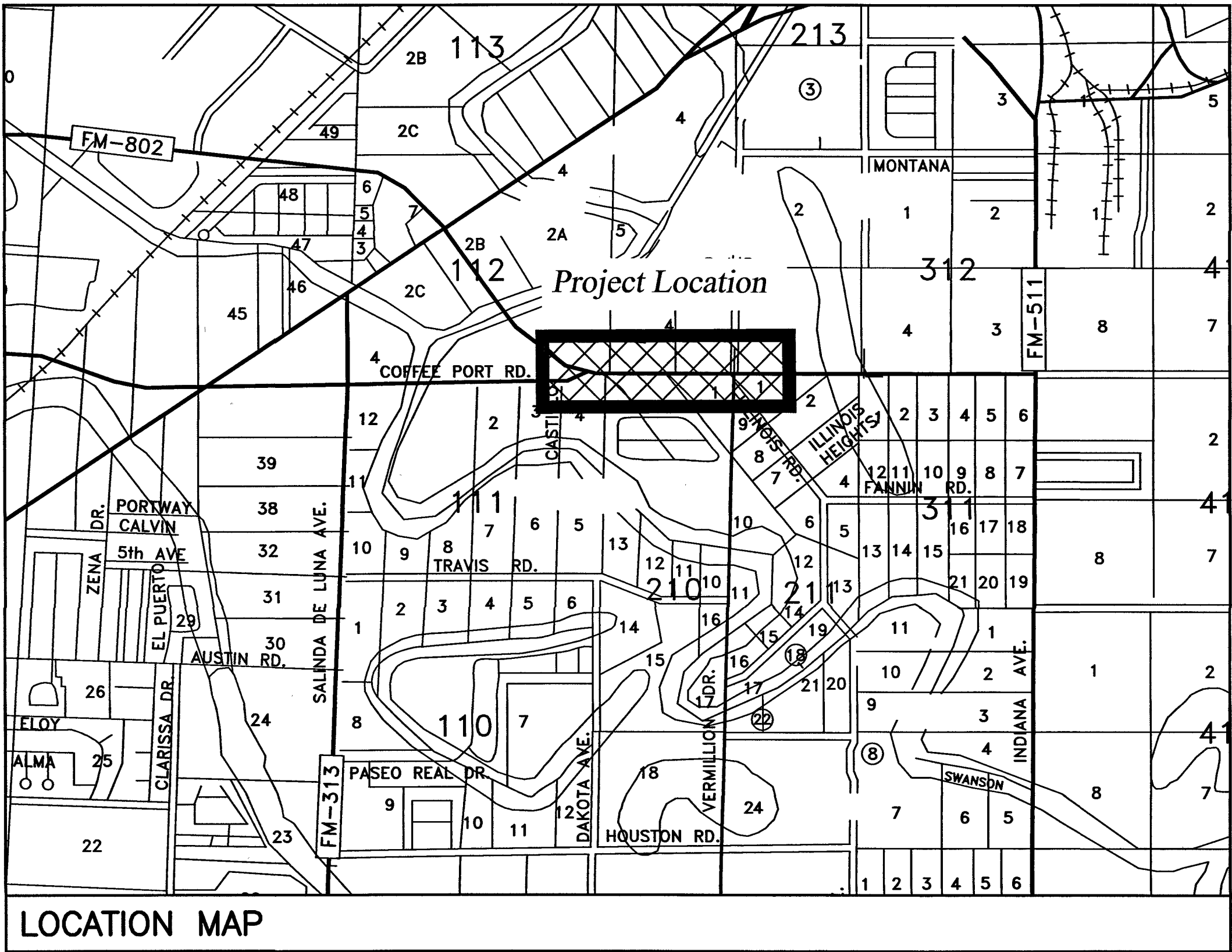


CONSTRUCTION PLANS  
FOR THE  
**16-INCH WATERLINE LOOP**  
AT  
**RUBEN M. TORRES BOULEVARD**

BID No. B084-25  
PREPARED FOR:  
**BROWNSVILLE PUBLIC UTILITIES BOARD**  
DATE: AUGUST 2025

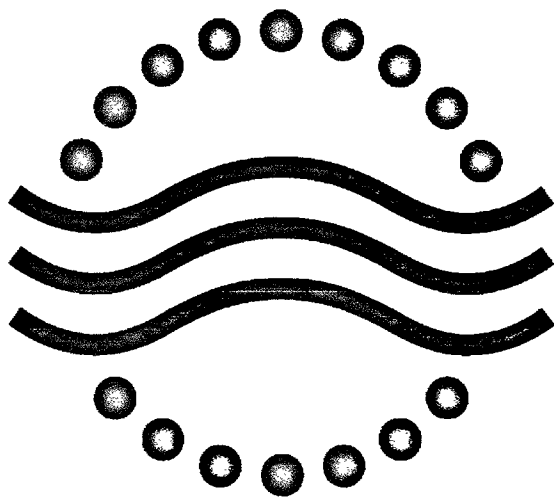
BOARD OF DIRECTORS

GERARDO MARTINEZ .....CHAIR  
ALONZO "AL" VILLARREAL .....VICE CHAIR  
DAISY ZAMORA, Ph.D .....SECRETARY/TREASURER  
ALEJANDRO NAJERA .....MEMBER  
JOSEPH L. HOLLMANN, Ph.D .....MEMBER  
MARTIN SARKIS .....MEMBER  
JOHN F. COWEN, JR.....EX-OFFICIO MEMBER, ELECTED



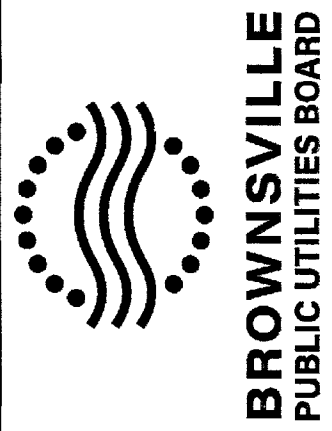
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**BROWNSVILLE**  
**PUBLIC UTILITIES BOARD**

REVISIONS			APP.
NO.	DATE		



Public Utilities Board  
1425 Robinhood Drive  
Brownsville, Texas 78521  
1-800-849-2922  
Water and Wastewater  
Engineering Department  
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*Marie C. Leal, P.E.*  
8/29/2025

16-INCH WATERLINE LOOP  
AT  
RUBEN M. TORRES BOULEVARD

COVER SHEET

Scale: Date: August 2025
Designed by: Brian Acanda
Drawn by: Brian Acanda / Luis Martinez
Approved by: Marie C. Leal, P.E.
Approved by: BPLB
Project #1-11111



GENERAL NOTES

1. CONTRACTOR TO SUBMIT WORKPLAN DETAILING SEQUENCE OF CONSTRUCTION FOR REVIEW AND APPROVAL BY THE BROWNSVILLE PUBLIC UTILITIES BOARD PRIOR TO BEGINNING OF CONSTRUCTION. WATER AND WASTEWATER SERVICES SHALL NOT BE INTERRUPTED BETWEEN THE HOURS OF 5:30 PM AND 8:00 A.M.
2. CONTRACTOR TO GIVE A MINIMUM OF 48 HOURS NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCEMENT OF WORK.
3. NO SEPARATE PAY FOR ITEMS REQUIRED BY NOTES ON THIS SHEET.
4. BLASTING IS NOT PERMITTED ON THIS PROJECT.
5. ALL CONSTRUCTION OPERATIONS TO BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION. COPIES OF OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE.
6. ELECTRICAL LINES ARE LOCATED IN THE PROJECT AREA. THE ATTENTION OF THE CONTRACTOR IS DIRECTED TO STATE LAW (VERNON'S ANNOTATED TEXAS STATUTES, ARTICLE 1436 (C)) CONCERNING CONSTRUCTION OPERATIONS IN THE VICINITY OF ELECTRICAL LINES AND THE NEED FOR EFFECTIVE PRECAUTIONARY MEASURES.
7. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THE WORK. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS.
8. ANY CHANGES OR REVISIONS TO THESE PLANS MUST FIRST BE SUBMITTED TO THE BROWNSVILLE PUBLIC UTILITIES BOARD FOR REVIEW AND WRITTEN APPROVAL.
9. EXISTING PAVING, BUILDING, AND OTHER ITEMS SHOWN ON PLANS NOT SPECIFICALLY RELATED TO THE WORK OF THE CONTRACTOR ARE FOR INFORMATION ONLY.
10. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING EXCESS AND WASTE MATERIAL, INCLUDING METHODS OF HANDLING AND DISPOSAL. EXCESS SOIL, ROCK, DEBRIS, EQUIPMENT, AND SPOIL MATERIAL NOT SPECIFICALLY LABELED FOR SALVAGE IN THIS PROJECT'S DRAWINGS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT JOBSITE AND LEGALLY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL VISIT THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ)'S WEBSITE AND CALL TCEQ FOR CURRENT WASTE DISPOSAL COMPLIANCE GUIDANCE, INCLUDING GUIDANCE ON CURRENT WASTE DISPOSAL REGULATIONS AND APPROVED OR PERMITTED DISPOSAL SITES. CONTRACTOR SHALL SUBMIT WASTE DISPOSAL DOCUMENTATION SUCH AS MANIFESTS TO THE OWNER UPON REQUEST. IF THE CONTRACTOR ENCOUNTERS ANY UNEXPECTED REGULATED WASTE DURING CONSTRUCTION THE CONTRACTOR SHALL FORMALLY CONTACT THE ENGINEER AND THE OWNER AND NOTIFY THE FINDING FOR FURTHER WASTE HANDLING INSTRUCTIONS. IF UNEXPECTED WASTE OF UNKNOWN QUALITY IS ENCOUNTERED DURING CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE OWNER IMMEDIATELY FOR FURTHER ENVIRONMENTAL ASSESSMENT AND TESTING TO DETERMINE ANY SPECIAL HANDLING AND DISPOSAL REQUIREMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME ACQUAINTED WITH CURRENT WASTE HANDLING AND DISPOSAL LAWS AND REGULATIONS.
11. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE ENVIRONMENTAL LAWS.
12. CONTRACTOR TO MAINTAIN ACCESS TO PUBLIC AND PRIVATE FACILITIES, RESIDENCES, AND BUSINESSES DURING CONSTRUCTION. CONTRACTOR SHALL MAKE ALL EFFORTS TO KEEP DRIVEWAYS OPEN AND ACCESSIBLE DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES TO BE COORDINATED WITH OWNER'S REPRESENTATIVE AND THE BROWNSVILLE PUBLIC UTILITIES BOARD. THE CONTRACTOR SHALL COORDINATE ALL DRIVEWAY CLOSURES WITH THE PROPERTY OWNER.
13. THE CONTRACTOR SHALL COORDINATE TEMPORARY RELOCATION OF MAILBOXES WITH THE BROWNSVILLE POSTMASTER. FINAL LOCATION SHALL BE IN ACCORDANCE WITH THE LOCAL POST OFFICE REQUIREMENTS AT CONTRACTOR'S EXPENSE.
14. CONTRACTOR TO TAKE ALL DUE PRECAUTIONS TO PROTECT EXISTING FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF THESE CONSTRUCTION OPERATIONS ARE TO BE REPAIRED IMMEDIATELY BY THE CONTRACTOR TO THE PRE-EXISTING CONDITION OR BETTER AT NO ADDITIONAL COST TO OWNER.
15. LOCATION OF EXISTING UTILITIES SHOWN ON PLANS WAS COMPILED FROM RECORD INFORMATION. NO WARRANTY IS IMPLIED AS TO THE ACTUAL LOCATION OF EXISTING UTILITIES. CONTRACTOR TO FIELD VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE FOLLOWING:
- |                                  |                      |
|----------------------------------|----------------------|
| DIG TESS:                        | 1-800-DIG-TESS (811) |
| TEXAS ONE CALL SYSTEM (TOCS)     | 1-800-545-6005       |
| BROWNSVILLE (BPUB)               | 956 983-6572         |
| BROWNSVILLE ENGINEERING DEPT.:   | 956-541-1012         |
| TEXAS GAS:                       | 1-800-700-2443       |
| AT&T:                            | 1-800-828-5127       |
| BROWNSVILLE IRRIGATION DISTRICT: | 956-831-8462         |
| TXDOT:                           | 956-542-2260         |
16. LOCATIONS AND DEPTHS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO DETERMINE EXACT LOCATIONS AND DEPTHS OF ALL APPLICABLE LINES, AND TO REPAIR ANY DAMAGES MADE AS A RESULT OF PROJECT CONSTRUCTION, INCLUDING UTILITIES NOT SHOWN ON THESE DRAWINGS.
17. CONTRACTOR TO COORDINATE INTERRUPTIONS OF ALL UTILITIES AND SERVICES WITH APPLICABLE UTILITIES COMPANY OR COMPANIES. ALL WORK TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE UTILITIES COMPANY OR AGENCY INVOLVED. (NO SEPARATE PAY).
18. WHEN NOT LOCATED OR INCORRECTLY LOCATED UNDERGROUND PIPING OR A BREAK IN A LINE OR OTHER UTILITIES AND SERVICES ARE ENCOUNTERED DURING SITE WORK OPERATIONS, CONTRACTOR TO NOTIFY THE APPLICABLE UTILITIES COMPANY IMMEDIATELY TO OBTAIN DIRECTION. CONTRACTOR TO COOPERATE WITH THE APPLICABLE UTILITIES COMPANY IN MAINTAINING ACTIVE SERVICES IN OPERATION.
19. CONTRACTOR TO ASSURE THAT ALL CONSTRUCTION PERMITS HAVE BEEN OBTAINED PRIOR TO COMMENCEMENT OF WORK. PERMITS ARE TO BE OBTAINED AT THE CONTRACTOR'S EXPENSE.
20. OWNER, ENGINEER, CONTRACTOR, REPRESENTATIVES OF ALL UTILITIES COMPANIES, AND A REPRESENTATIVE FROM THE TESTING LAB TO ATTEND PRE-CONSTRUCTION CONFERENCE PRIOR TO START OF CONSTRUCTION.
21. CONTRACTOR TO LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, AND CONTROL POINTS. CONTRACTOR TO RE-ESTABLISH DISTURBED OR DESTROYED ITEMS BY A REGISTERED PUBLIC SURVEYOR IN THE STATE OF TEXAS AT THE CONTRACTOR'S EXPENSE.
22. MATERIAL STORAGE, LAYDOWN, AND STAGING AREAS TO BE ON SAME SIDE OF ROADWAY AS ADJACENT WORK ZONE. STAGING AREAS ARE NOT TO BE USED FOR STOCKPILING SPOIL.
23. SPOIL MATERIAL SHALL NOT BE MOUNDED MORE THAN 18" HIGH ADJACENT TO DRIVEWAYS.
24. ANY DAMAGE CAUSED TO EXISTING PAVEMENT, CURBS, SIDEWALKS, ETC., SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY OF BROWNSVILLE ENGINEERING DEPARTMENT PRIOR TO ACCEPTANCE OF THE PROJECT.
25. ALL JOINTS TO MATCH EXISTING PAVEMENT SHALL BE SAW CUT. PAVEMENT PATCHING SHALL BE IN ACCORDANCE WITH BROWNSVILLE PUBLIC UTILITIES BOARD STANDARDS.
26. ALL SIDEWALKS TO BE CUT OR PATCHED TO COMPLY WITH AMERICANS WITH DISABILITIES ACT REQUIREMENTS.
27. CONTRACTOR SHALL NOTIFY THE BROWNSVILLE PUBLIC UTILITIES BOARD ENGINEERING DEPARTMENT AT LEAST 48 HOURS BEFORE DEMOLITION OF, OR CONNECTION WITH, ANY CITY UTILITIES OR STREET.
28. THE CONTRACTOR SHALL GIVE THE BROWNSVILLE PUBLIC UTILITIES BOARD 48 HOUR ADVANCE NOTICE PRIOR TO PLACEMENT OF ANY CONCRETE, TO PERMIT THE REVIEW OF FORMS, REINFORCING STEEL PLACEMENT, AND OTHER PREPARATIONS.
29. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST CITY OF BROWNSVILLE PUBLIC UTILITIES BOARD STANDARD SPECIFICATIONS.
30. BURNING OF TREES, BRUSH OR OTHER VEGETATIVE MATTER ON THE PROJECT SITE IS NOT PERMITTED.
31. NO TREES SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER OR ENGINEER, UNLESS OTHERWISE NOTED.
32. FUEL STORAGE IS NOT ALLOWED ON THIS PROJECT.

33. CONTRACTOR TO ADVISE OWNER IMMEDIATELY, VERBALLY AND IN WRITING, OF ANY FUEL OR TOXIC MATERIAL SPILLS ONTO THE PROJECT/CONSTRUCTION AREA AND THE ACTIONS TO BE TAKEN TO REMEDY THE PROBLEM.
34. CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF THEIR FUELS, MATERIALS, AND CONTAMINATED EXCAVATIONS IN A LEGALLY APPROVED MANNER.
35. CONTRACTOR IS RESPONSIBLE FOR PROVIDING & MAINTAINING SANITARY FACILITIES ON THIS PROJECT FOR EMPLOYEES.
36. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, ALL CONCRETE IS TO BE CLASS "A" (4000 PSI~28 DAYS), AND ALL REINFORCING STEEL TO BE ASTM A615 GRADE 60.
37. PROJECT MANHOLE CASTINGS OF ALL TYPES SHALL BE BROUGHT TO FINISHED GRADE BY THE CONTRACTOR.
38. PRIOR TO ACCEPTANCE OF THE PROJECT, ALL GRADED AND DISTURBED AREAS ARE TO BE RE-VEGETATED IN A CASE BY CASE BASIS.
39. APPROPRIATE SHORING AND BRACING EQUIPMENT SHALL BE USED WHERE TRENCHES ARE DEEPER THAN FIVE (5') FEET OR WHERE CONDITIONS WARRANT, AND SHALL COMPLY WITH OSHA REGULATIONS.
40. MAXIMUM LENGTH OF OPEN TRENCH TO BE 60', OR AS DIRECTED BY THE OWNER.
41. NO CONSTRUCTION OPERATIONS RELATIVE TO INSTALLATION OF UTILITIES, INCLUDING STOCKPILING OF EXCAVATED MATERIALS, SHALL BE PERMITTED WITHIN THE LIMITS OF EXISTING PAVEMENTS CARRYING TRAFFIC ON STATE HIGHWAYS, OR SHOULDERS ADJACENT THERETO, UNLESS SPECIFICALLY AUTHORIZED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
42. WHEN WORK IS PERFORMED ON PRIVATE PROPERTY OR EASEMENTS; ALL LAWN GRASS, SHRUBBERY, FLOWERS, AND FENCES IN THE WAY OF THE WORK SHALL BE REMOVED, PROTECTED AND REPLACED TO THEIR ORIGINAL POSITION AND CONDITION, OR BETTER, UPON COMPLETION OF THE WORK AT THE CONTRACTORS EXPENSE.
43. ALL DIMENSIONS GIVEN ARE TO THE CENTERLINE OF PIPE, UNLESS OTHERWISE NOTED. DO NOT ATTEMPT TO SCALE DIMENSIONS FROM THESE DRAWINGS. ALTHOUGH DRAWINGS ARE TO SCALE, THE ENGINEER SHOULD BE CONSULTED IF DIMENSIONING IS UNCLEAR OR INSUFFICIENT.
44. PRE-CONSTRUCTION PHOTOGRAPHS SHALL BE TAKEN THAT SHOW EXISTING CONDITIONS OF THE SITE AND ADJOINING STRUCTURES TO REMAIN. PHOTOS SHALL INCLUDE DAMAGE TO FINISH SURFACES THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY DEMOLITION OPERATIONS .
45. THE CONTRACTOR IS REQUIRED TO DISPOSE OF ALL MATERIALS AND PAY FOR ALL FEES RELATING TO DISPOSAL OF ALL MATERIAL IN COMPLIANCE WITH TCEQ AND EPA RULES AND REGULATIONS.
46. EXISTING BUILDINGS, PAVEMENTS, SIDEWALKS, CURBS, DRIVEWAYS, ELECTRICAL TRANSFORMERS, DITCHES, DRAINAGE PIPES AND STRUCTURES, FENCES, LAWNS, TREES, BUSHES, SIGNS, POWER POLES, ETC, TO REMAIN SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. ANY DAMAGE. DURING CONSTRUCTION SHALL BE RESTORED, RECONSTRUCTED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE. ALL DAMAGES SHALL BE RESTORED OR REPLACED TO AT LEAST THEIR ORIGINAL CONDITION OR BETTER OR AS REQUIRED OR DICTATED BY FEDERAL, STATE, COUNTY, CITY OR LOCAL GOVERNING AGENCIES.

WATER AND WASTEWATER NOTES

1. ALL PIPE BEDDING MATERIAL SHALL CONFORM TO DETAILS.
2. ALL CONCRETE BENCHES FOR WASTEWATER MANHOLES TO BE COATED PER MATERIALS AND PROCEDURES SPECIFIED IN CONTRACT SPECIFICATIONS. MINIMUM THICKNESS TO BE 80 MILS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATING AND RECONNECTING ANY BROWNSVILLE PUBLIC UTILITIES BOARD WATER AND WASTEWATER LINES, SERVICE TAPS, AND STORM SEWER WHERE REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ANY REQUIRED RELOCATION OF GAS, CABLE, TELEPHONE OR ELECTRIC LINES WITH THE APPROPRIATE UTILITIES OWNER.
4. PIPE MATERIAL FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (ASTM D2241 CLASS 200 SDR 21), OR DUCTILE IRON (AWWA C-100, MIN. CLASS 50); PIPE MATERIAL FOR GRAVITY WASTEWATER MAINS SHALL BE PVC (ASTM D2241 OR D3034, MAX. SDR 35). GASKETED PVC SEWER MAIN FITTINGS SHALL BE USED TO CONNECT SDR-35 PVC TO SDR-26 PVC PRESSURE PIPE OR AWWA C-900 PVC PIPE, UNLESS SPECIFIED OTHERWISE
5. WATER AND WASTEWATER LINES TO BE LAID WITH A MINIMUM COVER OF 48-INCHES BELOW FINISH GRADE UNLESS OTHERWISE NOTED.
6. ANY POTABLE WATERLINE WHICH MUST BE RELOCATED SHALL BE COORDINATED WITH BROWNSVILLE PUBLIC UTILITIES BOARD.
7. ALL MANHOLE COVERS SHALL BE 32" DIAMETER AND READ "BROWNSVILLE PUBLIC UTILITIES BOARD".
8. THE DISTANCE FROM TOP OF SANITARY SEWER MANHOLE CONE TO FINISHED GRADE TO BE 12" OR LESS UNLESS NOTED OTHERWISE ON PLANS.
9. EXISTING WASTEWATER LINES SHALL BE KEPT IN SERVICE UNTIL PROPOSED WASTEWATER SYSTEM IMPROVEMENTS HAVE BEEN COMPLETED AND APPROVED BY THE OWNER.
10. CONTRACTOR TO CONSTRUCT WASTEWATER GRAVITY MAIN FROM DOWNSTREAM END TO TO UPSTREAM END WITH BELLS FACING UPSTREAM.
11. ALL MANHOLES TO BE BENCHED IN THE DIRECTION OF FLOW TO MINIMIZE TURBULENCE.
12. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH TCEQ REQUIREMENTS.
13. THE CONTRACTOR SHALL PERFORM QUALITY TESTING FOR THE WATER AND WASTEWATER SYSTEM INSTALLED AND AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS AT HIS EXPENSE. BROWNSVILLE P.U.B. TO BE GIVEN 48 HRS NOTICE PRIOR TO ALL TESTING AND SHALL BE MONITORED BY BROWNSVILLE PUB PERSONNEL. TESTING IS TO BE DONE IN ACCORDANCE WITH B.P.U.B. STANDARDS.
14. ALL MANHOLES LOCATED WITHIN A ROADSIDE DITCH SHALL HAVE A MINIMUM COVER OF 18", AND HAVE WATER TIGHT COVERS. MANHOLES SHALL BE MARKED WITH MANHOLE MARKERS (SEE DETAIL) LOCATED AT THE RIGHT-OF-WAY. COST SUBSIDIARY TO OTHER ITEMS.
15. PROPOSED WATER AND SANITARY SEWER SERVICES ARE SHOWN IN AN APPROXIMATE LOCATION AND SHALL BE VERIFIED IN THE FIELD WITH AN INSPECTOR BASED ON THE LOCATION OF HOMES. SANITARY SEWER SERVICES SHALL BE SINGLE SERVICES UNLESS DECIDED OTHERWISE BY FIELD TECHNICIAN DURING CONSTRUCTION.
16. CONTRACTOR SHALL INSTALL ALL PROPOSED SANITARY SEWER SERVICE CONNECTIONS WITH AN ADEQUATE DEPTH TO ACCOMMODATE THE YARD LINE TO HAVE A SLOPE OF 1/4"-INCH PER FOOT PLUS 2' FEET MINIMUM COVER AT THE EXISTING HOME. THE CONTRACTOR SHALL VERIFY THAT SERVICE LINE HAS ADEQUATE DEPTH TO REACH THE RESIDENCE'S EXISTING SEWER CONNECTION(S).
17. CONTRACTOR SHALL KEEP 9 FT. MIN. SEPARATION BETWEEN SANITARY SEWER LINES AND WATERLINES. 9 FT. MIN. SEPARATION BETWEEN SANITARY SEWER LINES AND WATER METERS.

1. WHERE THE PROPOSED SANITARY SEWER LINE IS PLACED WITHIN THE ROADWAY, CONTRACTOR SHALL BACKFILL PIPE TO FINISH GRADE AS PER DETAIL. REFERENCE WASTEWATER DETAILS TYPICAL PIPE BEDDING AND TRENCH BACKFILL.
2. ALL EXISTING DRIVEWAYS SHALL BE OPEN CUT IN A NEAT STRAIGHT LINE, AND REPAIRED ON A LIKE FOR LIKE BASIS. ALL CONFLICTING RCP CULVERTS SHALL BE REMOVED AND REINSTALLED AS NEEDED. BOTH ITEMS ARE SUBSIDIARY TO OTHER ITEMS, NO SEPARATE PAY.
3. CONTRACTOR SHALL RESTORE ALL DRAINAGE SWALES TO ORIGINAL CONDITIONS.WATER SERVICE REPLACEMENT OR REPAIR SUBSIDIARY TO OTHER LINE ITEM'S PRICE PER L.F. (LINEAR FOOT) OF SEWER LINE. NO SEPARATE PAY.

TESTING NOTES

1. BROWNSVILLE PUBLIC UTILITIES BOARD TO BE GIVEN 48 HOURS NOTICE PRIOR TO ALL TESTING OF WATER LINES, WASTEWATER LINES, AND DENSITY TESTING. REFER TO SPECIFICATION 02687 AND TCEQ NOTES FOR TESTING REQUIREMENTS. ALL TESTING TO BE CONDUCTED IN PRESENCE OF B.P.U.B. INSPECTOR.
2. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM QUALITY TESTING FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL WATER LINES CONSTRUCTED AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. QUALITY AND PRESSURE TESTING SHALL BE MONITORED BY BROWNSVILLE PUB PERSONNEL. TESTING IS TO BE DONE IN ACCORDANCE WITH BPUB STANDARDS.
3. ALL SANITARY SEWERS, EXCLUDING SERVICE LINES, SHALL BE MANDREL TESTED PER TEXAS COMMISSION ON ENVIRONMENTAL QUALITY CRITERIA. MANDREL TEST SHALL NOT BE PERFORMED UNTIL BACKFILL HAS BEEN IN PLACE FOR A MINIMUM OF 30 DAYS.
4. SOIL DENSITY TESTS AND RELATED SOIL ANALYSIS TESTS TO BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY UNDER CONTRACT WITH THE OWNER. TESTS WHICH SHOW UNSATISFACTORY RESULTS ARE TO BE REPEATED AT THE EXPENSE OF THE CONTRACTOR SUBSEQUENT TO CONTRACTOR'S REMEDIAL ACTIVITIES.
5. DENSITY TESTING OF COMPACTED SUBGRADE MATERIAL FOR FIRST COURSE, AND SECOND COURSE OF COMPACTED BASE SHALL BE MADE AT ALL DRIVEWAYS AND INTERSECTING STREETS. IN ADDITION, ONE (1) DENSITY TEST PER LIFT PER FIVE HUNDRED (500) FEET OF INSTALLED PIPELINE SHALL BE CONDUCTED.

SITE GRADING NOTES

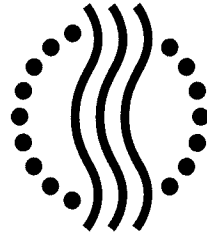
1. EROSION CONTROL MEASURES MUST BE INSTALLED PRIOR TO DISTURBING EXISTING GRADE WITHIN ANY WORK AREA. SUCH MEASURES SHALL REMAIN IN PLACE UNTIL WORK IS COMPLETE AND/OR GRASS IS ESTABLISHED, AS DIRECTED BY OWNER.
2. CONTRACTOR TO CONTROL DUST CAUSED BY THE WORK AND COMPLY WITH POLLUTION CONTROL REGULATIONS OF GOVERNING AUTHORITIES. (NO SEPARATE PAY.)
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING MUD AND/OR DIRT TRACKED ONTO EXISTING STREETS BY HIS WORKMEN'S, SUPPLIER'S, OR SUBCONTRACTOR'S VEHICLES. STREETS MUST BE CLEANED WITHIN 2 HOURS OF WHEN THE TRACKING OCCURS. (NO SEPARATE PAY.)
4. EXCESS EXCAVATED MATERIAL TO BE STOCKPILED IN DESIGNATED AREA AS SHOWN ON PLANS OR AS DIRECTED BY THE OWNER. REINFORCED FILTER FABRIC FENCE TO BE INSTALLED AROUND STOCKPILE ON DOWNSTREAM SIDE AND BOTH SIDES ADJACENT TO THE DOWNSTREAM SIDE. STOCKPILES ARE NOT TO TRAP OR POND WATER. TOPSOIL TO BE STOCKPILED SEPARATELY. ALL EXCESS EXCAVATED MATERIAL IS TO BE REMOVED FROM THE SITE, CONTRACTOR TO NOTIFY TCEQ AND THE OWNER'S REPRESENTATIVE OF LOCATION OF DISPOSAL BEFORE MATERIAL IS REMOVED.

STORMWATER NOTES

1. THE CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING A T.C.E.Q. APPROVED SWPP AND BE RESPONSIBLE FOR THE IMPLEMENTATION, MAINTENANCE, AND INSPECTION OF SWPP CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, EROSION AND SEDIMENT CONTROLS, STORM WATER MANAGEMENT PLANS, WASTE COLLECTION AND DISPOSAL, OFF-SITE VEHICLE TRACKING, AND OTHER CONSTRUCTION PRACTICES.
2. DURING CONSTRUCTION, SILT FENCING AND/OR HAY BALES DIKES SHALL BE ERECTED AND MAINTAINED TO MINIMIZE ESCAPE OF SEDIMENT INTO STORM SEWER SYSTEM AND RECEIVING WATERS. THE CONTRACTOR SHALL INSTALL EROSION CONTROL DEVICES WHERE NEEDED
3. DURING CONSTRUCTION, THESE TEMPORARY EROSION AND SEDIMENTATION CONTROLS TO REMAIN IN PLACE UNTIL THE DISTURBED AREAS ARE RE-VEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS TO BE INSPECTED PERIODICALLY FOR DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES AND FOLLOWING EVERY RAINFALL. DAMAGED OR OBSTRUCTED CONTROLS TO BE REPAIRED/REPLACED AS NECESSARY TO MAINTAIN THEIR PROPER OPERATION.
4. THE CONTRACTOR SHALL SELECT A SPECIFIC LOCATION TO BE THE STAGING FOR THE PROJECTS OPERATIONS, WHICH INCLUDES A CONSTRUCTION ENTRANCE AS PER NPDES REQUIREMENTS. THE CONTRACTOR WILL DESIGNATE THIS AREA FOR EQUIPMENT CLEANING , MAINTENANCE, REPAIR, AND STORAGE. ALL CONTRACTORS AND SUBCONTRACTORS SHALL UTILIZE SUCH AREA FOR THOSE PURPOSES. THIS AREA WILL BE LOCATED SUCH THAT HARMFUL SUBSTANCES WILL NOT BE ALLOWED TO LEACH OR RUN OFF-SITE. A STRICT POLICY WILL BE ENACTED WHICH WILL MINIMIZE VEHICLE TRAFFIC FROM ENTERING NON-PAVED AREAS.

TRAFFIC CONTROL NOTES

1. CONTRACTOR SHALL DEVELOP AND SUBMIT A TRAFFIC CONTROL PLAN WHICH WILL SHOW BOTH DAY AND NIGHT TIME OPERATIONS FOR THE INSTALLATION OF THE UTILITIES IMPROVEMENTS IN CONFORMANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, AND TXDOT STANDARDS. CONTRACTOR IS TO SUBMIT A TRAFFIC CONTROL PLAN FOR REVIEW AND APPROVAL BY THE CITY OF BROWNSVILLE TRAFFIC DEPARTMENT AND BROWNSVILLE PUBLIC UTILITIES BOARD PRIOR TO START OF CONSTRUCTION. ANY WORK PERFORMED WITHIN A TXDOT RIGHT OF WAY SHALL REQUIRE A TXDOT PERMIT FOR WORK. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO TXDOT FOR APPROVAL.
2. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN BARRICADES, WARNING SIGNS AND OTHER TRAFFIC HANDLING DEVICES OF THE SIZE AND TYPE SPECIFIED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES OR AS DIRECTED BY THE ENGINEER OR HIGHWAY DEPARTMENT OFFICIAL.
3. THE CONTRACTOR SHALL INSPECT AND PROPERLY MAINTAIN TRAFFIC CONTROLS EACH EVENING AND DURING THE WEEKEND IN ADDITION TO NORMAL DAYTIME WORKING HOURS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH INSTALLATION AND MAINTENANCE OF TRAFFIC CONTROLS.
4. THE CONTRACTOR SHALL DESIGNATE ONE PERSON WHO WILL BE ACCESSIBLE TO THE OWNER ON A 24-HOUR BASIS AND WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE BARRICADES AND THE WORK SITE.
5. TRAFFIC INTERRUPTION SHALL BE COORDINATED WITH THE TEXAS DEPARTMENT OF TRANSPORTATION, THE CITY OF BROWNSVILLE, THE BROWNSVILLE PUBLIC UTILITIES BOARD, FIRE AND POLICE DEPARTMENTS, AND THE ENGINEER AT LEAST 24 HOURS IN ADVANCE OF SUCH INTERRUPTIONS.



BROWNSVILLE  
PUBLIC UTILITIES BOARD

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Marie C. Leal P.E.  
8/29/2025

16-INCH WATERLINE LOOP  
AT  
RUBEN M. TORRES BOULEVARD

GENERAL NOTES

UTILITY WORK GENERAL NOTES REVISED: MAY 2021

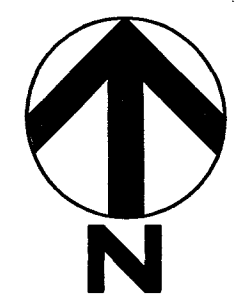
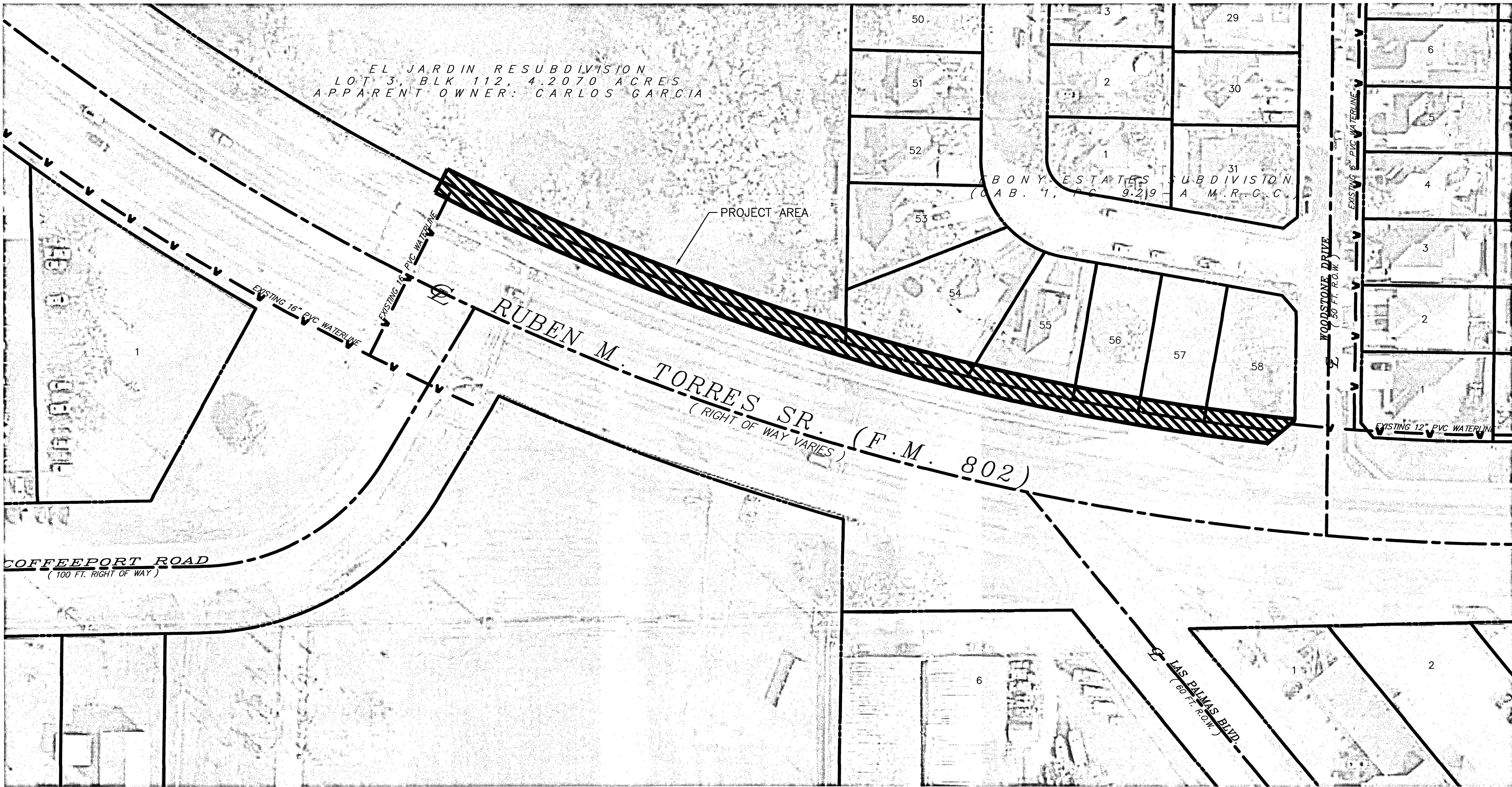
Scale:	Date: August 2025
Designed by: Brian Aranda	
Drawn by: Brian Aranda / Luis Martinez	
Approved by: Marie C. Leal, P.E.	
Approved by: BPUB	
Project #:	

SHEET

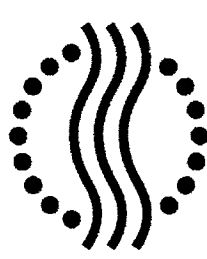
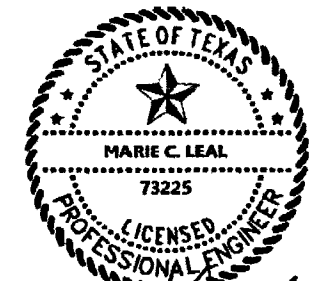
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OF 10



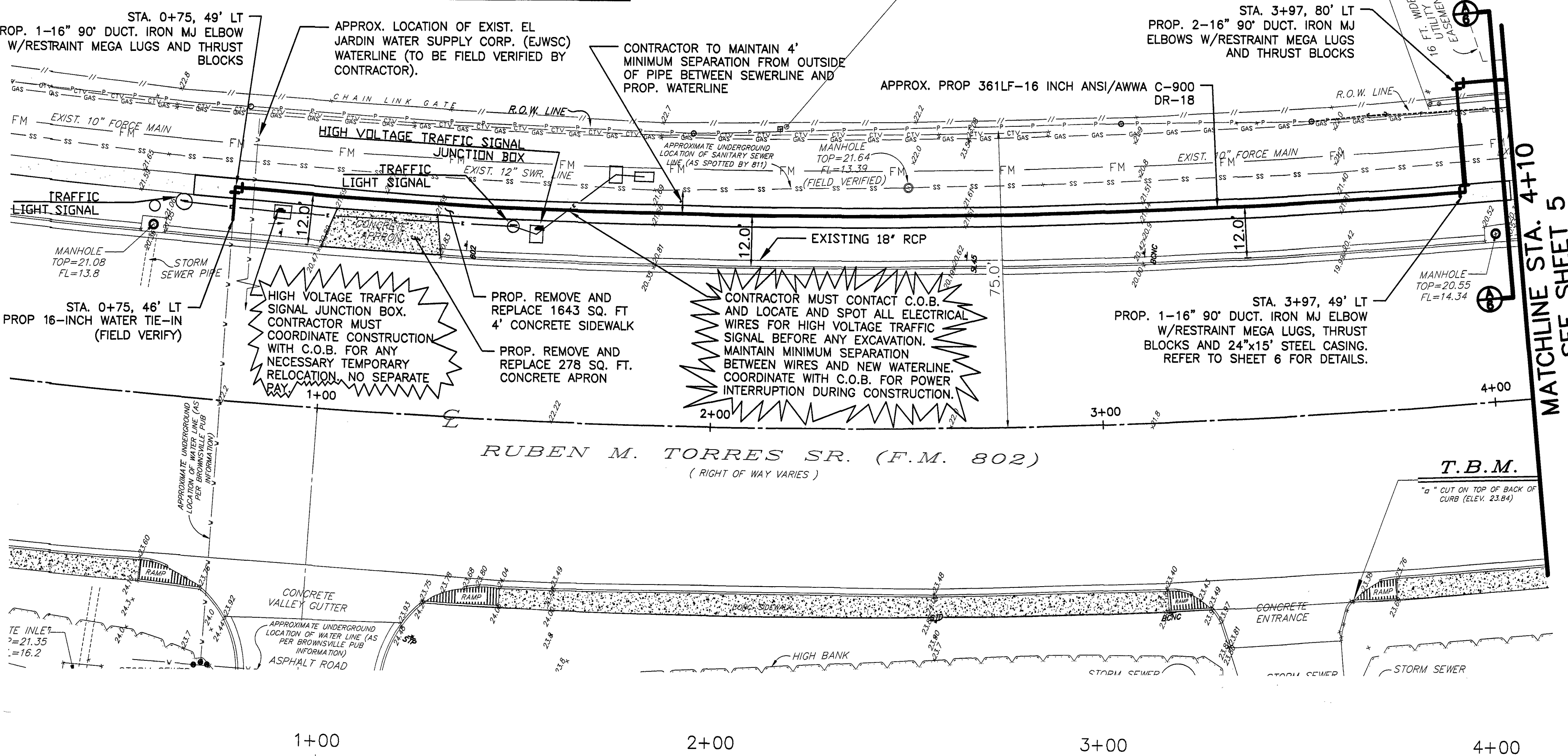


OVERALL SITE LAYOUT  
SCALE: 1"=40'

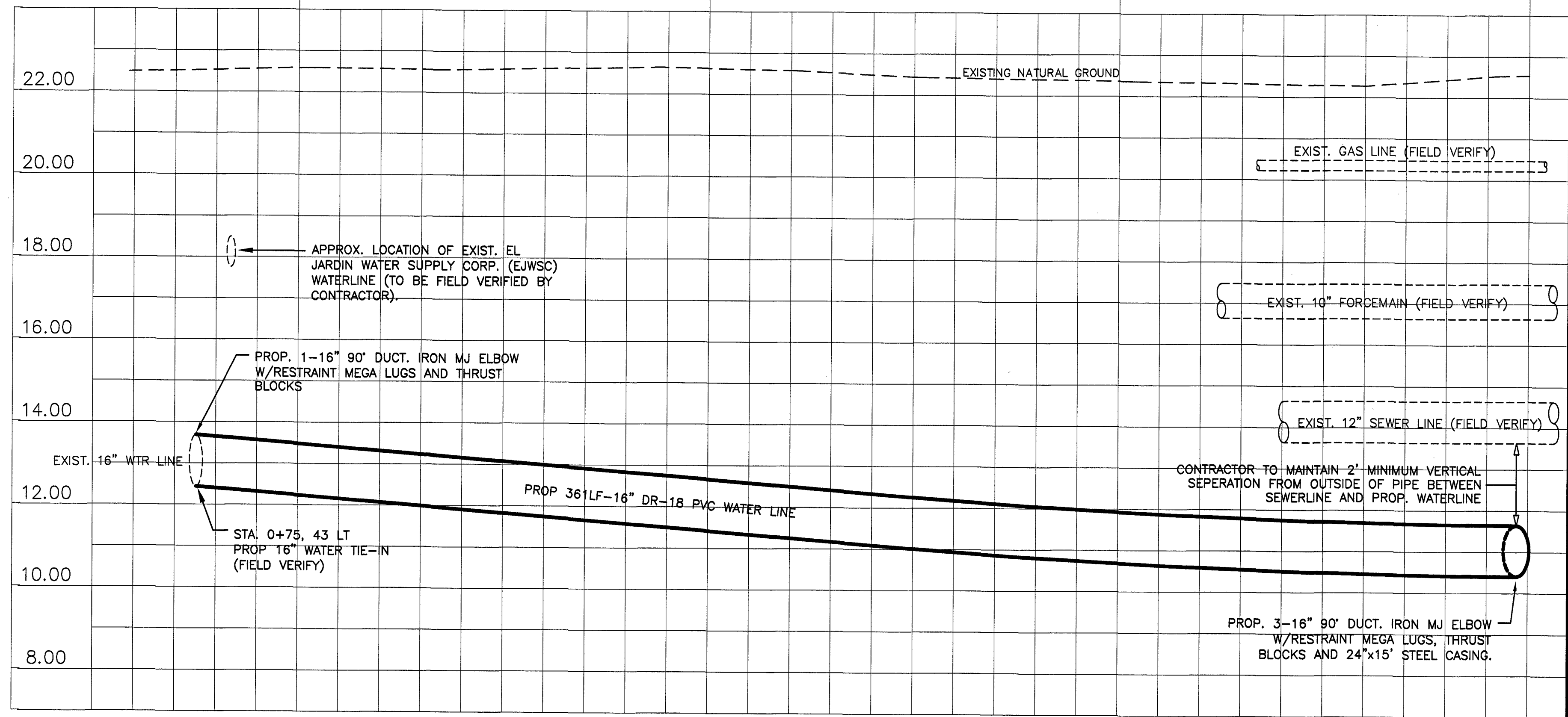
 <b>BROWNSVILLE</b> PUBLIC UTILITIES BOARD	
Public Utilities Board 1425 Robinhood Drive Brownsville, Texas 78521 1-800-869-2922 Water and Wastewater Engineering Department (956) 983-6215 FAX: (956) 983-6220	
 <i>Marie C. Leal, P.E.</i> 8/29/2025	
OVERALL SITE LAYOUT	
16-INCH WATERLINE LOOP AT RUBEN M. TORRES BOULEVARD	
Scale: Date: August 2025	Designed by: Brian Aranda
Drawn by: Brian Aranda / Luis Martinez	Approved by: Marie C. Leal, P.E.
Approved by: BRUB	Project #:
SHEET <b>3</b> OF 10	



APPROX. QUANTITIES		
ITEM	UNIT	QTY.
PROPOSED 16" WATERLINE	L.F.	361
PROPOSED 16" 90 DEGREE (DUCT. IRON) ELBOW	E.A.	4
PROPOSED 4' CONCRETE SIDEWALK REMOVAL AND REPLACEMENT	SQ. FT.	1643
PROPOSED CONCRETE APRON REMOVAL AND REPLACEMENT	SQ. FT.	278
PROPOSED 16" WATER TIE-IN	E.A.	1



SCALE:  
HOR: 1"=20'  
VERT: 1"=2'



NOTES:

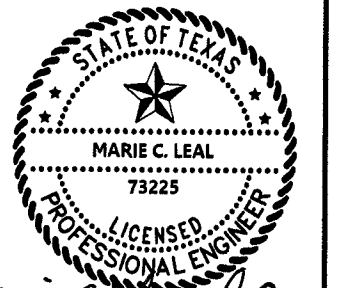
- CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES BEFORE BEGINNING CONSTRUCTION.
- CONTRACTOR SHALL SAW CUT ALL PROPOSED PAVING IMPROVEMENTS IN A NEAT STRAIGHT LINE ALONG BACK OF CURB LINE (SUBSIDIARY TO CURB AND GUTTER ITEM. NO SEPARATE PAY)
- CONTRACTORS SHALL SAW CUT ALL DRIVEWAYS IN A NEAT STRAIGHT LINE, IF NECESSARY CUT 2' BEHIND CURB AND REPLACE IMPROVEMENTS ON A LIKE FOR LIKE BASIS (SUBSIDIARY TO PAVEMENT ITEM. NO SEPARATE PAY.) (TYPICAL) CONTRACTOR SHALL PROTECT EXISTING PRIVATE PROPERTY INCLUDING MAILBOXES, SIDEWALKS, DRIVEWAYS, CURB AND GUTTER, ASPHALT PAVEMENT, IRRIGATION LINES, LANDSCAPING, ETC. FROM DAMAGE DURING CONSTRUCTION, AND RE-INSTALL AS REQUIRED. (NO SEPARATE PAY. SUBSIDIARY TO THE CONTRACT.) CONTRACTOR SHALL COORDINATE BEFOREHAND WITH PRIVATE PROPERTY OWNER AND BPUB INSPECTOR.
- THE CONTRACTOR SHALL SPOT AND "POTHOLE" ALL FIBER OPTIC AND UTILITY LINES AHEAD OF THE CONSTRUCTION CREWS AND VERIFY EXISTING VERTICAL ELEVATIONS PRIOR TO START OF CONSTRUCTION. ALL COSTS ASSOCIATED WITH SPOTTING AND POTHOLING SHALL BE PAID FOR BY THE CONTRACTOR. TEXAS811 (ONE CALL) SHALL MARK THE LINES PRIOR TO POTHOLING.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CONSTRUCTION STAKING ON THIS PROJECT. NO SEPARATE PAY.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY ALL APPROPRIATE UTILITY COMPANIES, 48 HOURS PRIOR TO ACTUAL CONSTRUCTION FOR THE EXACT LOCATION OF EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY RESIDENTIAL/BUSINESS OWNERS, AND STATE/LOCAL OFFICIALS (WHEN APPLICABLE) OF PROPOSED CONSTRUCTION IN FRONT OF THE RESPECTIVE PROPERTIES AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THE EXCAVATORS NEED TO CONTACT A NOTIFICATION CENTER 48 HOURS PRIOR TO EXCAVATING (TEXAS811), EXCEPT IN CASE OF AN EMERGENCY. THE NOTIFICATION CENTER TELEPHONE NUMBER IS 811 OR 1-800-245-4545.
- THE DRAWINGS SHOW AS MUCH INFORMATION AS CAN BE REASONABLY OBTAINED BY SURVEY CREW AND FROM CITY AND UTILITY RECORDS REGARDING THE LOCATION OF PIPELINES, STORM SEWER, WATERLINES, SEWER LINES, TELEPHONE CONDUITS, GAS LINES, ETC. HOWEVER, THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE SUCH UNDERGROUND FEATURES SUFFICIENTLY IN ADVANCE OF OPERATION TO PRECLUDE DAMAGE TO SAME. DAMAGE TO EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. RIGHT OF WAYS ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY. THE ENGINEER HAS MADE NO ATTEMPT TO PROVIDE ACTUAL BOUNDARY SURVEYS TO VERIFY LOCATION OF ALL PROPERTY LINES.
- IN THE EVENT THAT UNDERGROUND UTILITIES NOT SHOWN ON THE DRAWINGS ARE ENCOUNTERED, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONSTRUCT THE WORK AS INTENDED, AT NO INCREASE IN THE CONTRACT TIME AND PRICE.
- CONTRACTOR SHALL INSTALL PVC PIPE AND FITTINGS AS PER ANSI/AWWA C605, OF LATEST EDITION.

WATERLINES:

- ALL VALVES AND DUCTILE IRON FITTINGS, EXCEPT FIRE HYDRANTS, SHALL BE WRAPPED WITH 8-MIL POLYETHYLENE FILM. SECURE POLYETHYLENE WRAP WITH 3-INCH-WIDE PLASTIC-BACKED ADHESIVE TAPE (POLYETHYLENE No. 900, SCOTCHWRAP No. 50 OR APPROVED EQUAL). ALL FITTINGS SHALL BE MECHANICAL JOINT WITH RESTRAINING GLAND (EBBA IRON INC. MEGALUG OR APPROVED EQUAL).
- CONTRACTOR TO PROVIDE ADEQUATE CONCRETE THRUST BLOCKING TO WITHSTAND TEST PRESSURE OF 150 PSI.
- CONTRACTOR SHALL COORDINATE WITH FIELD INSPECTOR AT LEAST 48 HOURS PRIOR TO CONNECTING PROPOSED WATERLINE TO EXISTING WATER SYSTEM AND PRIOR TO ANY DISRUPTION OF WATER SERVICE. ALL EXISTING VALVES ARE TO BE OPERATED BY BROWNSVILLE PUBLIC UTILITIES BOARD PERSONNEL ONLY (NOTIFY THE BROWNSVILLE PUBLIC UTILITIES BOARD 48 HOURS IN ADVANCE OF ANY REQUIRED WATER VALVE OPERATIONS).
- CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE EXISTING WATERLINES DURING CONSTRUCTION. FOLLOWING CONSTRUCTION, TESTING, AND DISINFECTION OF NEW WATERLINES, CONTRACTOR SHALL, UPON 48 HOUR NOTICE TO THE PUBLIC UTILITIES BOARD, CUT, PLUG AND ABANDON EXISTING WATERLINES, REMOVE FIRE HYDRANTS AND VALVES ON FIRE HYDRANT LEADS. TRANSFER ALL AFFECTED SERVICES TO THE PROPOSED MAINS PRIOR TO ABANDONMENT OF EXISTING MAINS.
- ALL EXIST. WATER SERVICES SHALL BE RECONNECTED TO THE NEW LINE USING APPROVED MATERIAL AS SHOWN ON THE WATER DETAILS AND CONTRACT PLANS AND SPECIFICATIONS.



Public Utilities Board  
1425 Robinson Drive  
Brownsville, Texas 7821  
1-800-869-2922  
Water and Wastewater  
Engineering Department  
(956) 983-6215  
FAX: (956) 983-6200



Maria C. Leal, P.E.  
8/29/2025

16-INCH WATERLINE LOOP  
AT  
RUBEN M. TORRES BOULEVARD

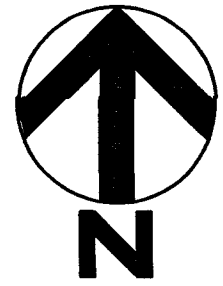
PLAN AND PROFILE  
STA. 1+00 TO 4+10

Date: August 2025  
Designed by: Brian Aranda  
Drawn by: Brian Aranda / Luis Martinez  
Approved by: Maria C. Leal, P.E.  
Approved by: BPUB  
Project #:

SHEET

4

OF 10



STA. 4+49, 80' LT  
PROP 16"x6" TEE  
PROP. FIRE HYDRANT  
W/VALVE

CONTRACTOR TO REMOVE AND REPLACE  
EXISTING CHAIN-LINK AND WOOD FENCES  
AS NECESSARY FOR THE INSTALLATION  
OF THE WATERLINE AND HYDRANT.  
REMOVAL AND REPLACEMENT OF FENCES  
ARE SUBSIDIARY TO THE WATERLINE  
INSTALLATION COST. NO SEPARATE PAY.

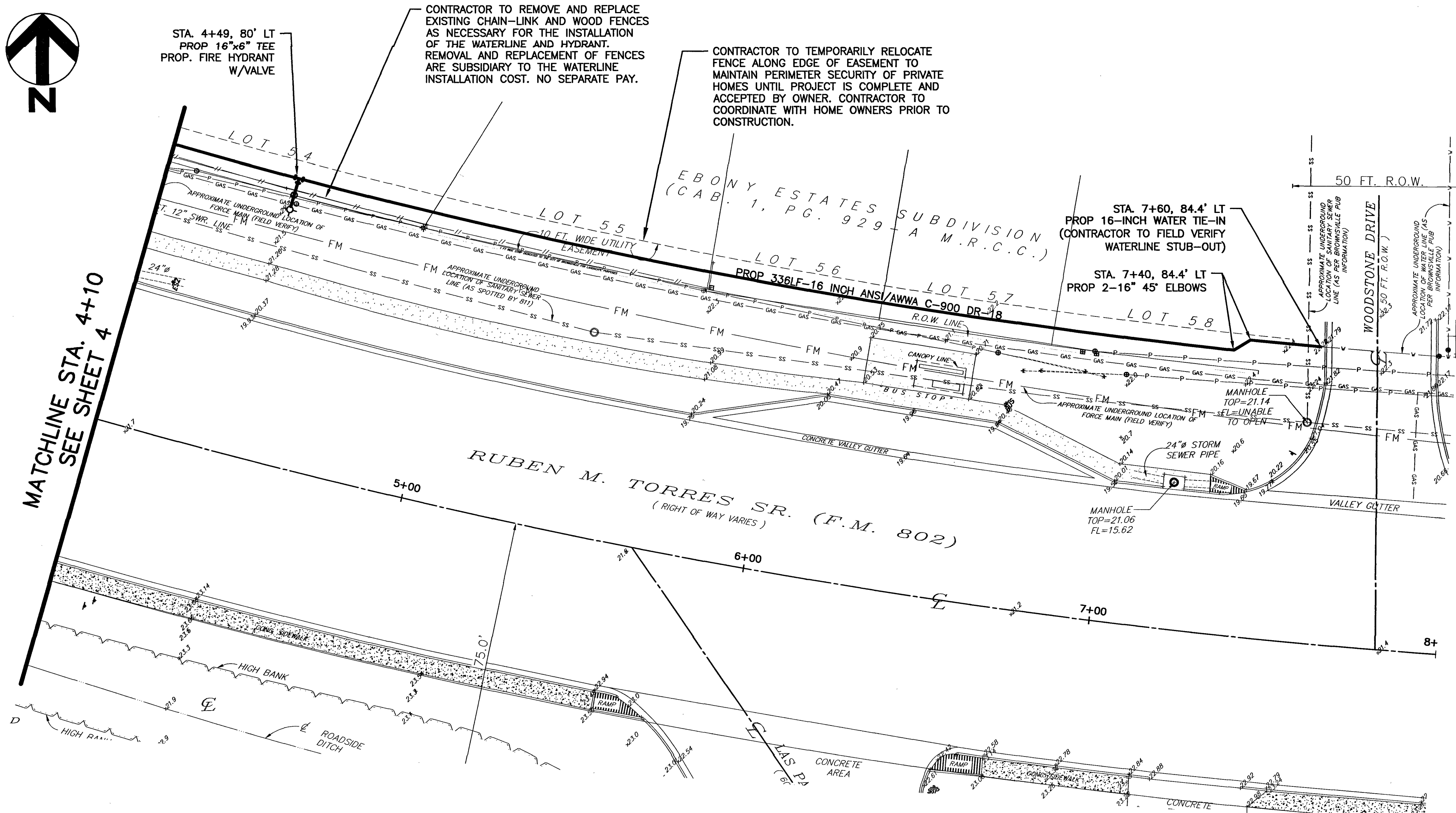
CONTRACTOR TO TEMPORARILY RELOCATE  
FENCE ALONG EDGE OF EASEMENT TO  
MAINTAIN PERIMETER SECURITY OF PRIVATE  
HOMES UNTIL PROJECT IS COMPLETE AND  
ACCEPTED BY OWNER. CONTRACTOR TO  
COORDINATE WITH HOME OWNERS PRIOR TO  
CONSTRUCTION.

EBONY ESTATES  
(CAB. 1, PG. 929)  
SUBDIVISION  
A.M.R.C.C.)

STA. 7+60, 84.4' LT  
PROP 16-INCH WATER TIE-IN  
(CONTRACTOR TO FIELD VERIFY  
WATERLINE STUB-OUT)

STA. 7+40, 84.4' LT  
PROP 2-16" 45° ELBOWS

MATCHLINE STA. 4+10  
SEE SHEET 4

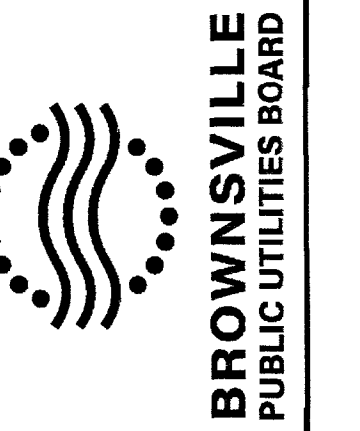
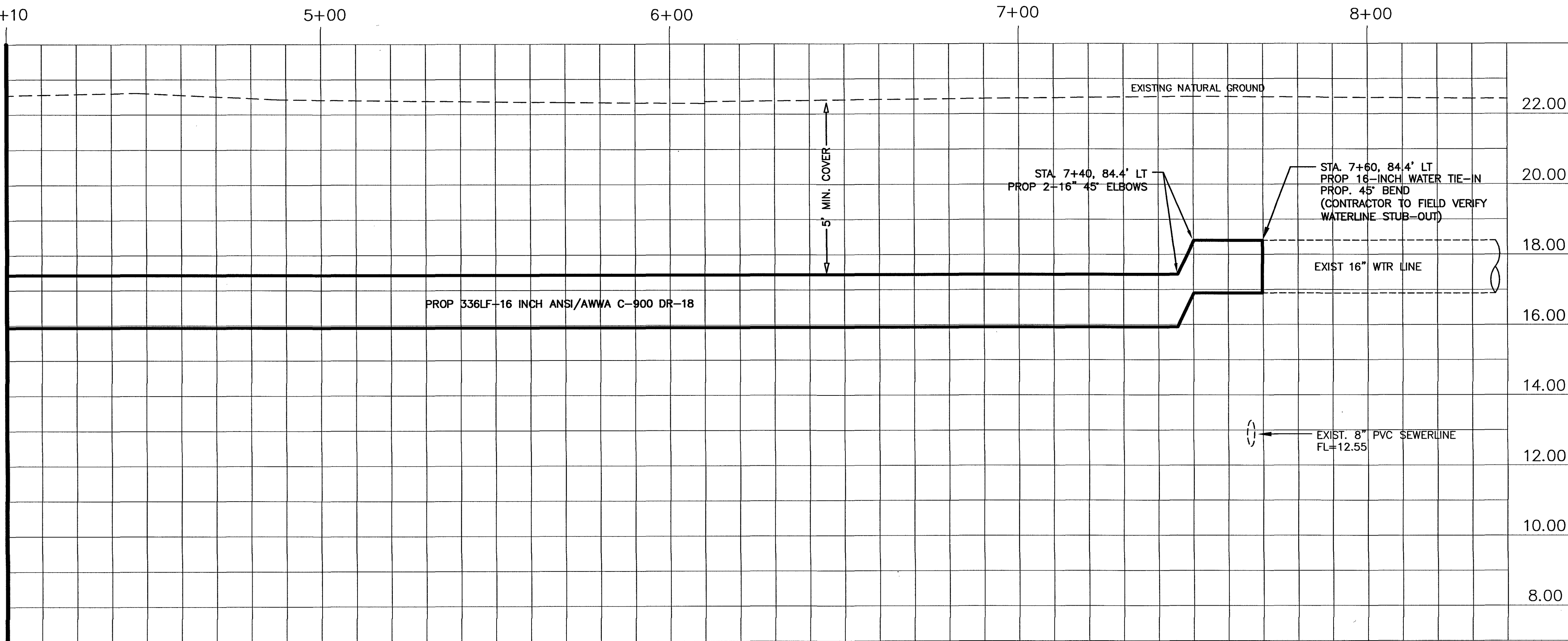


APPROX. QUANTITIES		
ITEM	UNIT	QTY.
PROPOSED 16" WATER LINE	LF	336
PROPOSED 16" 45 DEGREE ELBOW	EA.	2
PROPOSED FH	EA.	1
PROPOSED 6" VALVE	EA.	1
PROPOSED 16" X 6" TEE	EA.	1
PROPOSED 16" WATER TIE-IN	EA.	1

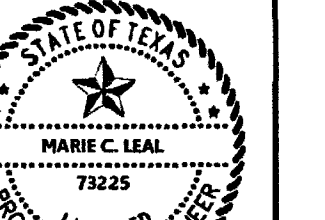
LEGEND:

- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- WATER METER
- WATER VALVE
- GAS METER
- FIRE HYDRANT
- EXIST. SANITARY SEWER LINE
- EXIST. WATER LINE
- TELEPHONE LINE
- GAS LINE
- PROP WATER LINE

MATCHLINE STA. 4+10  
SEE SHEET 4



Public Utilities Board  
1425 Robinhood Drive  
Brownsville, Texas 78521  
1-800-869-2022  
Water and Wastewater  
Engineering Department  
(956) 983-6215  
FAX: (956) 983-6220



Marie C. Leal, P.E.  
8/29/2025

16-INCH WATERLINE LOOP  
AT  
RUBEN M. TORRES BOULEVARD

PLAN AND PROFILE  
STA. 4+10 TO END

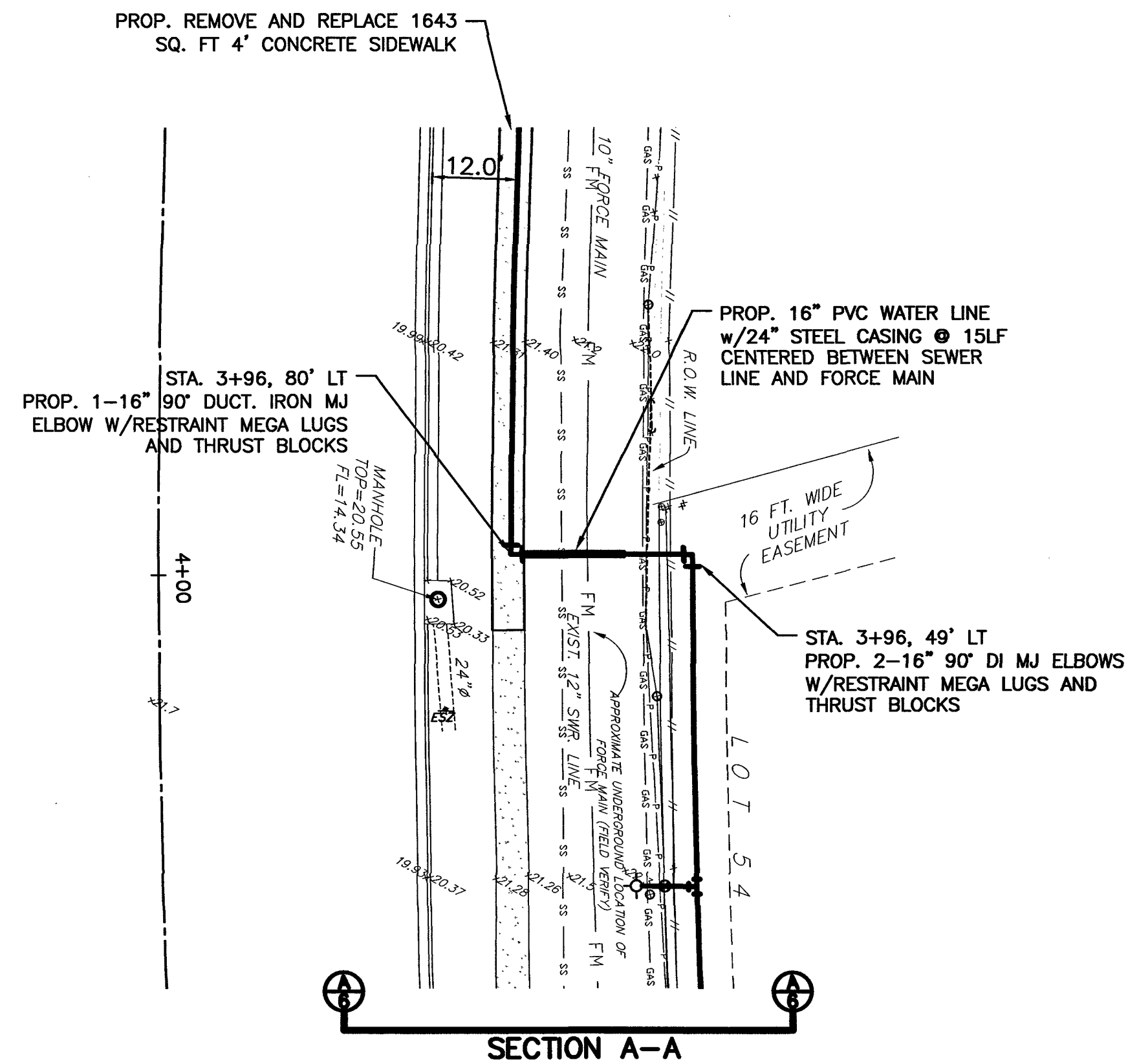
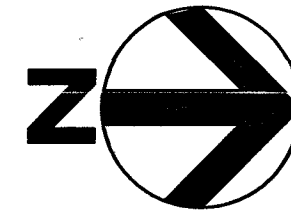
Date: August 2025  
Designed by: Brian Aranda  
Drawn by: Brian Aranda / Luis Martinez  
Approved by: Marie C. Leal, P.E.  
Approved by: BPHB  
Project #:

SHEET

5

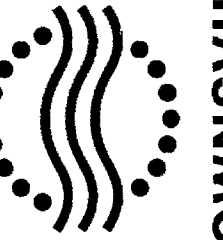
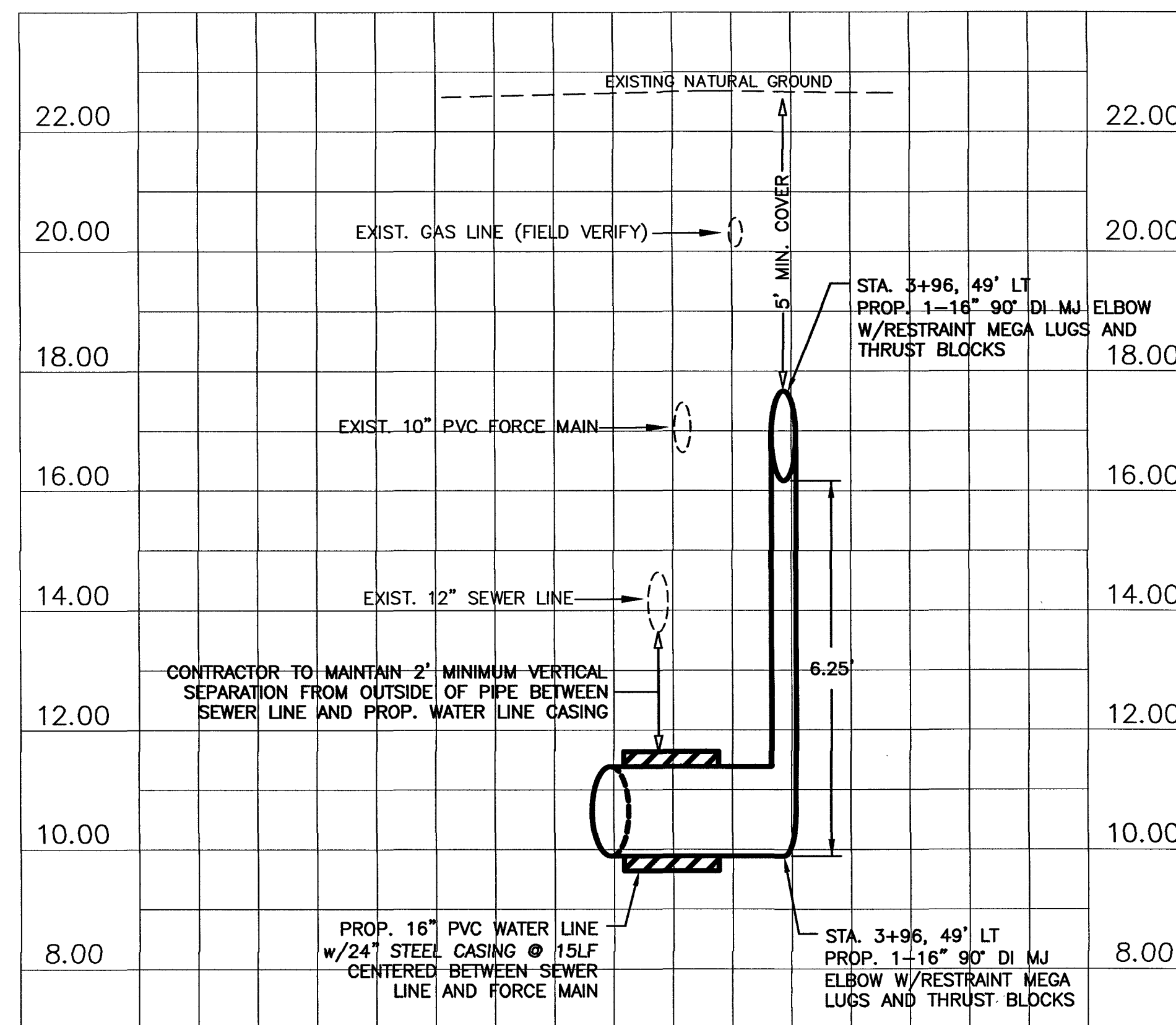
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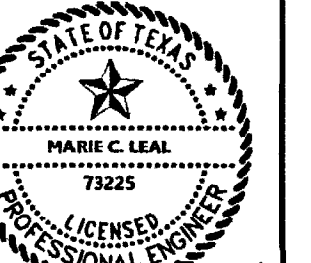
- LEGEND:
- SANITARY SEWER MANHOLE
  - STORM SEWER MANHOLE
  - WATER METER
  - WATER VALVE
  - GAS METER
  - FIRE HYDRANT
  - EXIST. SANITARY SEWER LINE
  - EXIST. WATER LINE
  - TELEPHONE LINE
  - GAS LINE
  - PROP WATER LINE

SCALE:  
HOR: 1"=20'  
VERT: 1"=2'



BROWNSVILLE  
PUBLIC UTILITIES BOARD

Public Utilities Board  
1425 Robinhood Drive  
Brownsville, Texas 78321  
1-800-869-2922  
Water and Wastewater  
Engineering Department  
(361) 983-6215  
FAX: (361) 983-6220



Marie C. Leal, P.E.  
8/27/2025

16-INCH WATERLINE LOOP  
AT  
RUBEN M. TORRES BOULEVARD

PLAN AND PROFILE  
SECTION A-A

Date: August 2025  
Designed by: Brian Aranda  
Drawn by: Brian Aranda / Luis Martinez  
Approved by: Marie C. Leal, P.E.  
Approved by: BPUB  
Project #: 25-0000

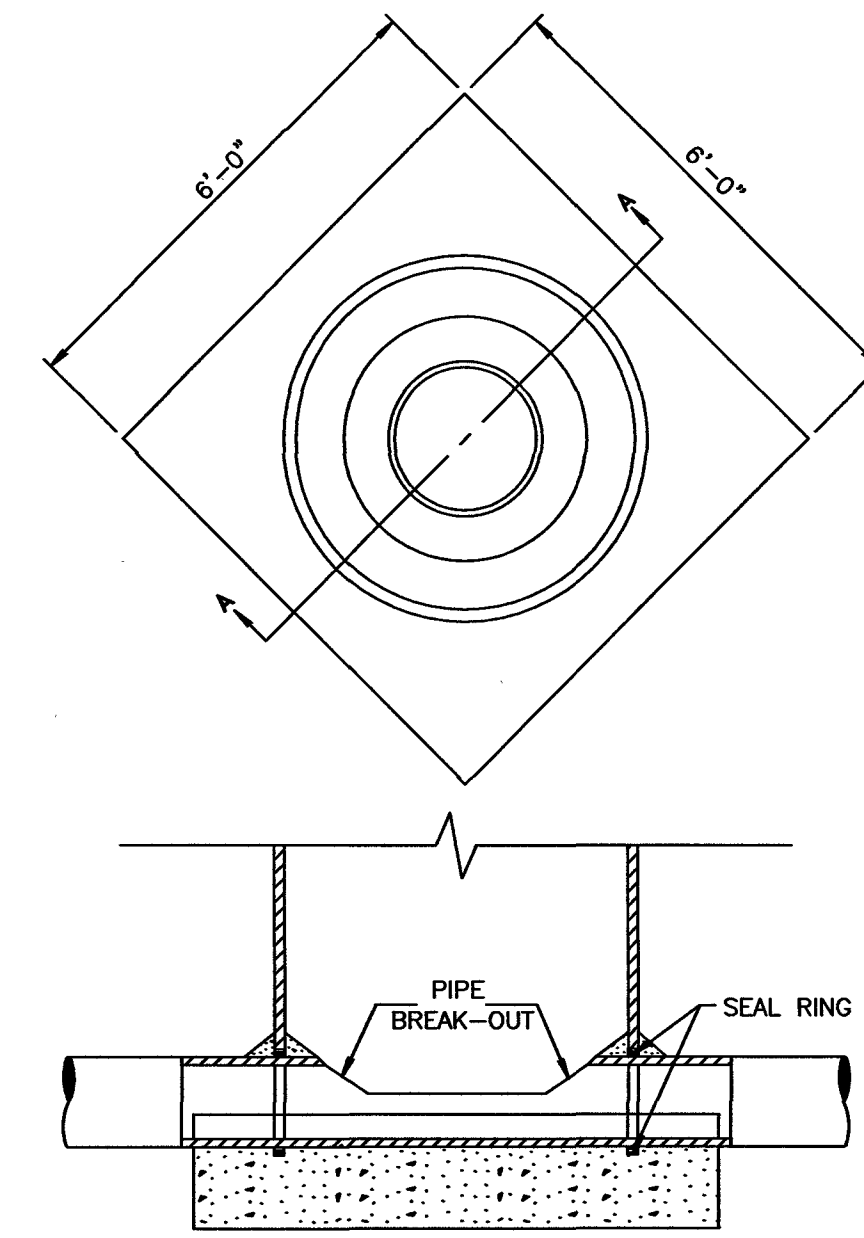
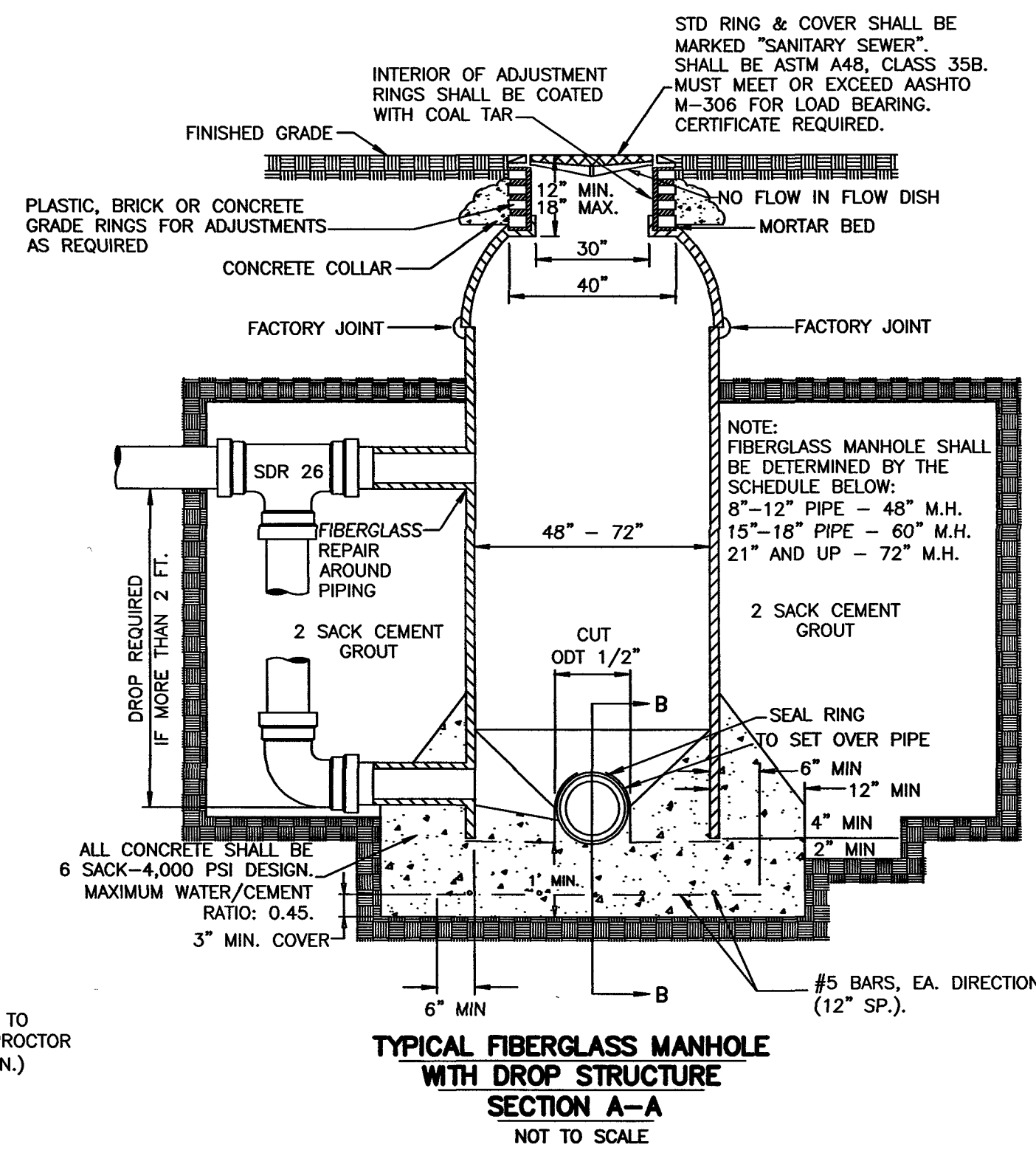
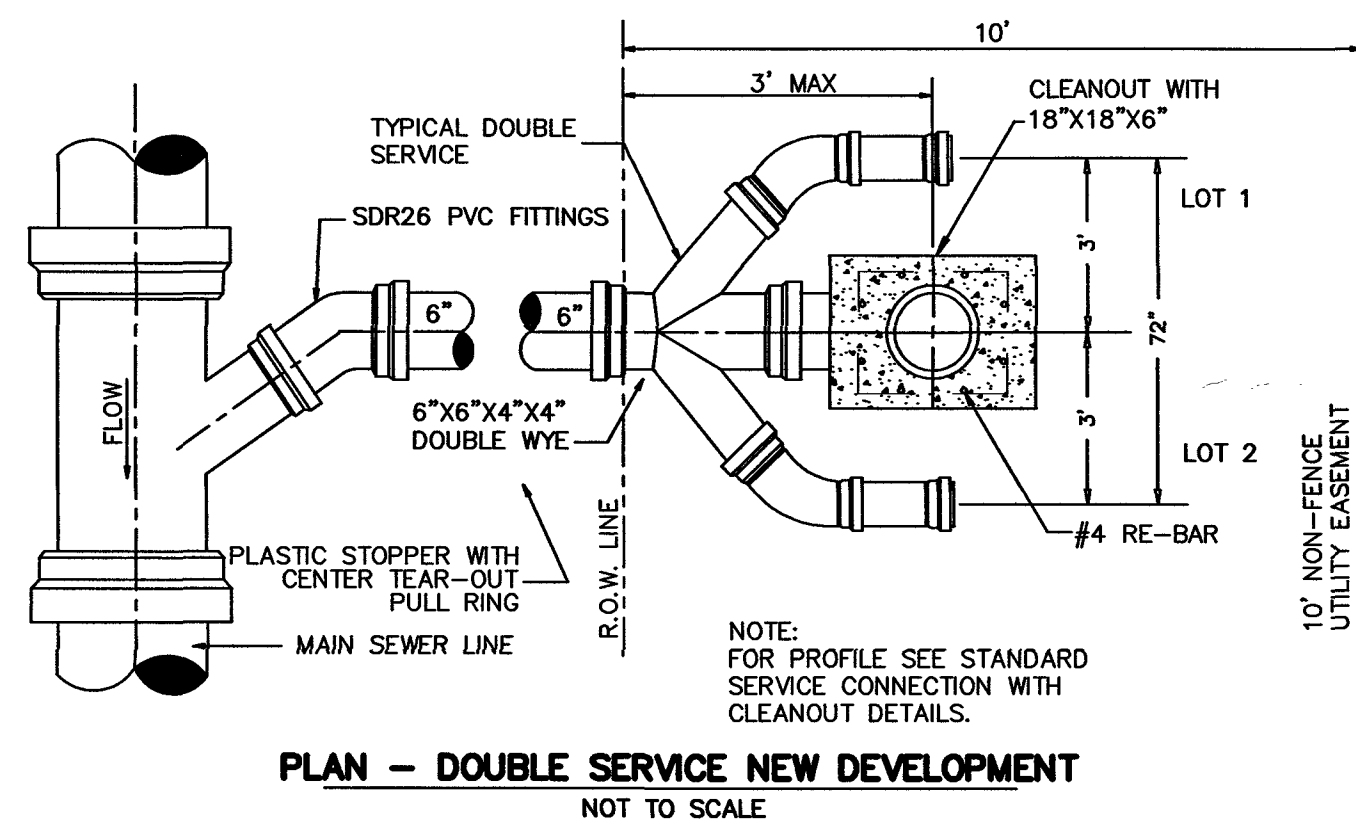
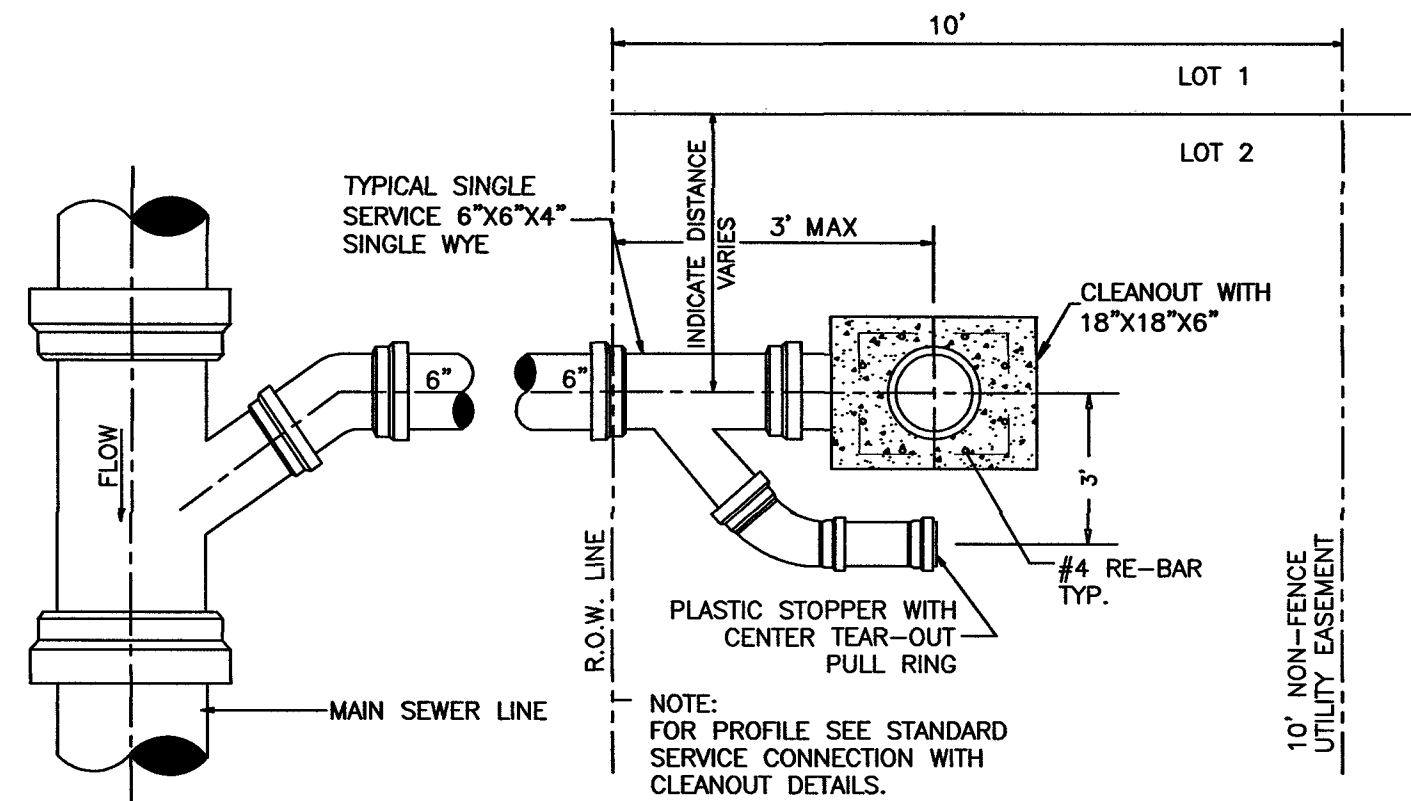
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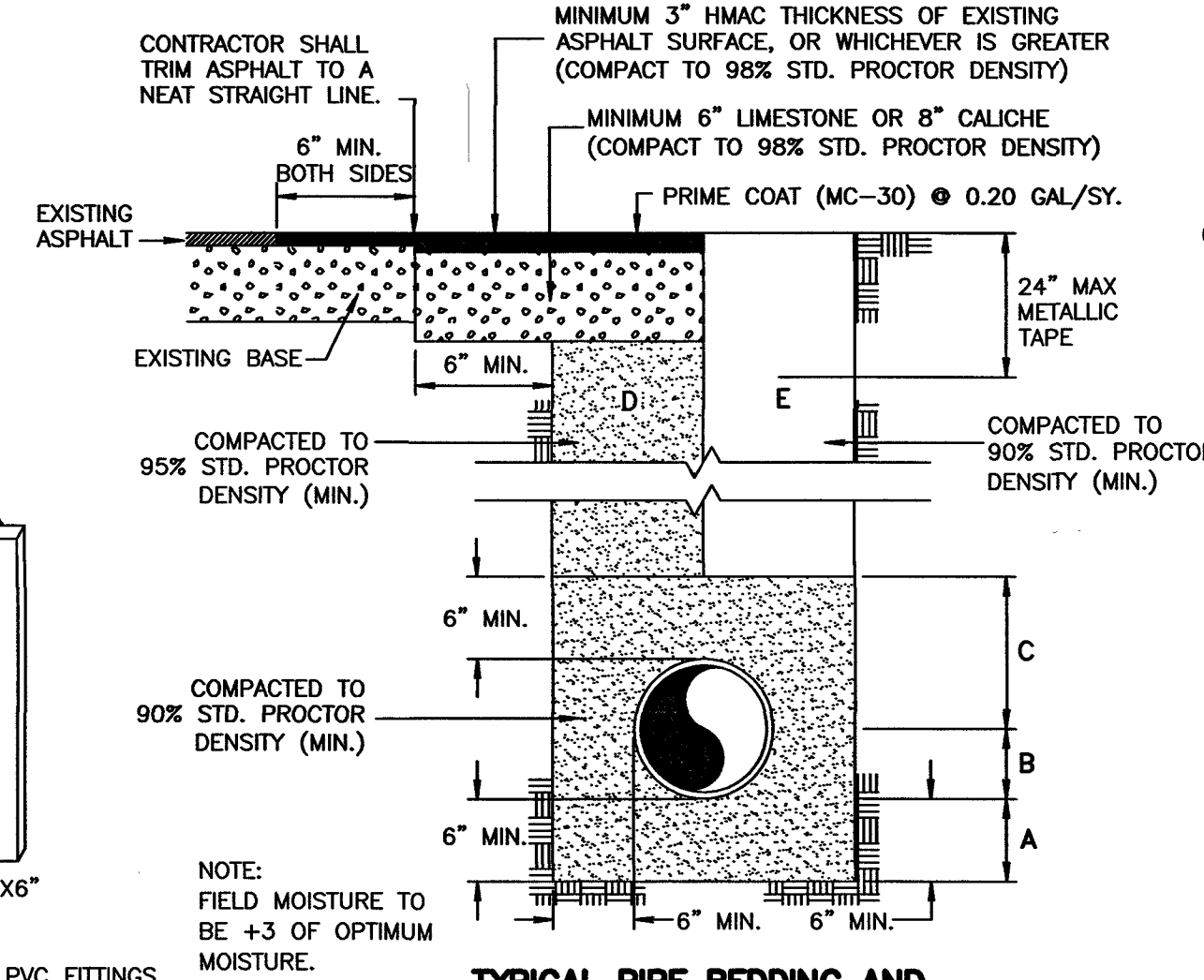
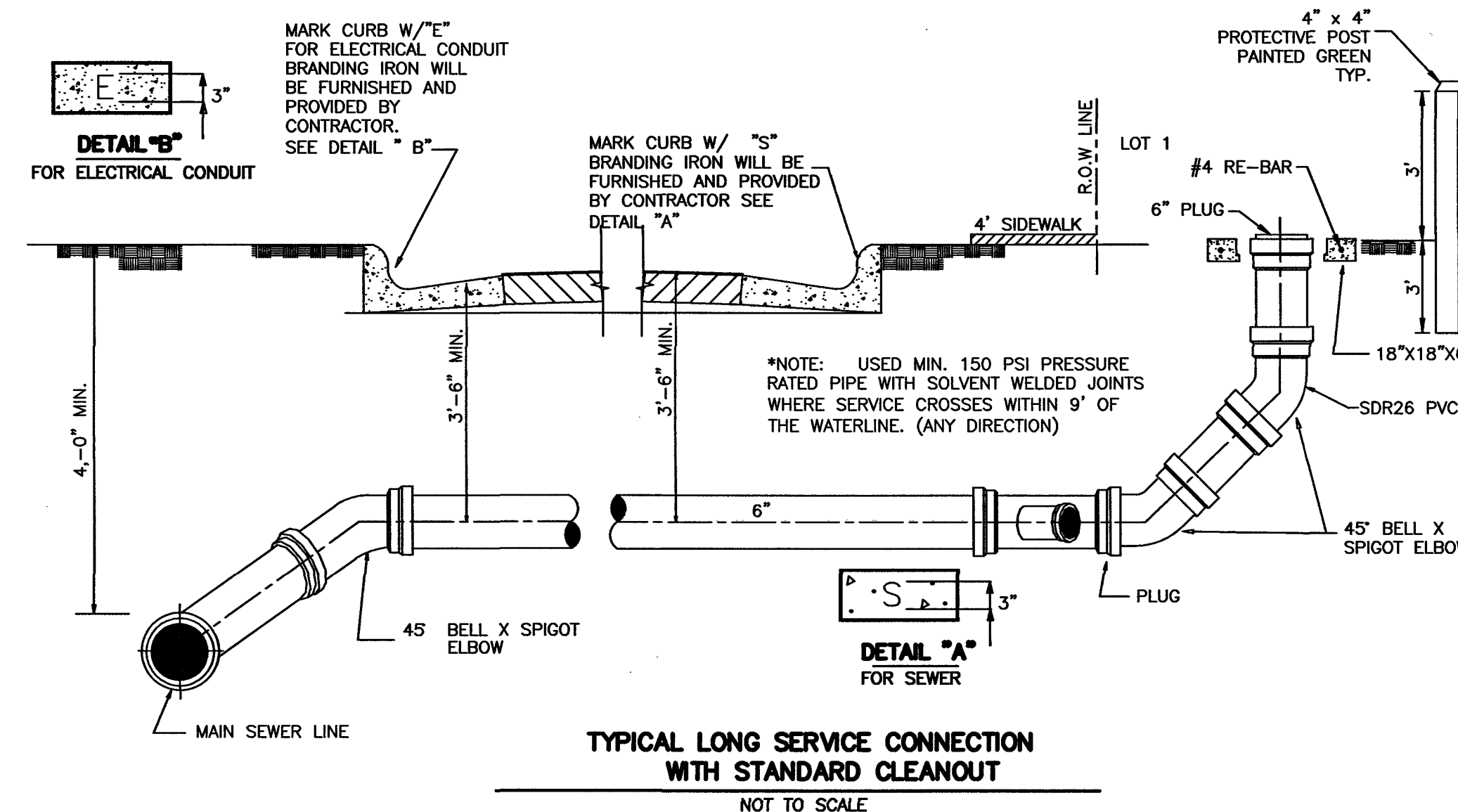
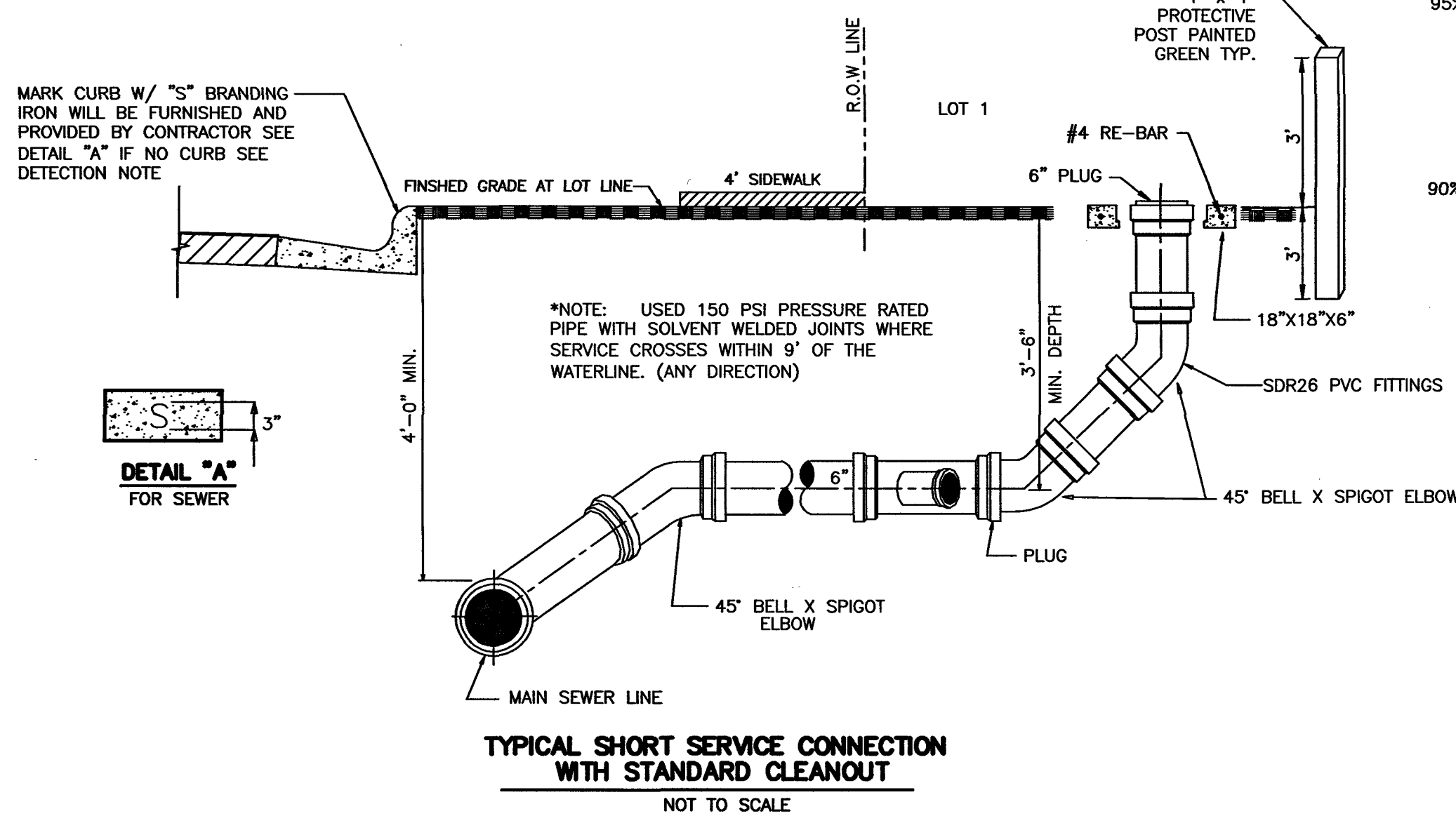
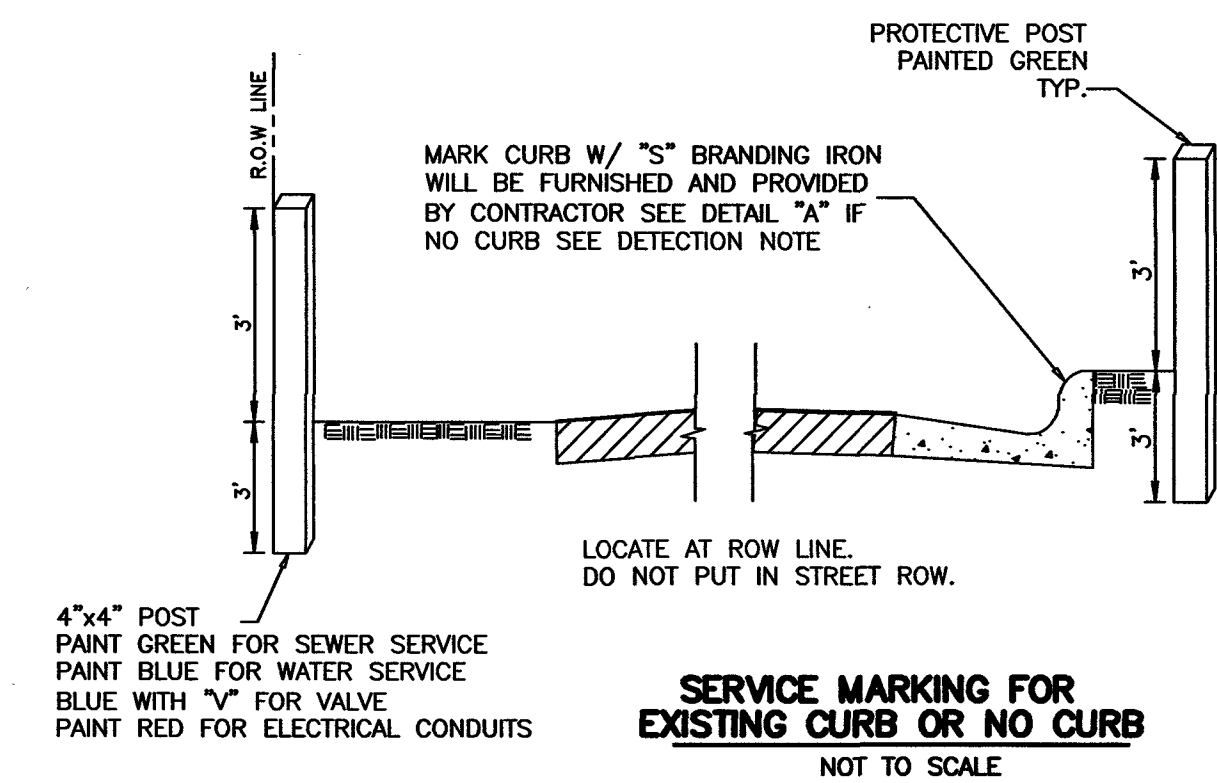
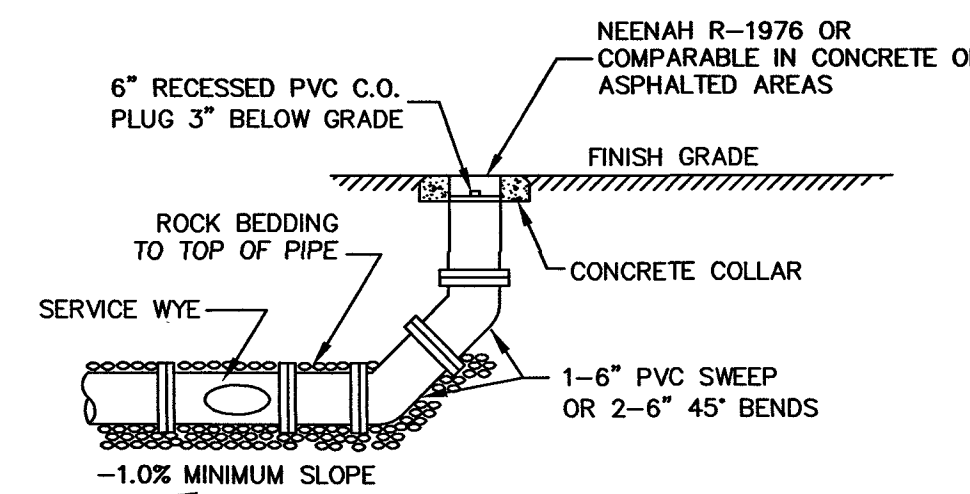
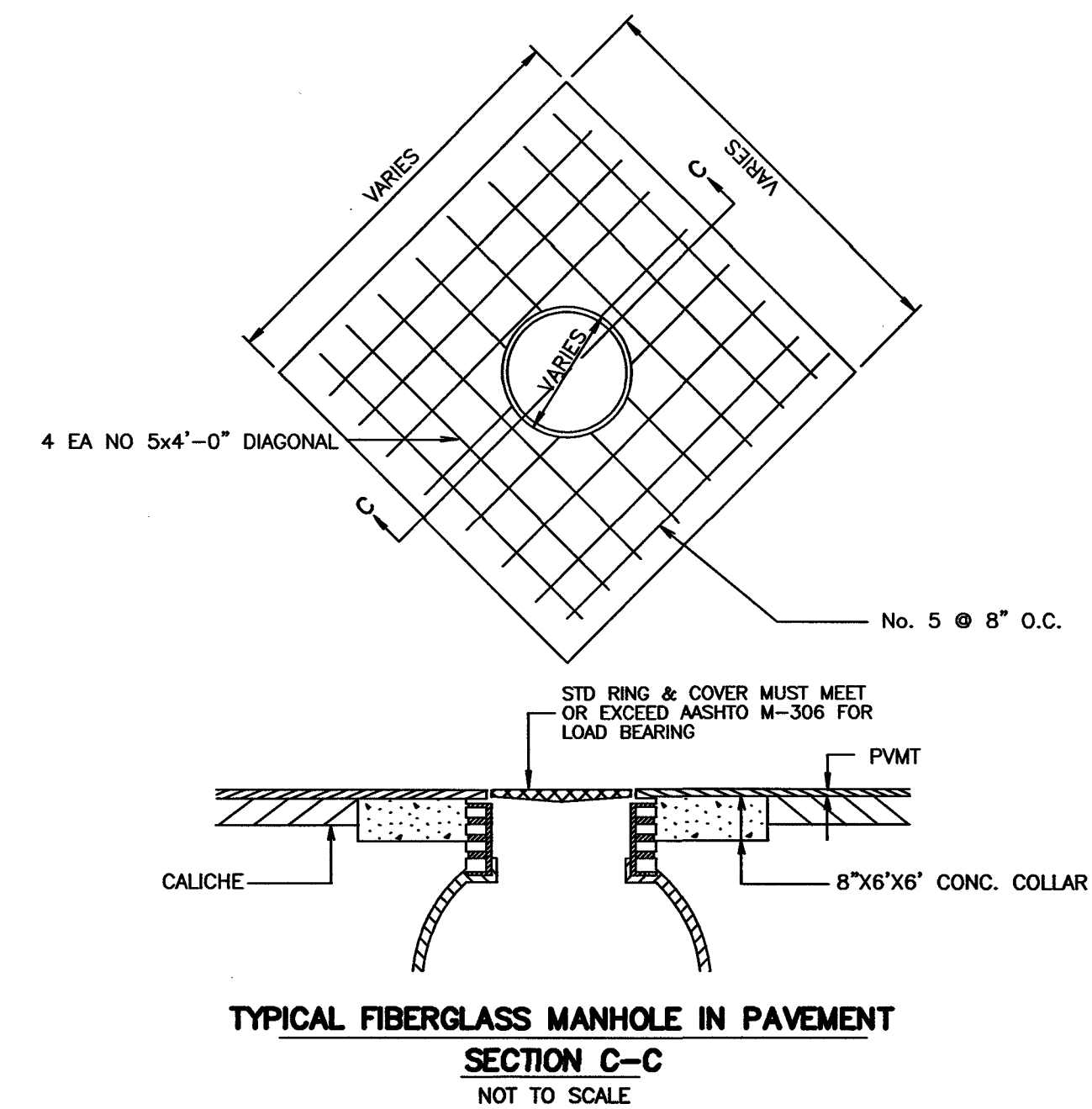
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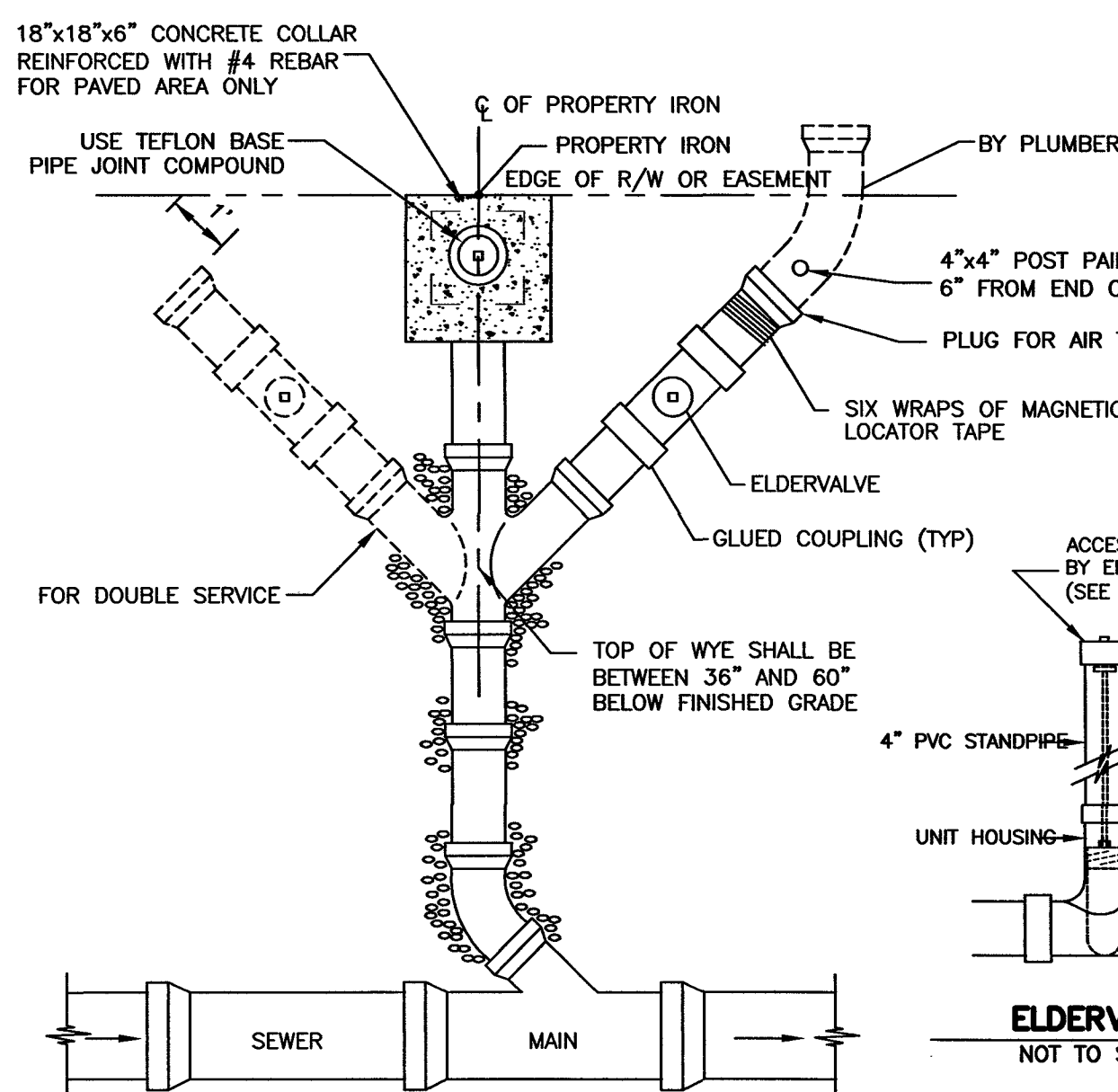




NOTES:  
6"x6" - 4" DIA. M.H.  
7"x7" - 5" DIA. M.H.  
8"x8" - 6" DIA. M.H.



A SAND BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE (MIN. THICKNESS = 6").  
B SAND BACKFILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE (4" LIFTS, HAND TAMPED).  
C SAND BACKFILL PLACED FROM SPRING LINE OF PIPE TO 6" ABOVE TOP OF PIPE (6" LIFTS, HAND TAMPED).  
D SAND BACKFILL, CLASS "A" (6" LIFTS, MECHANICAL COMPACTION).  
E EARTH BACKFILL, CLASS "B" (12" LIFTS, MECHANICAL COMPACTION).  
FOUNDATION PREPARATION (WELLPOINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS STABLE.  
BACKFILL AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO 95% STD. PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL NOT EXCEED 6". STRUCTURE BACKFILL MATERIAL SHALL BE SAND, APPROVED SITE SOIL, OR OTHER APPROVED.



Marie C. Leal P.E.  
8/29/2025

**16-INCH WATERLINE LOOP  
AT  
RUBEN M. TORRES BOULEVARD**

**WASTEWATER DETAILS**

STANDARD DETAILS REVISED: SEPTEMBER 1, 2021

Scale: Date: August 2025

Designed by: Brian Aranda

Drawn by: Brian Aranda / Luis Martinez

Approved by: Marie C. Leal, P.E.

Approved by: BPUB

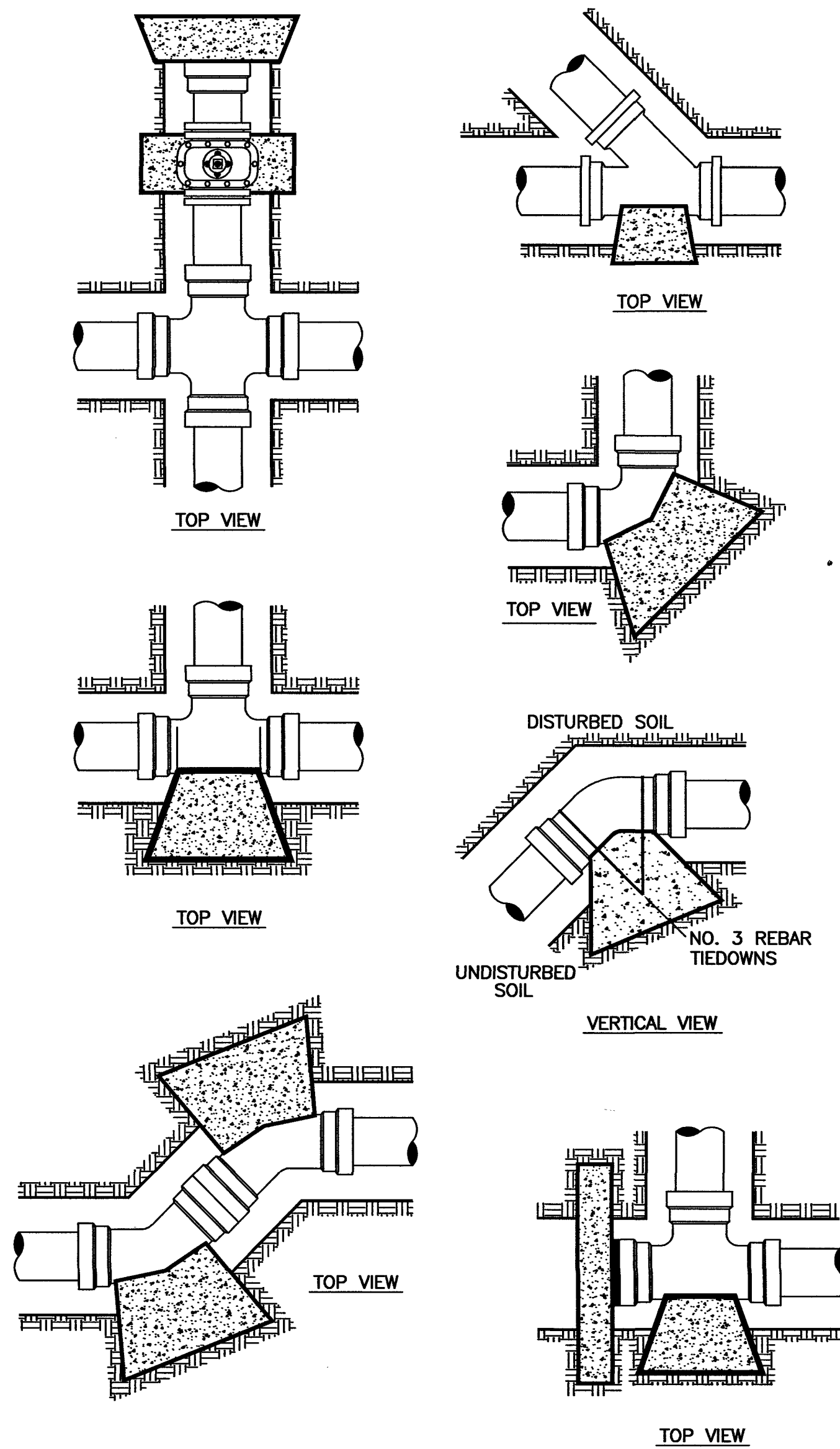
Project #

SHEET

**8**

OF 10

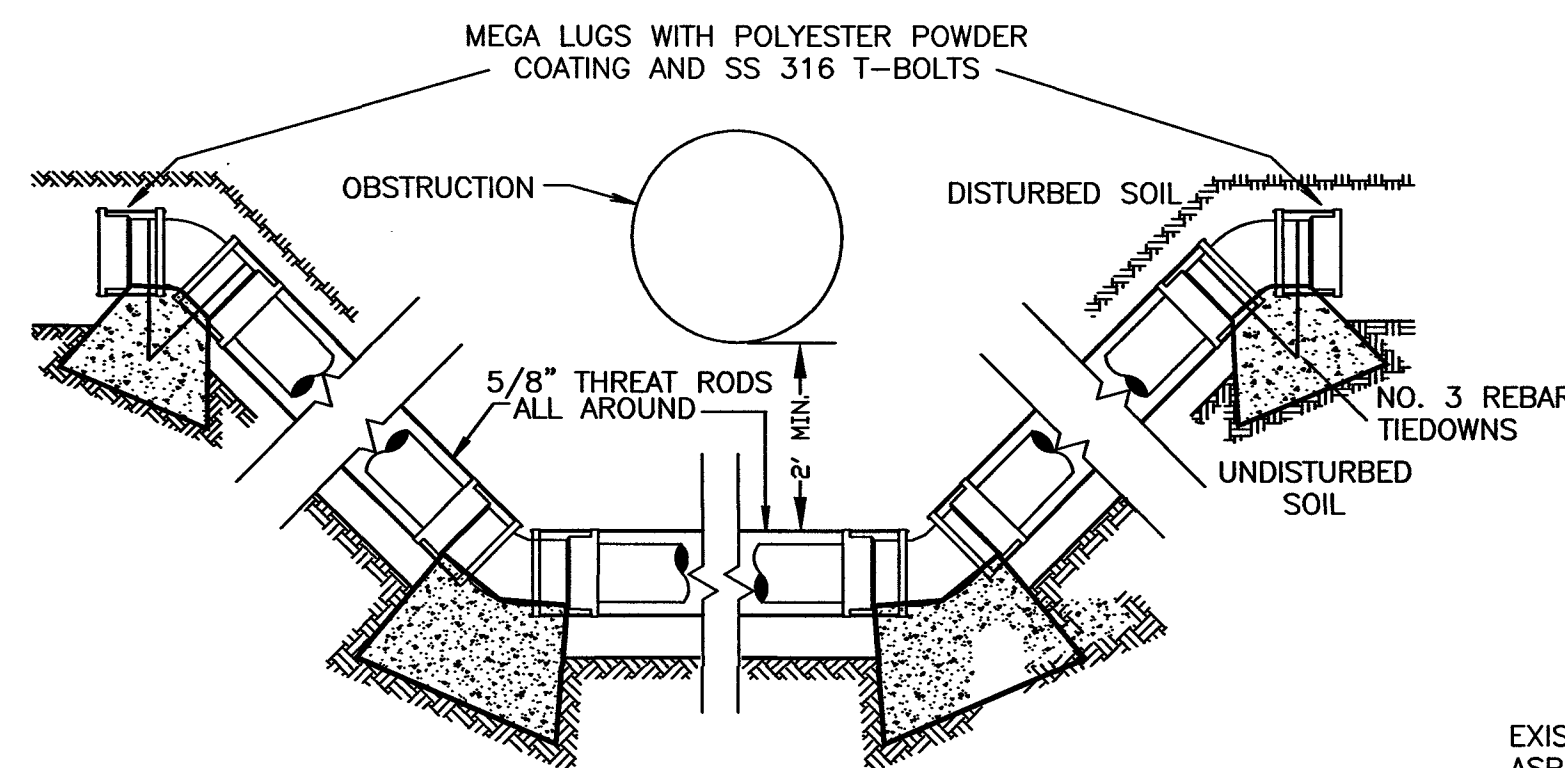




**THRUST BLOCK DETAILS**  
NOT TO SCALE

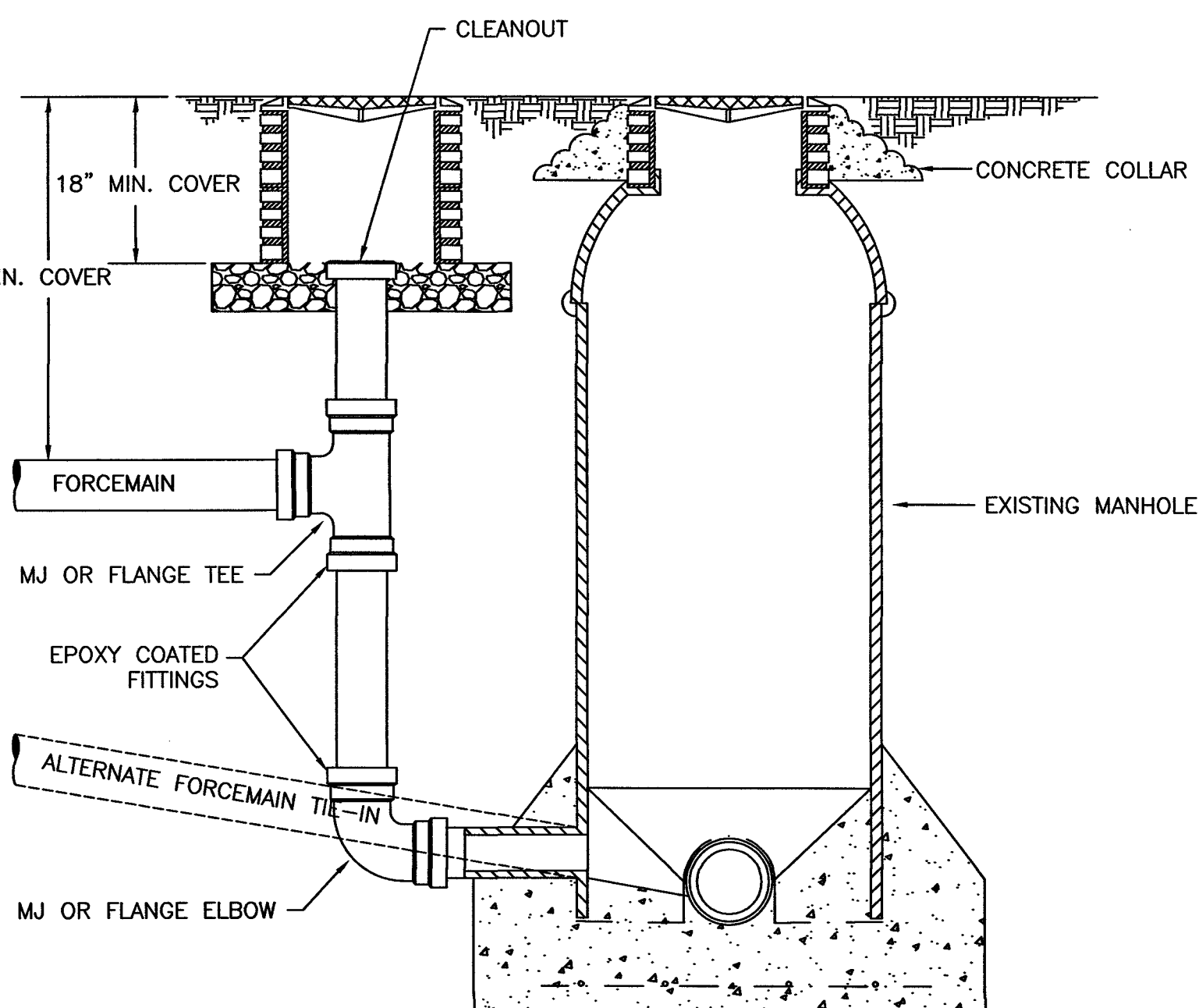
- ALL MJ FITTINGS WILL REQUIRE RESTRAINERS (MEGA LUGS) WITH THRUST BLOCKS
- NOTES ON THRUST BLOCKING:
- ALL BLOCKING SHALL BE AGAINST UNDISTURBED HAND DUG SOIL AND SHALL BE CONCRETE HAVING A MINIMUM 28 DAY STRENGTH OF 2000 LBS. PER SQUARE INCH.
  - THRUST CALCULATIONS TO BE BASED ON THRUST DUE TO WATER PRESSURE AT 100% OF TEST PRESSURE.  $THRUST = 2 AP \sin \frac{1}{2}\theta$  WHERE A = AREA OF PIPE, P = WATER PRESSURE,  $\theta$  = DEFLECTION ANGLE.
  - VERTICAL UPLIFT BLOCKS SHALL BE DESIGNED ON THE BASIS OF 150 LBS. PER CU. FT. FOR CONCRETE AND SOIL AT 120 LBS. PER FT. OVER THE AREA OF BLOCK.
  - VERTICAL DOWN THRUST BLOCKS SHALL BE DESIGNED ON THE BASIS OF 2000 LBS. PER SQ. FT. ALLOWABLE SOIL BEARING PRESSURE. DIMENSION MAY BE DECREASED WITH APPROVAL OF THE ENGINEER IF MEASURED SOIL CONDITIONS PERMIT. IN POOR SOIL CONDITIONS, BLOCK DIMENSIONS SHALL BE INCREASED IN PROPORTION TO ALLOWABLE BEARING VALUE.
  - THRUST BLOCKS ON HORIZONTAL BENDS, TEES, CROSSES, AND REDUCERS SHALL BE SIZED BASED ON 24000 LBS. PER SQ. FT. OF BLOCKING SURFACE AREA IN CONTACT WITH UNDISTURBED SOIL. BLOCK DIMENSIONS MAY BE DECREASED WITH APPROVAL OF THE ENGINEER IF MEASURED SOIL CONDITIONS PERMIT. IN POOR SOIL CONDITIONS, BLOCK DIMENSIONS SHALL BE INCREASED IN PROPORTION TO THE ALLOWABLE BEARING VALUE.
  - ALL BLOCKING SHALL HAVE A MINIMUM SOIL COVER OF 1 FT.
  - ADDITIONAL REINFORCING MAY BE REQUIRED FOR HORIZONTAL BLOCKING TO HANDLE UNUSUAL SHEAR LOADING CONDITIONS.

PIPE SIZE	GENERAL DATA FOR BLOCKING STANDARD FITTING					
	THRUST IN TONS EXERTED AT PLUGS, TEES AND BENDS FOR EACH 100 LBS. PER SQ. IN. OF TEST PRESSURE.					
	PLUG	TEE	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
4"	0.63	0.63	0.89	0.48	0.25	0.12
6"	1.40	1.40	2.00	1.08	0.55	0.28
8"	2.50	2.50	3.55	1.92	0.98	0.49
10"	3.93	3.93	5.55	3.00	1.53	0.77
12"	5.65	5.65	8.00	4.33	2.21	1.11
14"	7.70	7.70	10.88	5.89	3.00	1.51
16"	10.05	10.05	14.21	7.69	3.85	1.97
18"	12.70	12.70	17.99	9.74	4.96	2.49
20"	15.71	15.71	22.22	12.02	6.13	3.08
24"	22.67	22.67	32.00	17.31	8.83	4.43
27"	28.63	28.63	40.48	21.91	11.17	5.61
30"	35.35	35.35	50.00	27.08	13.79	6.93
36"	50.90	50.90	72.98	38.95	19.89	9.98
42"	69.27	69.27	97.97	53.02	27.03	13.58
48"	90.48	90.48	127.96	69.25	35.30	17.74
54"	114.51	114.51	161.94	87.64	44.68	22.45

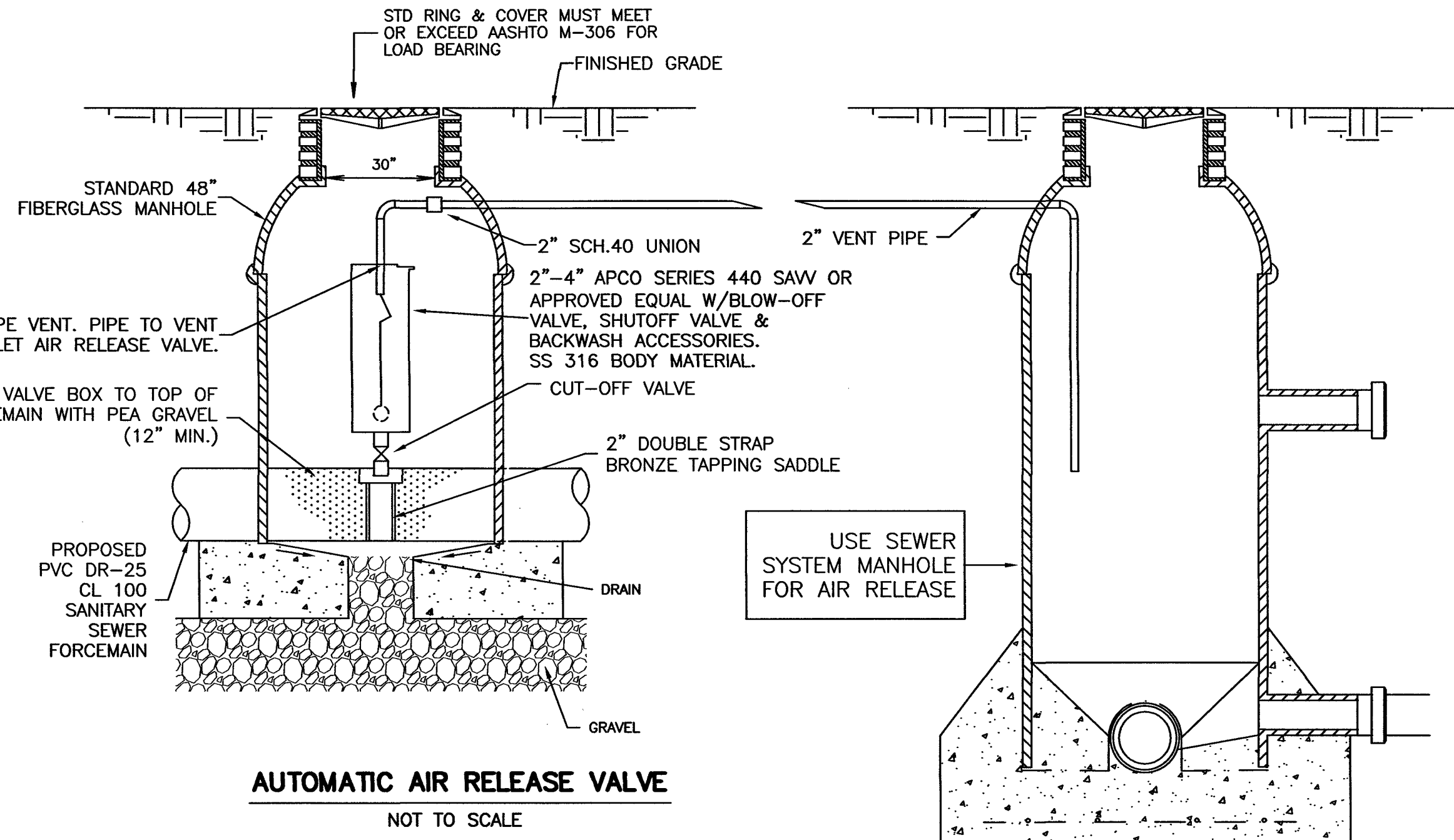


**ADJUSTMENTS**  
NOT TO SCALE

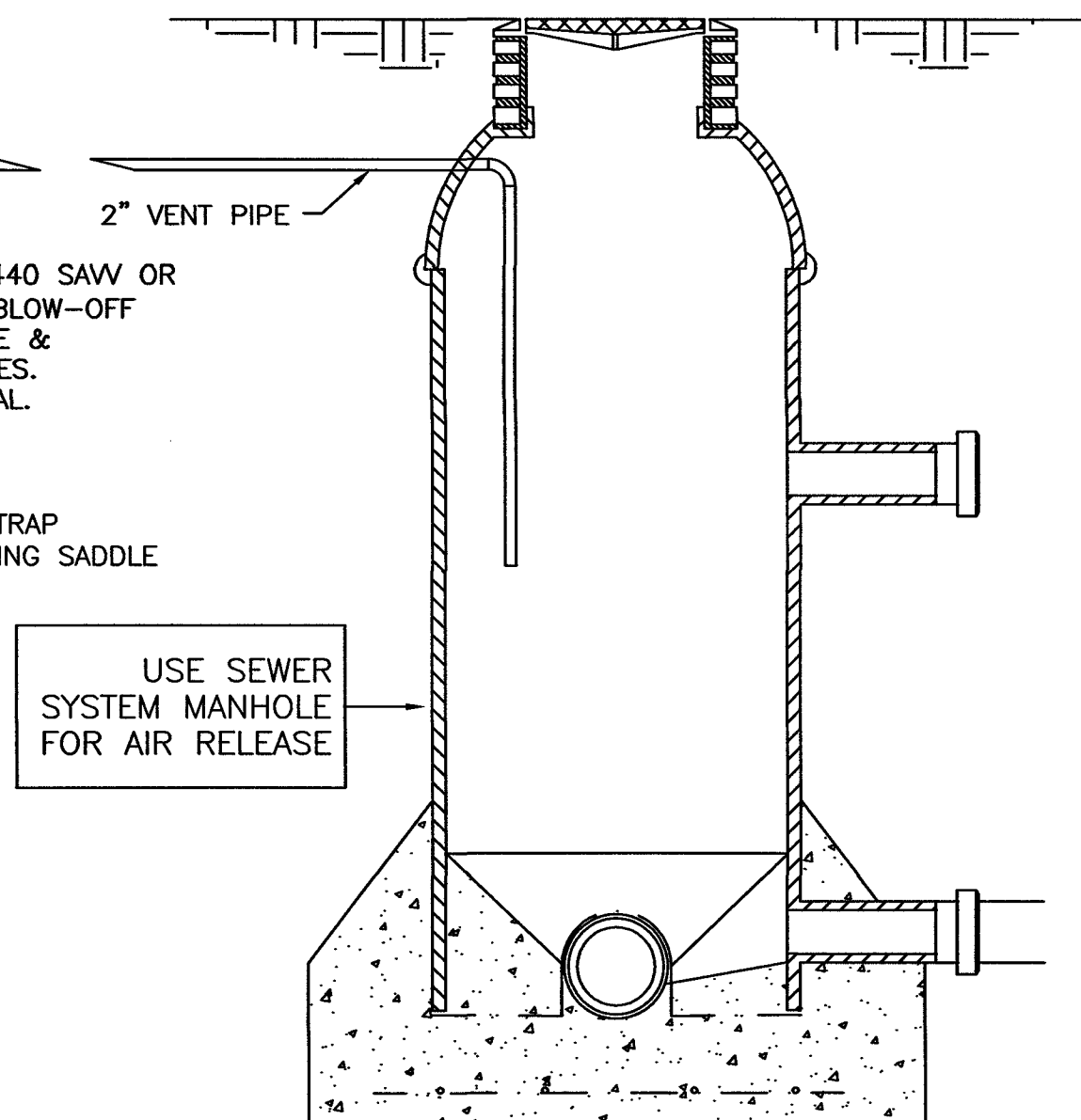
SPECIAL CONDITION LINE ADJUSTMENTS 5/8" SS 316 ALL THREAT RODS WITH EYELET BOLTS FOR ASSEMBLY WITH THRUST BLOCKS.



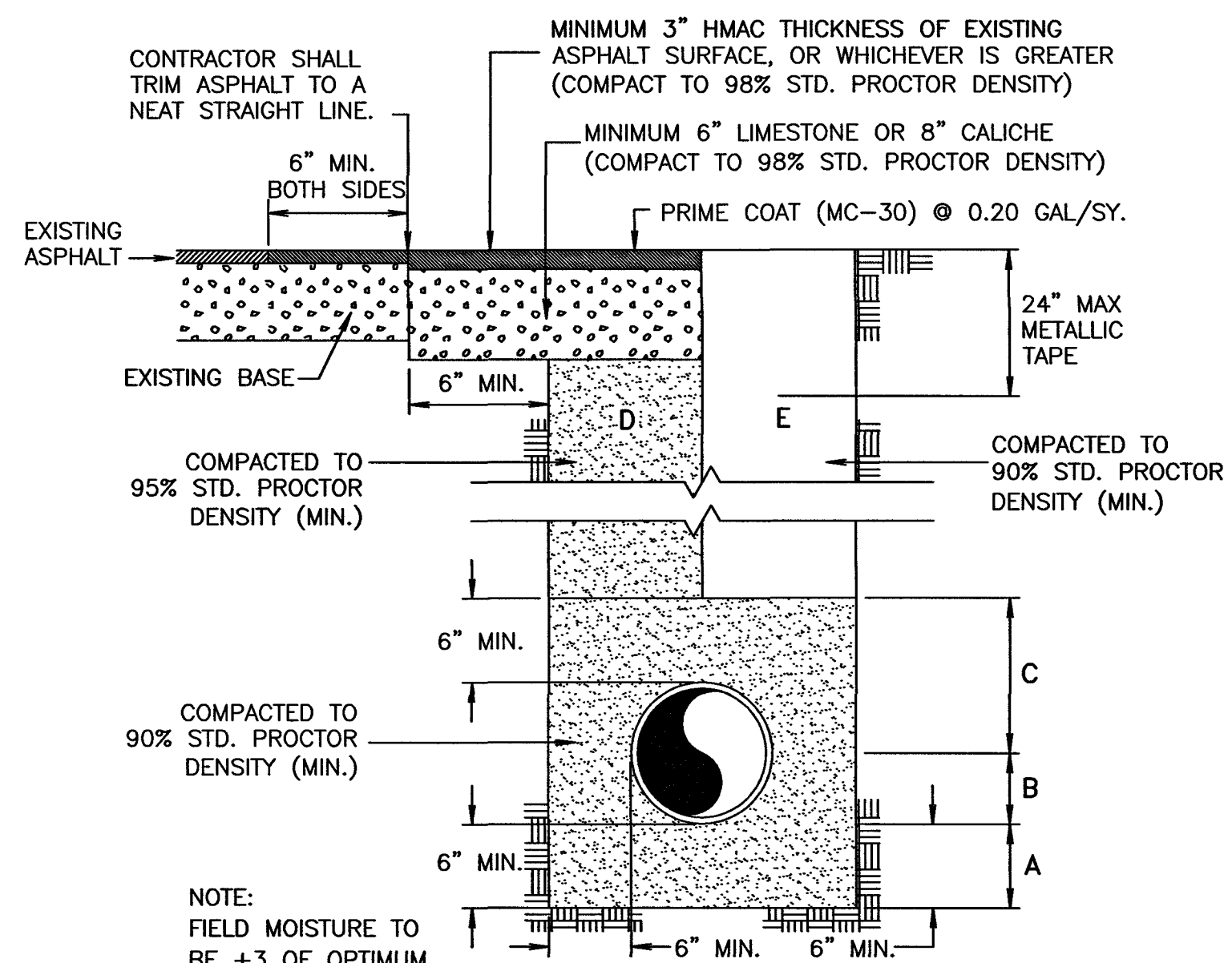
**FORCEMAIN TIE-IN TO EXISTING MANHOLE**  
NOT TO SCALE



**AUTOMATIC AIR RELEASE VALVE**  
NOT TO SCALE



**MANHOLE**  
NOT TO SCALE



**TYPICAL PIPE BEDDING AND TRENCH BACKFILL DETAIL**  
NOT TO SCALE

- SAND BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE (MIN. THICKNESS = 6").
- SAND BACKFILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE (4" LIFTS, HAND TAMPED).
- SAND BACKFILL PLACED FROM SPRING LINE OF PIPE TO 6" ABOVE TOP OF PIPE (6" LIFTS, HAND TAMPED).
- SAND BACKFILL, CLASS "A" (6" LIFTS, MECHANICAL COMPACTION).
- EARTH BACKFILL, CLASS "B" (12" LIFTS, MECHANICAL COMPACTION).

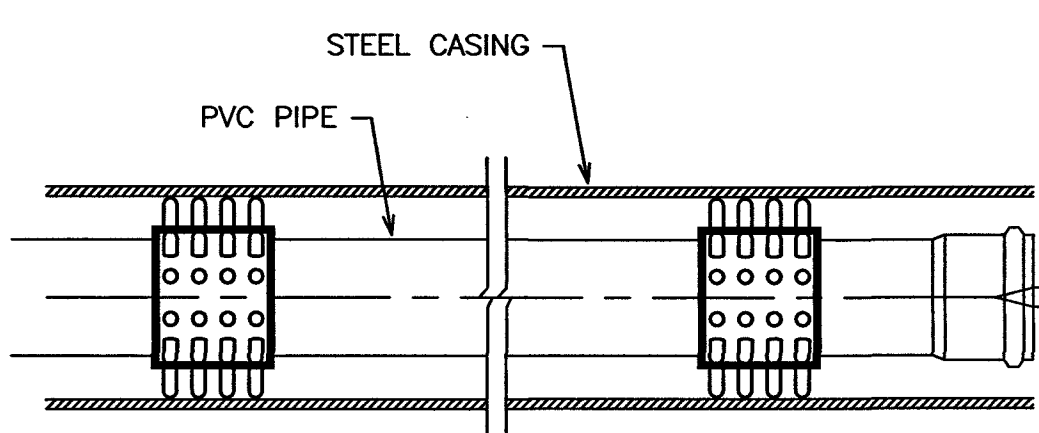
FOUNDATION PREPARATION (WELLPOINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS STABLE.

BACKFILL AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO 95% STD. PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL NOT EXCEED 6". STRUCTURE BACKFILL MATERIAL SHALL BE SAND, APPROVED SITE SOIL, OR OTHER APPROVED.

STEEL CASING WALL THICKNESS CHART	
MINIMUM THICKNESS	DIAMETER OF CASING PIPE
1/4"	12" OR LESS
5/16"	OVER 12"-18"
3/8"	OVER 18"-22"
7/16"	OVER 22"-28"
1/2"	OVER 28"-34"
9/16"	OVER 34"-42"
5/8"	OVER 42"-48"

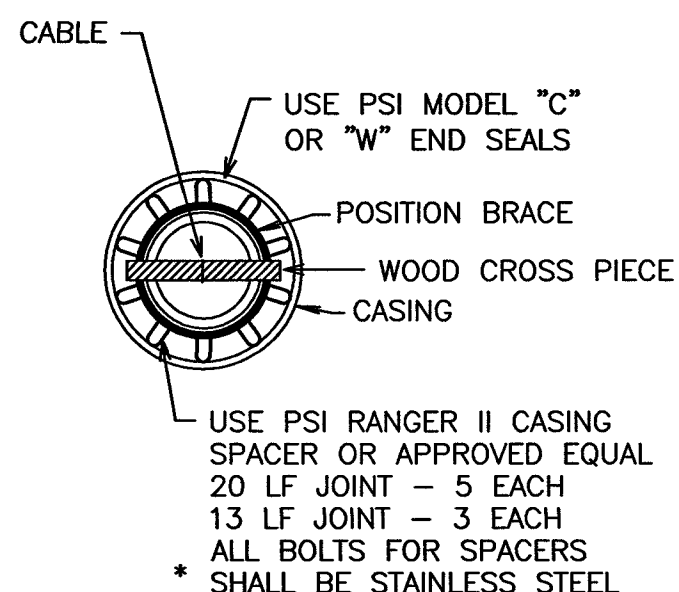
OVER 48" MUST BE APPROVED BY B.P.U.B.

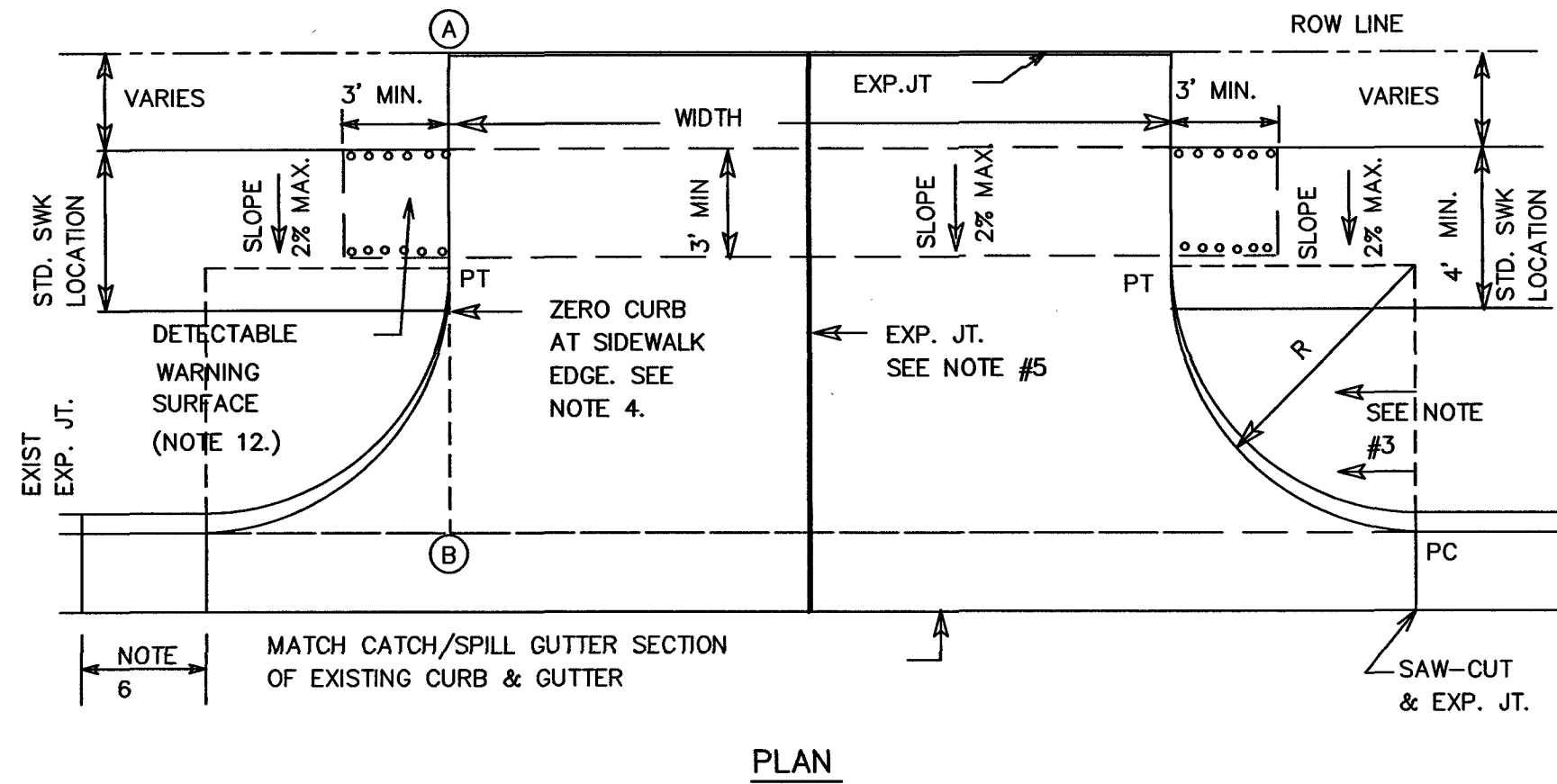
NOTE: THIS CHART IS ONLY FOR SMOOTH STEEL CASING PIPES WITH MINIMUM YIELD STRENGTH OF 35,000 PSI



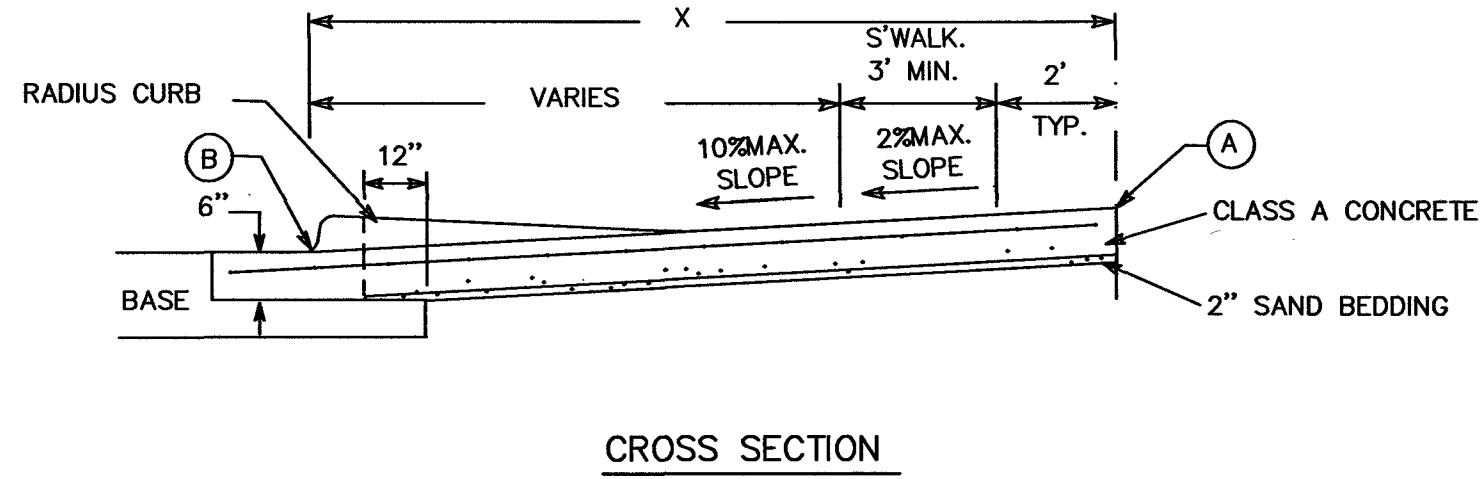
**PVC PIPE CASING & SKIDS**  
NOT TO SCALE

NOMINAL PIPE SIZE	CASING SIZE	NO. OF SKIDS
6"	12"	4
8"	16"	4
12"	20"	4
16"	24"	5





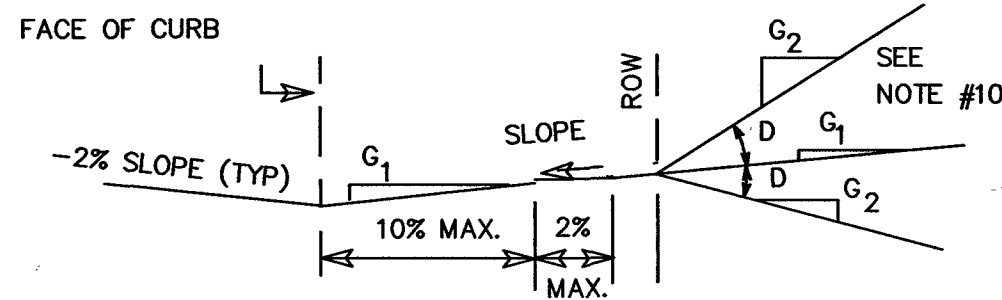
PLAN



GENERAL NOTES:

- ALL COMMERCIAL DRIVEWAYS SHALL HAVE RADIUS ENDS.
- DRIVEWAY WIDTHS AND RADIUS DIMENSIONS, ONE/TWO WAY TRAVEL REQUIREMENTS, AND GEOMETRIC LAY-OUT ARE HIGHLY VARIABLE, SUBJECT TO SITE SPECIFIC CONDITIONS AND REQUIREMENTS. INQUIRE AT ENGINEERING DEPARTMENT.
- THE DRIVEWAY EDGE SHALL BE SMOOTHLY TRANSITIONED INTO THE SIDEWALK BEGINNING AT THE RADIUS PC LINE.
- "ZERO" CURB AT PT OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST.
- PLACE AN EXPANSION JOINT DOWN THE CENTER OF DRIVEWAYS WIDER THAN 30 FEET.
- IF DIMENSION IS LESS THAN FIVE FEET, REMOVE CURB & GUTTER TO EXISTING EXPANSION JOINT AND POUR MONOLITHICALLY WITH DRIVEWAY.
- IF THE BASE IS OVER-EXCAVATED WHERE THE CURB & GUTTER WERE REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
- COMMERCIAL DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTERSECTING RIGHT OF WAY THAN 60 PERCENT OF PARCEL FRONTAGE OR 100 FEET; WHICHEVER IS LESS.
- DRIVEWAYS SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
- WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE FIRE DEPARTMENT SHOULD BE CONSULTED WHERE THE DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND "G2" IS GREATER THAN 15%.
- USE 1/2" ASPHALT BOARD OR OTHER APPROVED MATERIAL FOR CURB & GUTTER EXPANSION JOINTS, SIDEWALK, AT THE R.O.W. LINE, AND AT MIDWIDTH (NOTE 5).
- DETECTABLE WARNING SHALL CONSIST OF GROOVES SPACED AT 2.25 INCHES ON CENTER. (REF: ADA SECTION 4.29.2).
- INQUIRE AT ENGINEERING DEPARTMENT FOR OTHER DRIVEWAY REQUIREMENTS.

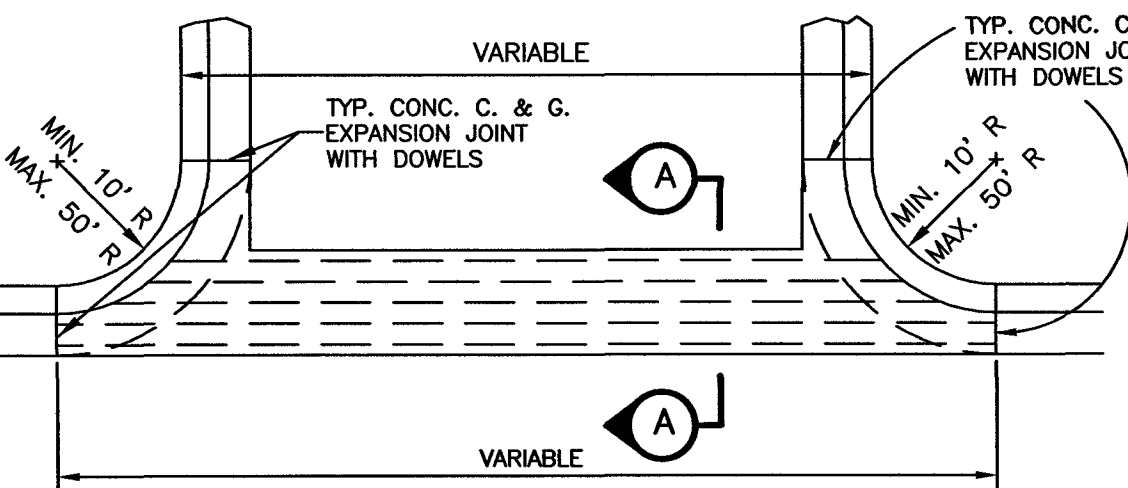
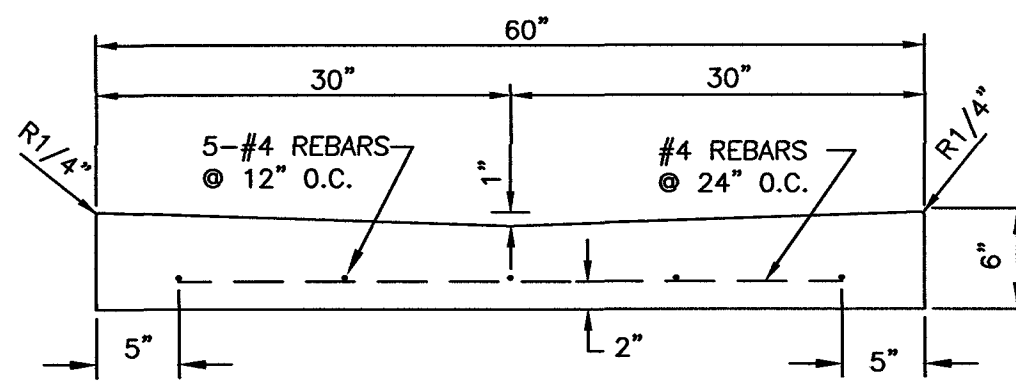
USE	THICKNESS	REINFORCEMENT
COMMERCIAL DRIVEWAYS FOR PASSENGER VEHICLE PARKING LOTS	6" MIN	#3 @ 18" OR 6 X 6 X W3.0 X W3.0, MINIMUM
ALL OTHERS	7" MIN	#3 @ 12" OR 6 X 6 X W5.0 X W5.0, MINIMUM



ALLOWABLE GRADES

DRIVEWAY VOLUME (ADT)	D=GRADE CHANGE	
	STD.	MAX.
> 1500	0 %	3 %
500-1500	3 %	6 %
< 500	6 %	15 %

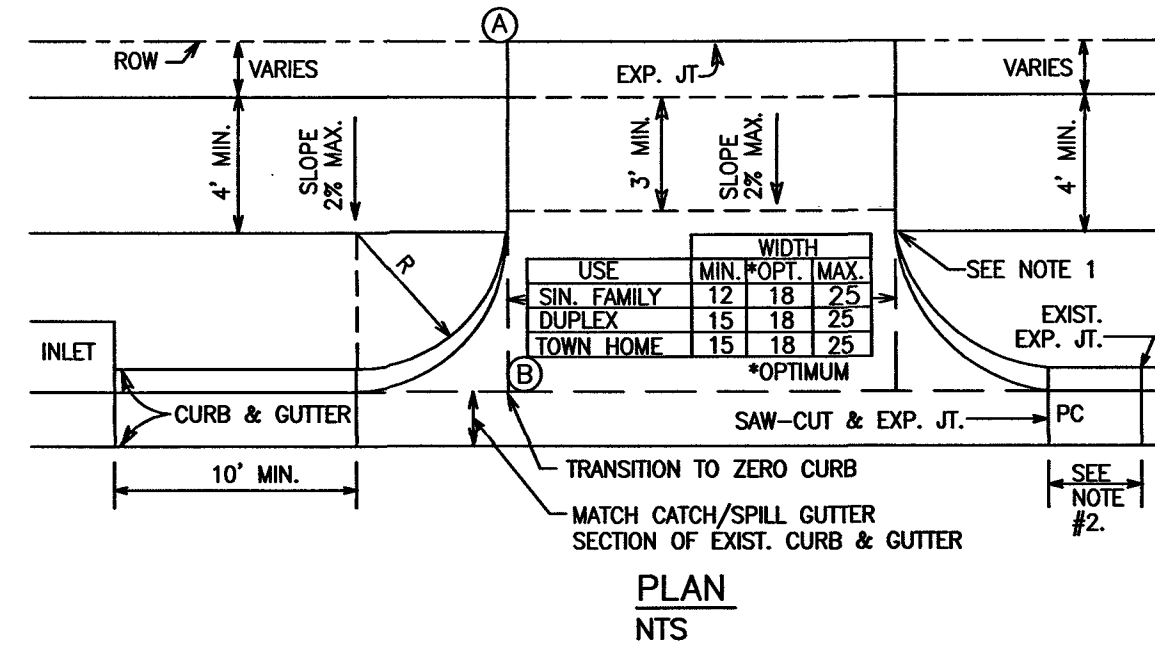
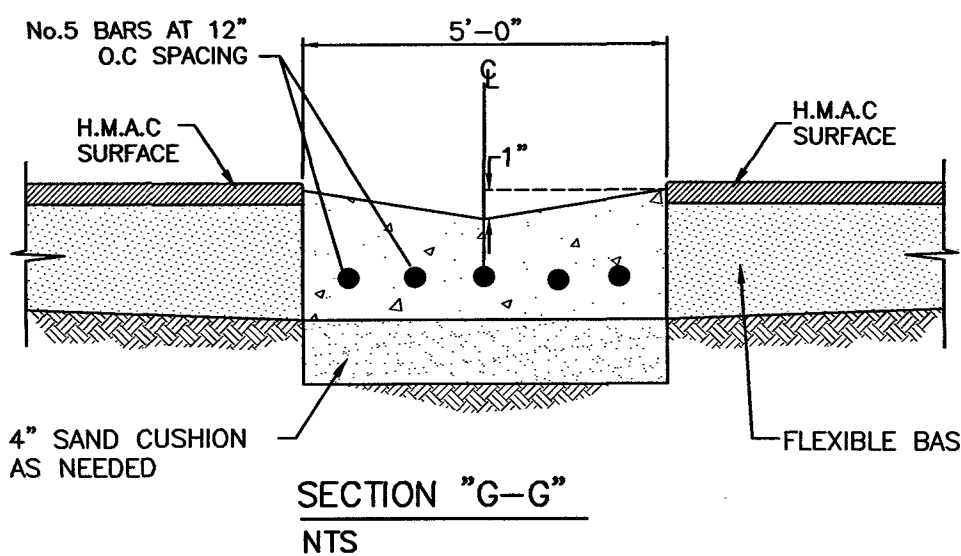
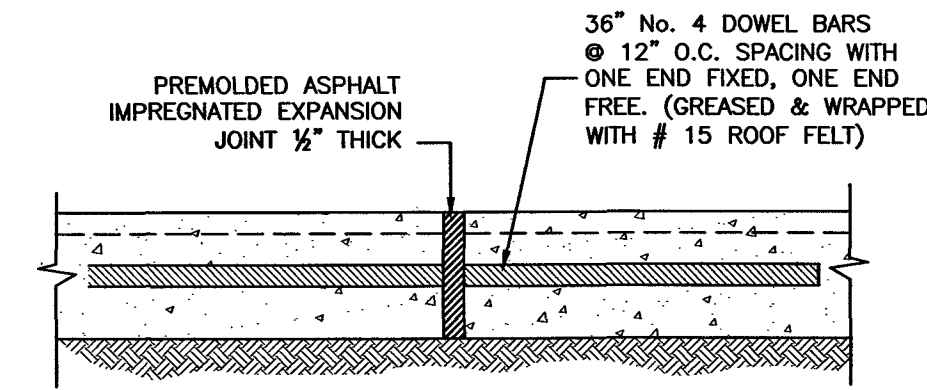
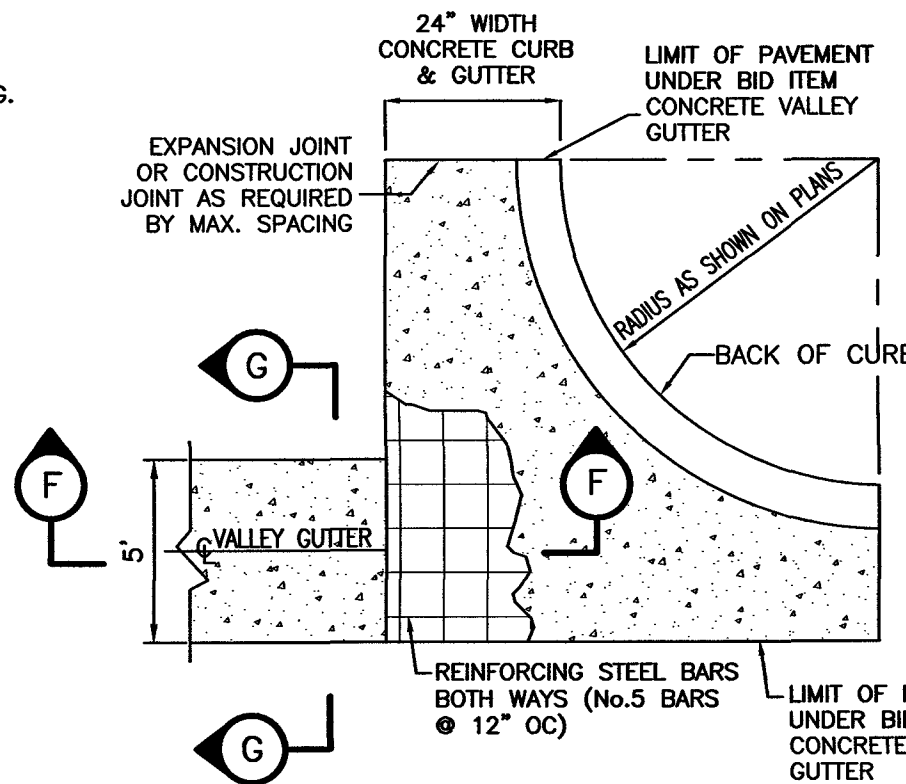
COMMERCIAL DRIVEWAY  
NTS



CONCRETE SHALL BE CLASS "A" WITH A 3,000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, WITH 1.5 LBS./C.Y. "FIBERMESH". 2" DEEP DUMMY JOINTS 10' O.C. MAX.

EXPANSION JOINTS WILL BE PLACED AT THE END OF EACH POUR WITH INTERVALS NOT TO EXCEED 40 L.F.; JOINTS WILL CONSIST OF 1/2" PRE-MOLDED BITUMINOUS EXPANSION JOINT MATERIAL WITH REINFORCING RODS SPACED AS SHOWN.

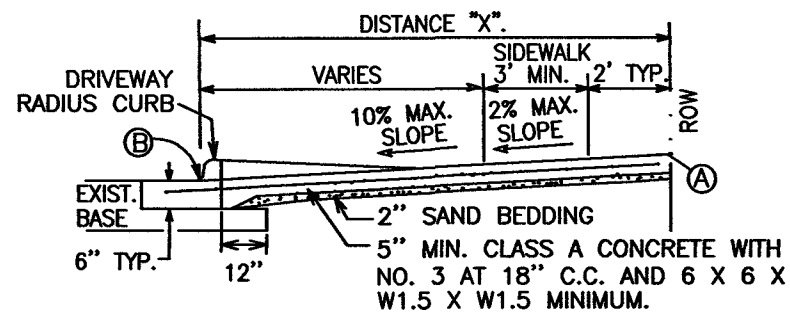
TYPICAL 5' WIDE CONCRETE VALLEY GUTTER  
NTS



USE	MIN.	OPT.	MAX.
SINGLE FAMILY	5	5	10
DUPLEX	5	8	10
TOWN HOME	5	8	10

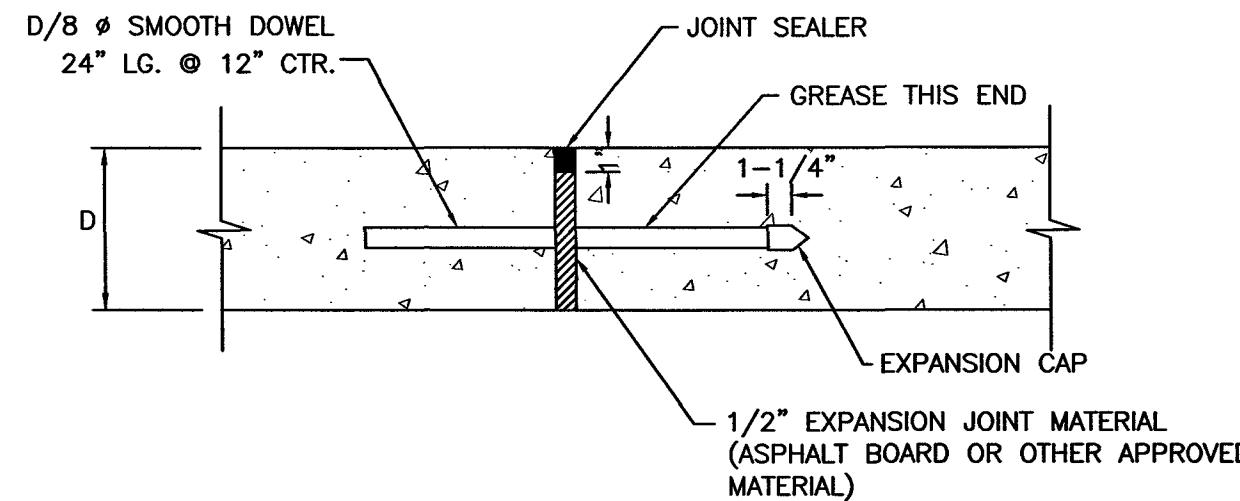
\*OPTIMUM

NOTE: ALL DRIVEWAYS SHALL BE SLOPED TOWARDS THE STREET FROM THE R.O.W. LINE. ELEVATION OF POINT A ABOVE POINT B IS, TYPICALLY, A MINIMUM OF 6" PLUS 1/4" RISE/FEET OVER A.

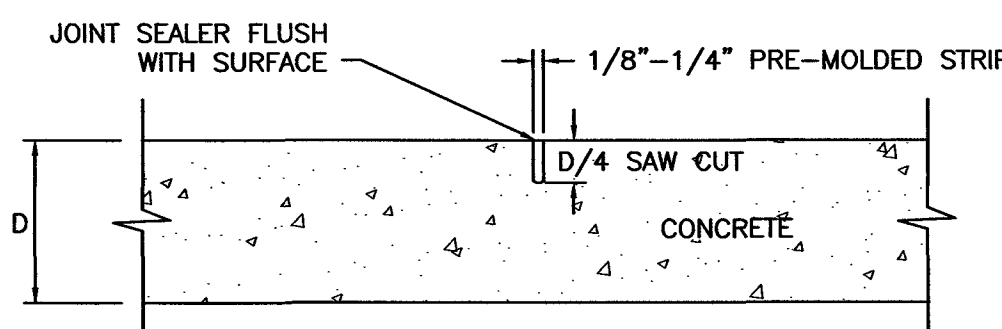


DRIVEWAY VOLUME (ADT)	D=GRADE CHANGE	
	STD.	MAX.
> 1500	0 %	3 %
500-1500	3 %	6 %
< 500	6 %	15 %

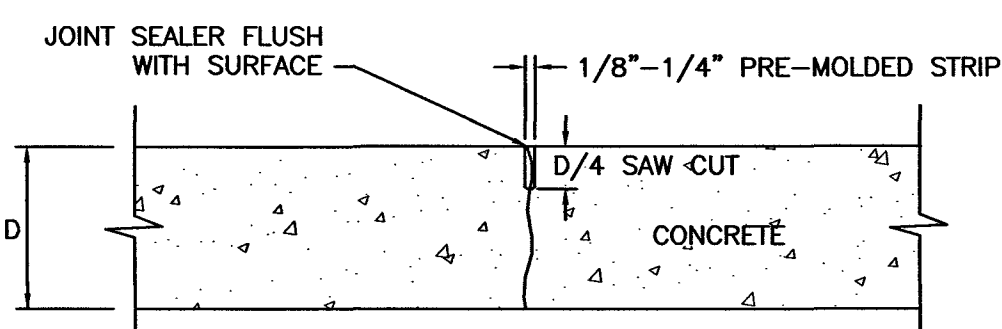
TYPICAL RESIDENTIAL DRIVEWAY  
NTS



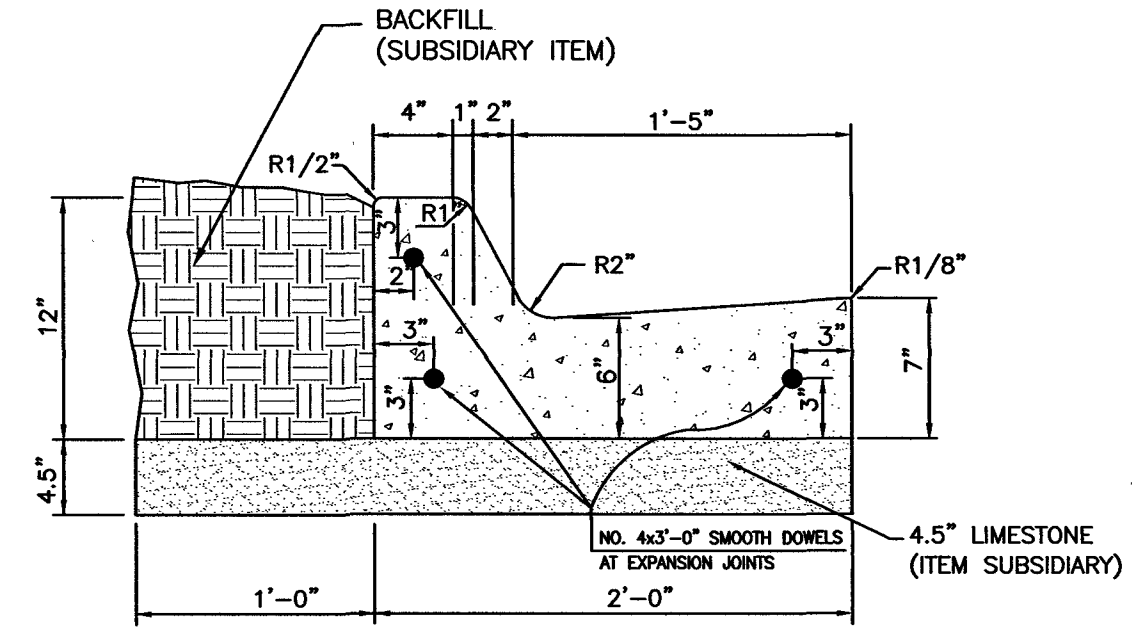
TYPE "A" EXPANSION JOINT  
NTS



SAWED DUMMY JOINT  
NTS



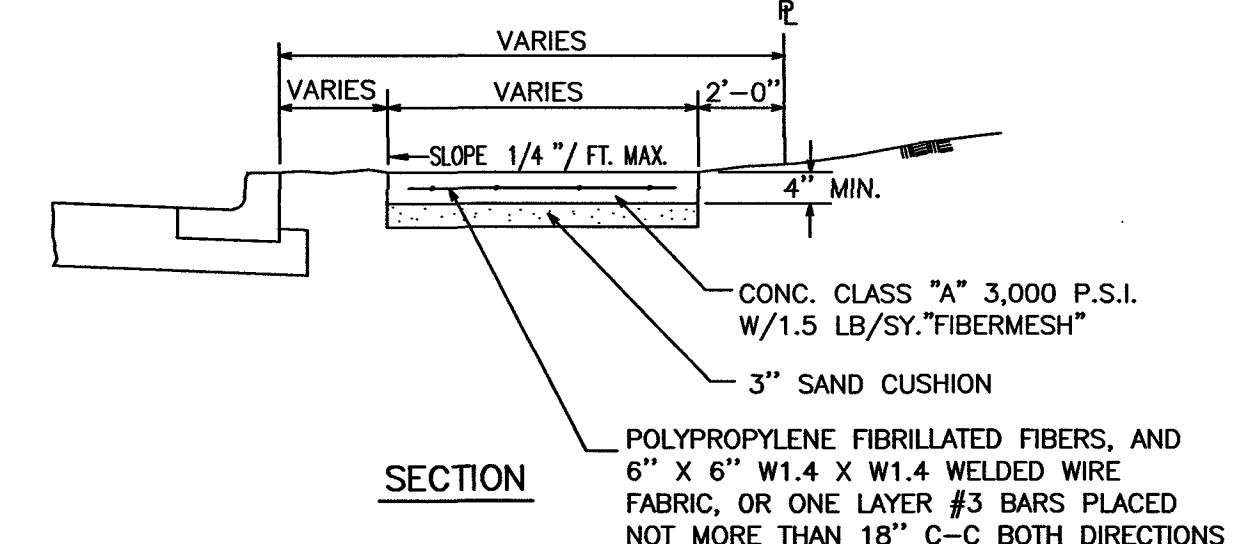
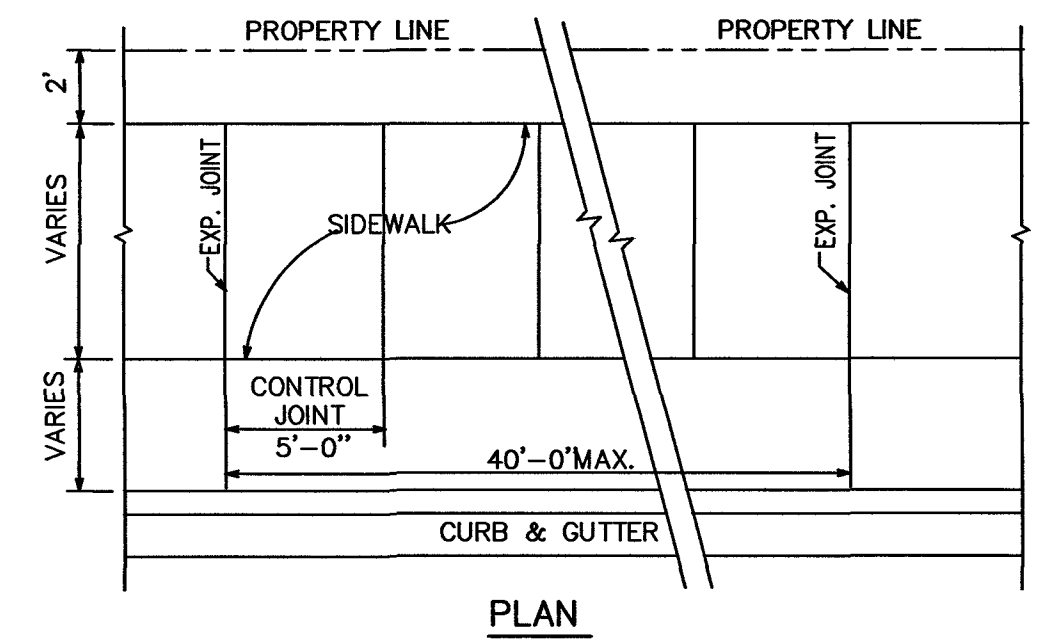
TYPE "D" CONSTRUCTION JOINT  
NTS



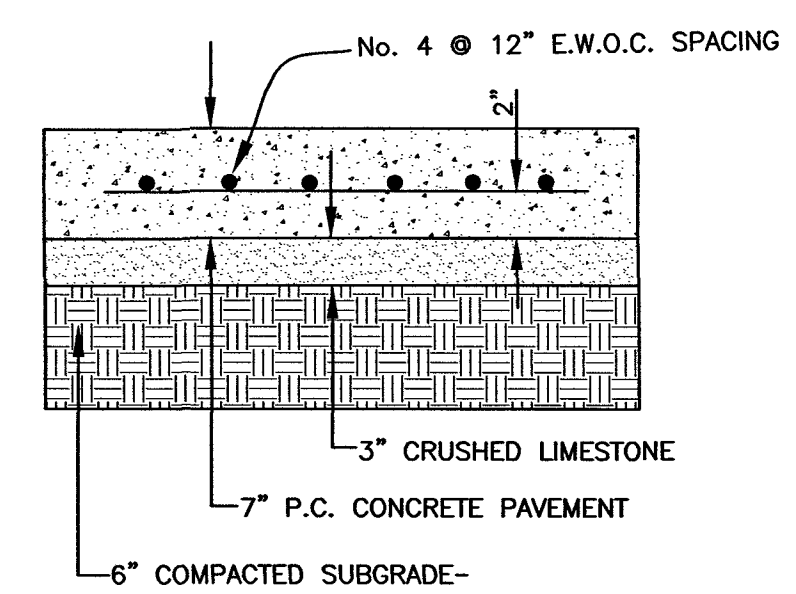
NOTES:

- CONCRETE SHALL BE CLASS "A" WITH A 4000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS W/1.5 LBS/CY "FIBERMESH".
- CURBS SHALL BE BACKFILLED IMMEDIATELY AFTER REMOVAL OF FORMS TO PREVENT TILTING.
- 2" DEEP DUMMY JOINTS 10' O.C. MAX.
- EXPANSION JOINTS WILL BE PLACED AT CURB RETURNS, INLETS AND END OF EACH POUR WITH INTERVALS NOT TO EXCEED 40 LF.
- JOINTS WILL CONSIST OF 1/2" PRE-MOLDED BITUMINOUS EXPANSION JOINT MATERIAL WITH 3-36" x 1/2" DOWELS, ONE END GREASED AND WRAPPED.
- CARE MUST BE TAKEN THAT THE DOWELS ARE STRAIGHT AND LAID PARALLEL WITH CURB AND NO CONCRETE "PLUGS" OR OTHER MATERIAL BE ALLOWED THROUGH THE DOWEL HOLES OR EXPANSION MATERIAL THAT WOULD PREVENT JOINT FROM OPERATING AS AN EXPANSION JOINT.

5 CURB & GUTTER DETAIL  
NTS



6 SIDEWALK  
NTS



\* INCLUDE EXPANSION JOINTS, DUMMY JOINTS.

CONCRETE SHALL BE CLASS "A" WITH A 4,000 P.S.I. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS WITH 1.5 LB. "FIBERMESH" PER CU. YD.

CONCRETE APRON DETAIL  
NTS