

STANDARD UTILITY AGREEMENT

U-Number: **U14908**

District: Houston

County: Galveston

Federal Project No.: n/a

Highway: IH 45

ROW CSJ: 0500-04-120

From: Harris County Line

Highway Project Letting Date: April 2017

To: 0.452 Miles South of FM 518

This Agreement by and between the State of Texas, acting by and through the Texas Transportation Commission, ("**State**"), and City of League City, ("**Utility**"), acting by and through its duly authorized representative, shall be effective on the date of approval and execution by and on behalf of the **State**.

WHEREAS, the **State** has deemed it necessary to make certain highway improvements as designated by the **State** and approved by the Federal Highway Administration within the limits of the highway as indicated above;

WHEREAS, the proposed highway improvements will necessitate the adjustment, removal, and/or relocation of certain facilities of **Utility** as indicated in the following statement of work: Installation of a 6" Water Line from Main Lane Sta. 922+13 to Sta. 929+39, an 8" Water Line and 2" Force Main from Sta. 950+43 to 953+08, a 12" Water Line from Sta. 934+28 to 944+23, and 945+51 to 946+55, a 12" Water Line along FM 518 from Sta. 14+28 to 27+21 (crossing IH-45 at ML Sta. 933+62), an 8" Water Line crossing IH-45 at ML Sta. 963+37, and the relocation of Wastewater Force Main Lift Station at Sta. 925+00 to avoid conflict with proposed highway and drainage construction ; and more specifically shown in **Utility's** plans, specifications and estimated costs, which are attached hereto as Attachment "A".

WHEREAS, the **State** will participate in the costs of the adjustment, removal, and/or relocation of certain facilities to the extent as may be eligible for State and/or Federal participation.

WHEREAS, the **State**, upon receipt of evidence it deems sufficient, acknowledges **Utility's** interest in certain lands and/or facilities that entitle it to reimbursement for the adjustment, removal, and relocation of certain of its facilities located upon the lands as indicated in the statement of work above.

NOW, THEREFORE, BE IT AGREED:

The **State** will pay to **Utility** the costs incurred in adjustment, removal, and/or relocation of **Utility's** facilities up to the amount said costs may be eligible for **State** participation.

All conduct under this agreement, including but not limited to the adjustment, removal and relocation of the facility, the development and reimbursement of costs, any environmental requirements, and retention of records will be in accordance with all applicable federal and state laws, rules and regulations, including, without limitation, the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, 42 U.S.C. §§ 4601, et seq., the National Environmental Policy Act, 42 U.S.C. §§ 4231, et seq., the Buy America provisions of 23 U.S.C. § 313 and 23 CFR 635.410, the Utility Relocations, Adjustments, and Reimbursements provisions of 23 CFR 645, Subpart A, and with the Utility Accommodation provisions of 23 CFR 645, Subpart B. **Utility** shall supply, upon request by the **State**, proof of compliance with the aforementioned laws, rules and regulations prior to the commencement of construction.

The **Utility** agrees to develop relocation or adjustment costs by accumulating actual direct and related indirect costs in accordance with a work order accounting procedure prescribed by **State**, or may, with the **State's** approval, accumulate actual direct and related indirect costs in accordance with an established accounting procedure developed by **Utility**. Bills for work hereunder will be submitted to **State** not later than 90 days after completion of the work.

Initial Date
TxDOT

Initial Date
Utility

When requested, the **State** will make intermediate payments at not less than monthly intervals to **Utility** when properly billed and such payments will not exceed 90 percent (90%) of the eligible cost as shown in each such billing. Intermediate payments shall not be construed as final payment for any items included in the intermediate payment.

Alternatively, **State** agrees to pay **Utility** an agreed lump sum of \$N/A as supported by the attached estimated costs. The **State** will, upon satisfactory completion of the adjustments, removals, and/or relocations and upon receipt of a final billing, make payment to **Utility** in the agreed amount.

Upon execution of this agreement by both parties hereto, the **State** will, by written notice, authorize the **Utility** to perform such work diligently, and to conclude said adjustment, removal, or relocation by the stated completion date. The completion date shall be extended for delays caused by events outside **Utility's** control, including an event of Force Majeure, which shall include a strike, war or act of war (whether an actual declaration of war is made or not), insurrection, riot, act of public enemy, accident, fire, flood or other act of God, sabotage, or other events, interference by the **State** or any other party with **Utility's** ability to proceed with the relocation, or any other event in which **Utility** has exercised all due care in the prevention thereof so that the causes or other events are beyond the control and without the fault or negligence of **Utility**.

The **State** will, upon satisfactory completion of the relocation or adjustment and upon receipt of final billing prepared in an approved form and manner, make payment in the amount of 90 percent (90%) of the eligible costs as shown in the final billing prior to audit and after such audit shall make an additional final payment totaling the reimbursement amount found eligible for **State** reimbursement.

This agreement in its entirety consists of the following elements:

1. Standard Utility Agreement;
2. Plans, Specifications, and Estimated Costs (Attachment "A");
3. Utility's Accounting Method (Attachment "B");
4. Utility's Schedule of Work and Estimated Date of Completion (Attachment "C");
5. Statement Covering Contract Work – ROW-U-48 (Attachment "D");
6. Eligibility Ratio (Attachment "F");
7. Betterment Calculation and Estimates (Attachment "G");
8. Proof of Property Interest – ROW-U-1A, ROW-U-1B, or ROW-U-1C (Attachment "H");
9. Inclusion in Highway Construction Contract (if applicable) (Attachment "I"); and
10. Utility Joint Use Acknowledgment - ROW-U-JUA and/or Utility Installation Request - Form 1082 (Attachment "E").

All attachments are included herein as if fully set forth. In the event it is determined that a substantial change from the statement of work contained in this agreement is required, reimbursement therefore shall be limited to costs covered by a modification or amendment of this agreement or a written change or extra work order approved by the **State and Utility**.

This agreement is subject to cancellation by the **State** at any time up to the date that work under this agreement has been authorized and that such cancellation will not create any liability on the part of the **State**. However, the **State** will review and reimburse the **Utility** for eligible costs incurred by the **Utility** in preparation of this Agreement.

The State Auditor may conduct an audit or investigation of any entity receiving funds from the **State** directly under this contract or indirectly through a subcontract under this contract. Acceptance of funds directly under this contract or indirectly through a subcontract under this contract acts as acceptance of the authority of the State Auditor, under the direction of the Legislative Audit Committee, to conduct an audit or investigation in connection with those funds. An entity that is the subject of an audit or investigation must provide the state auditor with access to any information the state auditor considers relevant to the investigation or audit.

The **Utility** by execution of this agreement does not waive any of the rights which **Utility** may have within the limits of the law.

Initial Date
TxDOT

Initial Date
Utility

It is expressly understood that the **Utility** conducts the adjustment, removal, or relocation at its own risk, and that TxDOT makes no warranties or representations regarding the existence or location of utilities currently within its right of way.

The signatories to this agreement warrant that each has the authority to enter into this agreement on behalf of the party represented.

UTILITY

Utility: City of League City
Name of Utility

By: _____
Authorized Signature

Print or Type Name

Title: _____

Date: _____

EXECUTION RECOMMENDED:

Director of TP&D (or designee), Houston District

THE STATE OF TEXAS

Executed and approved for the Texas Transportation Commission for the purpose and effect of activating and/or carrying out the orders, established policies or work programs heretofore approved and authorized by the Texas Transportation Commission.

By: _____
District Engineer (or designee)

Date: _____

Initial Date
TxDOT

Initial Date
Utility

Attachment "A"

Plans, Specifications, and Estimate

Please see attached Plan Sheets and Itemized Estimates

CSJ: 0500-04-117

RCSJ: 0500-04-120

U14908 –League City

Limits: IH-45 From Harris County Line to 0.452 Miles South of FM 518

Statement of Work:

This work includes the installation of several Water and Wastewater utility relocations and a Sanitary Sewer Lift Station, as listed by sheets below. The existing water and wastewater lines are in conflict with the I-45 and FM 518 project proposed drainage improvements and pavement widening. The existing lines in conflict will be purged, grout filled, cut & capped, and removed or abandoned as needed for the project application, and as specified in the TAC UAR 21.39(d). The associated valves, hydrants, meters, manholes, and tie-ins will be replaced as specified in the plans sheets.

Water and Wastewater Utility Relocation Design Plans:

- **Sheets 4-5 of 32:** 737 LF of 6" Water Line along the SBFR from Main Lane Sta. 922+13 to Sta. 929+39
- **Sheets 6-7:** 1043 LF of 12" Water Line from Sta. 934+28 to 944+23 with 211 LF of 18" steel casing.
- **Sheet 8:** 104 LF of 10" Water Line from Sta. 945+51 to Sta 945+54
- **Sheets 9-10:** 276 LF of 8" Water Line with 85 LF of 16" steel casing and 232 LF of 2" Force Main with 67 LF of 8" steel casing from ML Sta. 950+43 to 953+08
- **Sheet 11 of 32:** 332 LF of 8" Water Line with 292 LF of 16" steel casing crossing IH-45 at ML Sta. 963+37
- **Sheet 12 of 32** 103 LF 2" Water Line along FM 518 Sta 14+48 to Sta. 15+40
- **Sheets 13-15:** 1307 LF 12" Water Line along FM 518 Sta 14+28 to Sta. 27+21 (crossing IH-45 at ML Sta. 933+62)

- **Sheet 16:** 156 LF of 10" Water Line with 145 LF of 18" steel casing crossing FM 518 at Sta. 23+33
- **Sheet 17:** 203 LF of 8" Sanitary Sewer along FM 518 from Sta. 24+27 to Sta. 26+29

Sanitary Sewer Lift Station Design Plans:

- **Sheet 4 of 20:** Site Plan of Proposed Lift Station at Main Lane Sta. 925+00. The proposed lift station will replace the existing lift station in conflict with highway pavement widening, proposed sidewalk and drainage installations, and ROW land purchase.
- **Sheet 5-20:** Details of Lift Station Installations

Specifications:

The utility lines will be placed in accordance with the TxDOT Houston District 2014 Specifications and as referenced in the design details. The applicable specifications are Special Specification: 7049- Water Mains, Special Specification: 7017-Sanitary Sewers, and the League City Sanitary Sewer Lift Station Project Manual Specifications.

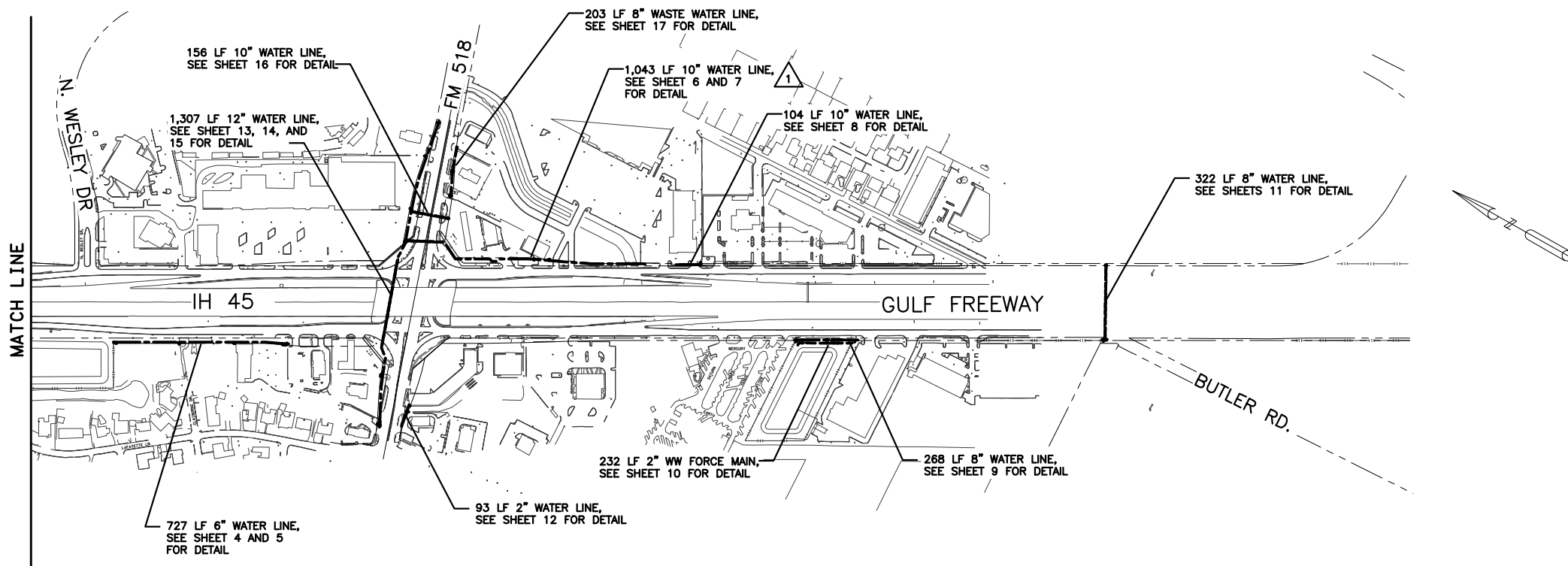
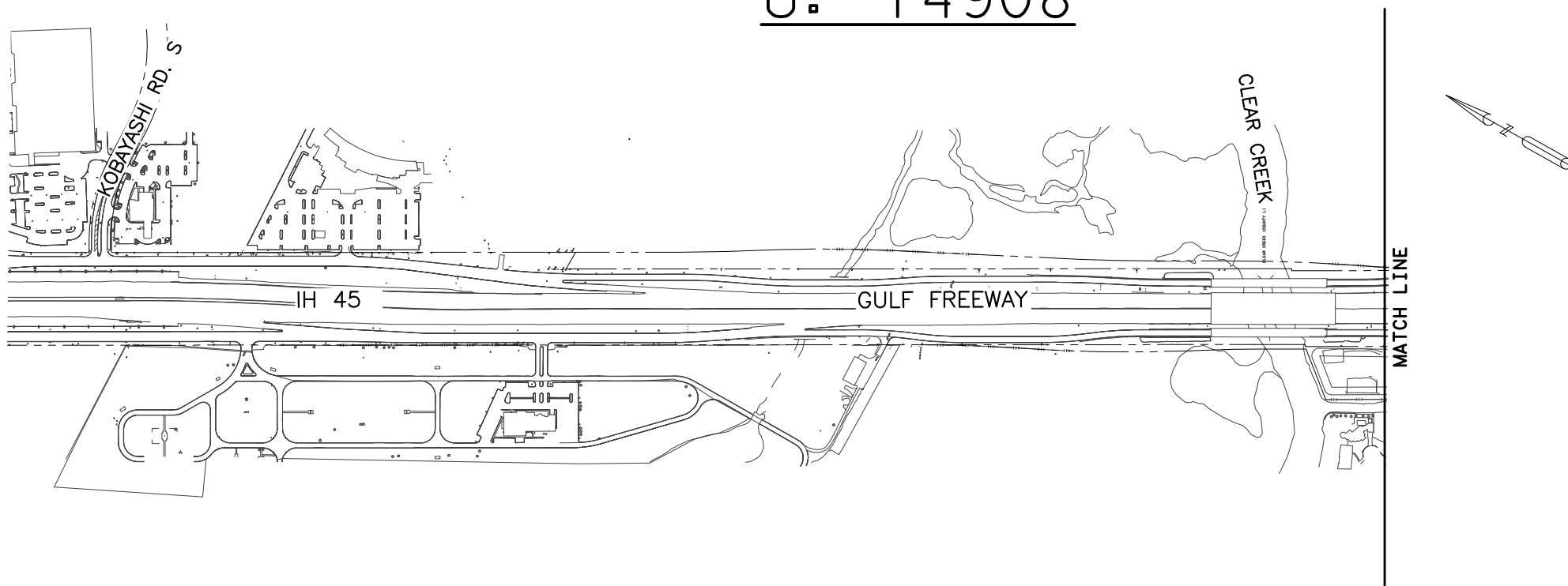
LEAGUE CITY, TEXAS

CSJ: 0500-04-117

RCSJ: 0500-04-120

LIMITS: HARRIS COUNTY LINE TO 0.452 MI. S OF FM 518

U: 14908



1 REVISED



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Registration No. F-754



LEAGUE CITY
TEXAS

IH 45
UTILITY ADJUSTMENTS

SCALE: N. T. S. SHEET 1 OF 32

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2101
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

DATE: \$DATE\$
FILE: \$FILE\$

GENERAL NOTES: 1-2015

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED. CONTRACTOR SHALL OBTAIN (AND USE) COPY FROM THE CITY OF LEAGUE CITY.
2. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS, UNLESS SPECIFICALLY ESTABLISHED IN THE BID PROPOSAL SECTION OF THE CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.
3. EXISTING UTILITY INFORMATION SHOWN IS NOT GUARANTEED TO BE ACCURATE AND ALL INCLUSIVE. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND SHOULD BE VERIFIED BY THE CONTRACTOR IN ADVANCE OF HIS CONSTRUCTION. ANY CONFLICT OR DISCREPANCY DISCOVERED MUST IMMEDIATELY BE BROUGHT TO THE ENGINEER'S ATTENTION.
4. ANY DAMAGE TO EXISTING PUBLIC UTILITIES MUST BE REPAIRED IMMEDIATELY. THE CONTRACTOR MUST NOTIFY THE APPROPRIATE UTILITY OWNER, WHO WILL MAKE THE REPAIRS AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR ON BEHALF OF THE OWNER, SHALL OBTAIN ALL CONSTRUCTION PERMITS PRIOR TO THE COMMENCEMENT OF WORK.
6. THE WORK AREA SHALL BE BARRICADED AND ILLUMINATED DURING DARKNESS AND PERIODS OF INACTIVITY, WHEN IN AN AREA OF DIRECT PUBLIC ACCESS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIAL AND EQUIPMENT IN A SAFE AND WORKMAN LIKE MANNER TO PREVENT INJURIES, DURING AND AFTER WORKING HOURS UNTIL PROJECT COMPLETION. THERE SHALL BE NO PAYMENT MADE TO THE CONTRACTOR FOR STORED MATERIAL.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SHIPPING OF ALL MATERIALS. THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL AT ALL TIMES BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE SUCH MATERIAL AT THE POINT OF DELIVERY AND TO REJECT ALL DEFECTIVE MATERIAL. THE DEFECTIVE MATERIAL MUST BE REPLACED WITH SOUND MATERIAL.
9. ALL PIPE AND REINFORCEMENT STEEL SHALL BE KEPT FREE OF DIRT AND OTHER DEBRIS. ANY DAMAGE TO THE COATING OF THE VARIOUS MATERIALS MUST BE REPAIRED.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE AND POSITIVE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED FACILITIES. NATURAL GROUND ADJACENT TO UTILITY TRENCH EXCAVATION TO BE GRUBBED PRIOR TO PLACEMENT OF EXCESS TRENCH MATERIAL. (NO SEPARATE PAY).
11. ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
12. THE CONTRACTOR IS REQUIRED TO FOLLOW ALL APPLICABLE OSHA RULES AND REGULATIONS. TRENCH SAFETY SHALL BE DONE IN ACCORDANCE WITH OSHA 29 CFR PART 1926, AS PUBLISHED IN THE FEDERAL REGISTER OCTOBER 31, 1989, AND EFFECTIVE JANUARY 2, 1990, AND AMENDMENTS THERETO.
13. NO CONNECTIONS SHALL BE MADE TO THE EXISTING WATER LINES OR SANITARY SEWERS UNTIL ALL PROPOSED LINES OR SEWERS HAVE BEEN THOROUGHLY CLEANED, TESTED, AND APPROVED BY THE ENGINEER.
14. ALL GEOTECHNICAL REPORTS (IF ANY) FOR THIS PROJECT ARE AVAILABLE AT THE OFFICE OF THE ENGINEER.
15. SURFACE RESTORATION: AT THE END OF ALL CONSTRUCTION PROJECTS, THE CONTRACTOR SHALL RESTORE THE EXISTING FACILITIES, I.E., THE PROPERTY, INCLUDING DITCH, EQUAL TO OR BETTER THAN EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. ALL DISTURBED AREA SHALL BE SEEDED PROPERLY.
16. FINAL ACCEPTANCE OF THE UTILITIES WILL NOT BE GIVEN TO THE CONTRACTOR UNTIL THEY ARE INSPECTED AND APPROVED BY THE CITY OF LEAGUE CITY.
17. ALL MANHOLES ARE TO BE CONSTRUCTED TO ALLOW FOR A MINIMUM OF 1 FOOT OF VERTICAL ADJUSTMENT.
18. ALL TRENCH EXCAVATION, BEDDING AND BACKFILL SHALL BE IN CONFORMANCE WITH THE CITY OF LEAGUE CITY STANDARD DETAILS - EXCAVATION AND BACKFILL FOR UTILITIES AND UTILITY BACKFILL MATERIAL SPECS.
19. ALL UTILITY TRENCHES UNDER OR WITHIN THREE FEET OF EXISTING, PROPOSED, AND/OR FUTURE PAVEMENT OR CURB SHALL BE BACKFILLED WITH NO LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF CEMENT-STABILIZED SAND TO A POINT ONE FOOT BELOW PAVEMENT SUBGRADE. THE REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL.
20. THE USE OF WELL POINT SYSTEMS, WHEN REQUIRED BY TRENCH CONDITIONS, SHALL BE REQUESTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

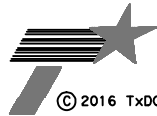
21. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA. NO TREES SHALL BE REMOVED WITHOUT PERMISSION OF OWNER.
22. CONTRACTOR SHALL PROVIDE MINIMUM CLEARANCES AT STORM SEWER, SANITARY SEWER AND WATER LINE CROSSINGS AS DESIGNED PER THE PLANS AND ACCORDING TO THE BEDDING AND BACKFILL DETAILS.
23. ALL AREAS DISTURBED ALONG SIDE AND BACK-OF-LOT EASEMENTS OR OTHER UNNECESSARY DISTURBANCES AS A RESULT OF CONSTRUCTION WORK SHALL BE SEEDED AND FERTILIZED IN ACCORDANCE WITH SEEDING SPECIFICATIONS (NO SEPARATE PAY).
24. EXCAVATE MUCK, ORGANIC MATERIAL AND UNSUITABLE SOIL PRIOR TO PLACING FILL. PLACE SUITABLE MATERIAL IN 8" MAXIMUM LOOSE LIFT AND COMPACT TO 95% STANDARD PROCTOR DENSITY.
25. ALL BACKFILL SHALL BE PLACED 8" LIFTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY AND BE TESTED BY AN APPROVED TESTING LAB.
26. ALL TRENCH BACKFILL SHALL HAVE AT LEAST ONE DENSITY TESTING ON EACH LIFT. ONLY STANDARD BACKFILL PROCEDURES ARE ALLOWED. ANY DEVIATION TO THIS STANDARD MUST BE APPROVED BY THE CITY OF LEAGUE CITY.
27. EXCEPT FOR WATER AND SANITARY SEWER FACILITIES, ALL PROPOSED FACILITIES MUST BE INSTALLED WITH A MINIMUM SEPARATION OF 4 FEET OUTSIDE TO OUTSIDE FROM ALL OTHER EXISTING OR PROPOSED FACILITIES.
28. ALL TESTING PROCEDURES USED ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEAGUE CITY STANDARDS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTS REQUIRED. IF ANY TEST RESULTS DO NOT MEET THE TESTING STANDARDS, SUCH MATERIAL SHALL BE REMOVED AND REPLACED SO THAT THE TESTING STANDARDS CAN BE MET. COST OF TEST AND LABORATORY SERVICES SHALL BE INCIDENTAL AND INCLUDED IN UNIT PRICE OF BID ITEM. A COPY OF THE TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER AND THE CITY OF LEAGUE CITY.
29. ALL UNSATISFACTORY AND OR WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE AND DEBRIS SHALL BE DISPOSED OF OFFSITE BY THE CONTRACTOR, NO DIRECT PAYMENT WILL BE MADE, BUT SHALL BE CONSIDERED AS INCIDENTAL TO THE VARIOUS BID PROPOSAL ITEMS.
30. UTILITY CONTRACTOR SHALL ADJUST RIM ELEVATIONS TO 0.3 FEET ABOVE THE FINISHED GRADE AT EACH MANHOLE LOCATION AFTER PAVEMENT CONTRACTOR HAS COMPLETED FINAL GRADING (NO SEPARATE PAY). SLOPED FILL SHALL BE ADDED FOR STORM WATER DRAINAGE AWAY FROM THE MANHOLE RIM.
31. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION BOTH DAY AND NIGHT IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
32. UTILITY CONTRACTOR SHALL AT COMPLETION OF HIS WORK FILL AND GRADE ALL UTILITY EASEMENTS (WET AND DRY) FOR POSITIVE DRAINAGE, AS DIRECTED BY THE OWNER. (NOT SEPARATE PAY)
33. CITY OF LEAGUE CITY SIGNATURES ARE VALID FOR 1 (ONE) YEARS ONLY AFTER DATE & SIGNING OF PLANS.
34. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURB INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
35. CONTRACTOR SHALL CONTACT THE FOLLOWING A MINIMUM OF 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
- A) CITY OF LEAGUE CITY PROJECT MANAGEMENT (281)-554-1439
B) CITY OF LEAGUE CITY FIRE MARSHALL (281)-554-1290
C) TEXAS ONE CALL SYSTEM 1-800-245-4545
D) LONE STAR NOTIFICATION CENTER 1-800-669-8344
E) TEXAS EXCAVATION SAFETY SYSTEM INC. 1-800-344-8377
F) EL PASO PIPELINE : MR. J.R. LOGAN (281)-331-4693
G) BP PIPELINE : MR. DARREL BARBO (409)-938-6995 (MOBIL) (281)-636-6747
36. CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AND PAVEMENT BEFORE CONSTRUCTION. ANY VERIFICATIONS THAT ARE INCONSISTENT WITH THE PLANS NEED TO BE REPORTED TO THE ENGINEER BEFORE CONSTRUCTION BEGINS.
37. WITH CITY ENGINEERS APPROVAL, W. S. & D. SPOIL MAY BE SPREAD EVENLY IN THE STREET RIGHT-OF-WAY AFTER UTILITIES ARE IN PLACE.
38. THERE WILL BE NO ADDITIONAL COST FOR INSTALLING WATER LINES AND SEWERS UNDER EXISTING UTILITIES AND PIPELINE. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.
39. LAWS TO BE OBSERVED, THE DEVELOPER/CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH AND AT ALL TIMES SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL

- LAWS, ORDINANCES, AND REGULATIONS WHICH IN ANY MANNER AFFECT THE CONDUCT OF THE WORK AND SHALL INDEMNIFY AND SAVE HARMLESS THE CITY AND ITS REPRESENTATIVES AGAINST ANY CLAIM ARISING FROM THE VIOLATION OF ANY SUCH LAW, ORDINANCE, OR REGULATIONS, WHETHER BY HIMSELF OR BY HIS EMPLOYEES.
40. CONTRACTOR SHALL REMOVE ALL MUD, DIRT, AND DEBRIS DEPOSITED ON EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY DAILY.
41. CONTRACTOR SHALL CONTACT THE WATER UTILITY DEPARTMENT AT 281-554-1390 TO COORDINATE VALVE OPERATIONS FOR PROPOSED TIE-INS.
42. DISPOSAL OF EXCESS EXCAVATION MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. DISPOSAL OF EXCESS EXCAVATION MATERIAL WITHIN LEAGUE CITY SHALL COMPLY WITH ORDINANCE 2009-25 ARTICLE 2.



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TEXAS DEPARTMENT OF TRANSPORTATION

LEAGUE CITY
TEXAS

IH 45
UTILITY ADJUSTMENTS
GENERAL NOTES

SCALE: NONE SHEET 2 OF 32

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2102
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

DATE: \$DATE\$
FILE: \$FILE\$

WATER CONSTRUCTION NOTES: 1-2015

- WATER MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED.
- ALL WATERLINES ARE TO BE HYDROSTATICALLY TESTED BY THE CONTRACTOR IN ACCORDANCE WITH CITY OF LEAGUE CITY CRITERIA.
- PIPE MATERIAL SHALL BE PVC WATER PIPE AWWA C900 (DR 18) FOR SIZES 6" THROUGH 12" OR C905 (DR 18) FOR SIZES 14" THRU 24", DUCTILE IRON PIPE FOR SIZES 6" THROUGH 36", 'STEEL CYLINDER CONCRETE PIPE (CLASS 150) FOR SIZES OVER 18" IN CONFORMANCE WITH MATERIAL SPECIFICATION OF THE CITY OF LEAGUE CITY. (ANY OTHER MATERIAL OR SIZES TO BE SUBMITTED FOR APPROVAL).
- ALL WATER VALVES SHALL OPEN COUNTER CLOCKWISE. ALL WATER VALVES SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND SHALL BE OF THE RESILIENT SEAT TYPE.
- ALL FLANGES BELOW GRADE SHALL BE INSULATED.
- ALL WATERLINES SHALL BE ENCASED IN BANK SAND TO AT LEAST 12" ABOVE THE PIPE. COST OF BANK SAND TO BE INCLUDED IN UNIT PRICE OF WATERLINE.
- WATERLINE TRENCHES UNDER PAVEMENT OR WITHIN THREE (3) FOOT OF PROPOSED CURBS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND (NO LESS THAN 1-1/2 SACK/PER TON) UP TO WITHIN ONE FOOT OF PAVEMENT. COST OF BACKFILL SHALL NOT BE PAID DIRECTLY BUT SHALL BE INCLUDED IN THE UNIT PRICE OF WATERLINE.
- ALL FLUSHING VALVES SHALL BE LOCATED A MIN. OF 3' BACK OF CURB, ON CURB AND GUTTER STREETS. ON STREETS HAVING NO CURB, THE FLUSHING VALVE SHALL BE LOCATED INSIDE THE RIGHT-OF-WAY OR ADJACENT EASEMENT.
- WATERLINE SHALL BE CONSTRUCTED SUCH THAT ALL CROSSES AND TEES WILL NOT BE LOCATED UNDER PROPOSED OR FUTURE PAVING.
- UTILITY CONTRACTOR TO TURN FLUSHING VALVES AND ALL FINAL ADJUSTMENTS AFTER COMPLETION OF PAVING. NO SEPARATE PAY.
- SANITARY PRECAUTIONS MUST BE TAKEN DURING WATERLINE CONSTRUCTION, AS CALLED FOR BY AWWA STANDARDS. PRECAUTIONS INCLUDE KEEPING PIPE CLEAN AND CAPPING OR OTHERWISE EFFECTIVELY COVERING OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.
- ALL NEWLY INSTALLED PIPES, COATINGS AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARDS AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.
- ALL DUCTILE IRON PIPE WATERLINE SHALL HAVE BEDDING AND BACKFILL EMBEDMENT IN ACCORDANCE WITH THE CITY OF LEAGUE CITY DETAILS AND DESIGN AND SPECIFICATIONS AS CURRENTLY AMENDED.
- WATER MAINS SHALL HAVE MINIMUM OF 4' COVER FROM TOP OF CURB. EXCEPT 16" AND LARGER WATER LINES SHALL HAVE MINIMUM OF 5' COVER FROM TOP OF CURB.
- FLUSHING VALVE UNIT CONSISTS OF: MAIN LINE SIZE X 6" TEE, 6" PVC PIPE LEAD, 6" GATE VALVE WITH BOX, AND ONE FLUSHING VALVE WITH 4' MIN. BURY. ANY OTHER PIPE MATERIAL SHALL BE IN ACCORDANCE WITH THE CITY'S DESIGN AND CONSTRUCTION STANDARDS MANUAL.
- WATER & SANITARY SEWER THAT ARE PARALLEL MUST BE INSTALLED IN SEPARATE TRENCHES WITH NO LESS THAN 9' (NINE FEET) MIN. HORIZONTAL CLEARANCE. SEE LEAGUE CITY DETAIL SANITARY SEWER INSTALLATION CROSSING OR PARALLEL TO WATER LINE.
- UNLESS MANHOLES CAN BE MADE WATERTIGHT AND TESTED FOR NO LEAKAGE THEY MUST BE INSTALLED SO AS TO PROVIDE A MINIMUM OF NINE FEET OF HORIZONTAL CLEARANCE FROM AN EXISTING OR PROPOSED WATER LINE. IF THE NINE FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE WATERLINE MUST BE ENCASED IN A JOINT OF 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE WATERLINE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT 5 FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEAL."
- COMPLETED WATERLINES MUST BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651, "DISINFECTING WATER MAINS."
- IF CLEARANCE IS BETWEEN SIX (6) INCHES TO TWO (2) FEET ONE 20 FOOT JOINT OF C-900 PVC, 150 PSI WATERLINE SHALL BE CENTERED AT SANITARY CROSSING.
- ALL STUB OUTS AND THEIR FITTINGS FOR FUTURE WATER MAIN AND LATERAL EXTENSIONS SHALL BE MECHANICALLY RESTRAINED WITH MEGA-LUG, UNI-FLANGE OR APPROVED EQUAL RESTRAINT DEVICES.
- ALL WATER LINES ON PRIVATE PROPERTY AND/OR UNDER PAVEMENT SHALL BE RESTRAINED.

SANITARY SEWER CONSTRUCTION NOTES:

- ALL SANITARY SEWER BEDDING SHALL BE AS PER THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED UNLESS OTHERWISE INDICATED.
- ALLOWABLE SANITARY SEWER PIPE MATERIAL FOR GRAVITY LINES SHALL BE POLYVINYL CHLORIDE (PVC) OR AS APPROVED BY CITY ENGINEER: 6-INCH TO 15-INCH: ASTM D-3034, SDR 26 (ALSO SEE SECTION 507.2 OF THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS MANUAL.)
- ALL AUGURED CONSTRUCTION UNDER PAVEMENT SHALL BE CASED PER DETAIL AND ITEM 407.13.2 OF THE GENERAL DESIGN AND CONSTRUCTION STANDARDS MANUAL.
- IN WET OR DRY STABLE TRENCH CONSTRUCTION FOR SANITARY SEWER, BEDDING AND BACKFILL SHALL BE PER CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED.
- DEFLECTION TESTING OF THE GRAVITY SEWER LINE SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5.0%. THE DEFLECTION TEST SHALL BE CONDUCTED USING A RIGID MANDREL HAVING AN OUTSIDE DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES. I. & E. TEST FOR SANITARY SEWER SYSTEM WILL BE IN ACCORDANCE WITH CITY OF LEAGUE CITY REQUIREMENTS, FOR LOW PRESSURE AIR TEST AS PER TAC 317.2
- CHEMICALLY WELDED SANITARY SEWER JOINTS ARE NOT ACCEPTABLE. USE RUBBER GASKETED BELL & SPIGOT SANITARY SEWER JOINTS.
- ALL SANITARY SEWER ADAPTERS REQUIRED TO CONNECT TO EXISTING SANITARY SEWERS ARE INCIDENTAL TO THE BID ITEM FOR SANITARY SEWER PIPE.
- MANHOLES (AS DESIGNATED ON PLAN & PROFILE) SHALL INCLUDE INFLOW PROTECTORS WHICH SHALL BE INCIDENTAL TO CONSTRUCTION OF MANHOLES. (NO SEPARATE PAY)
- UNLESS APPROVED NO CAST IN PLACE MANHOLES SHALL BE USED. ALL SANITARY MANHOLES SHALL BE PRECAST REINFORCED CONCRETE 4' TO 8' DIAMETER MOOR-TEX MANHOLE OR EQUAL IN ACCORDANCE WITH CITY OF LEAGUE CITY STANDARDS.
- UNIT PRICE FOR AUGER SECTION AND AUGER PIT INCLUDE DRY OR WET CONDITION. (NO EXTRA PAY)
- THE TOTAL FOOTAGE OF LINE 36" AND SMALLER SHALL BE INSPECTED WITH TELEVISION EQUIPMENT IN ACCORDANCE WITH THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AS CURRENTLY AMENDED.
- CONTRACTOR SHALL TEST ALL SANITARY SEWER SYSTEMS IN ACCORDANCE WITH THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AS CURRENTLY AMENDED.
- CONTRACTOR SHALL AIR TEST ALL GRAVITY SANITARY SEWER LINES. FORCE MAIN LINES SHALL BE HYDROSTATICALLY TESTED AT 125 PSI.
- WATER & SANITARY SEWER THAT ARE PARALLEL MUST BE INSTALLED IN SEPARATE TRENCHES WITH NO LESS THAN 9' (NINE FEET) MIN. HORIZONTAL CLEARANCE. SEE LEAGUE CITY DETAIL SANITARY SEWER INSTALLATION CROSSING OR PARALLEL TO WATER LINE.

LEGEND:

- PROPOSED WATER
----- PROPOSED WASTEWATER
----- UTILITY CASING
———— PROPOSED ROADWAY
———— PROPOSED SIDEWALK
□————□ PROPOSED STORM DRAIN

- | | | | |
|---|------------------------------|---|---------------------------------------|
| ⊙ | EXISTING STORM DRAIN MANHOLE | ⊠ | EXISTING COMMUNICATIONS BOX |
| □ | PROPOSED STORM DRAIN MANHOLE | ⊕ | EXISTING FIRE HYDRANT |
| — | PROPOSED STORM DRAIN INLET | ⊖ | EXISTING WATER VALVE |
| ● | EXISTING POWER POLE | ⊗ | EXISTING WATER METER |
| ○ | PROPOSED POWER POLE | ⊘ | EXISTING WASTEWATER MANHOLE |
| ☆ | LIGHT POLE | ⊙ | EXISTING WASTEWATER CLEAN OUT |
| ⊠ | ELECTRIC BOX | ⊕ | EXISTING GAS MARKER |
| ● | EXISTING TELEPHONE/COMM POLE | ⊖ | PROPOSED WATER VALVE |
| ⊠ | TELEPHONE BOX | ⊕ | PROPOSED FIRE HYDRANT |
| ⊕ | TELEPHONE MANHOLE | ⊖ | PROPOSED COMBINATION AIR/VACUUM VALVE |
| ○ | PROPOSED TELEPHONE/COMM POLE | ⊙ | PROPOSED SANITARY SEWER MANHOLE |

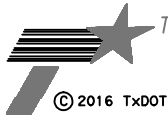
ABBREVIATIONS

- | | |
|------------|------------------------|
| CL | CENTER LINE |
| EXIST | EXISTING |
| GB/G. B. | GRADE BREAK |
| GV | GATE VALVE |
| GV&B | GATE VALVE AND BOX |
| IE: /I. E. | INVERT ELEVATION |
| LT | LEFT |
| MIN/MIN. | MINIMUM |
| MH | MANHOLE |
| OFF | OFF SET |
| PROP | PROPOSED |
| RED | REDUCER |
| RT | RIGHT |
| STA: /STA. | STATION |
| TYP/TYP. | TYPICAL |
| WL | WATER LINE / WATERLINE |



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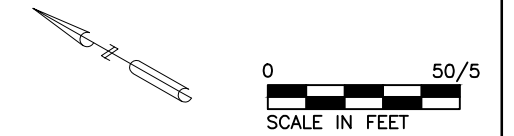
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LEAGUE CITY
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IH 45
UTILITY ADJUSTMENTS
GENERAL NOTES

SCALE: NONE SHEET 3 OF 32

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2103
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC



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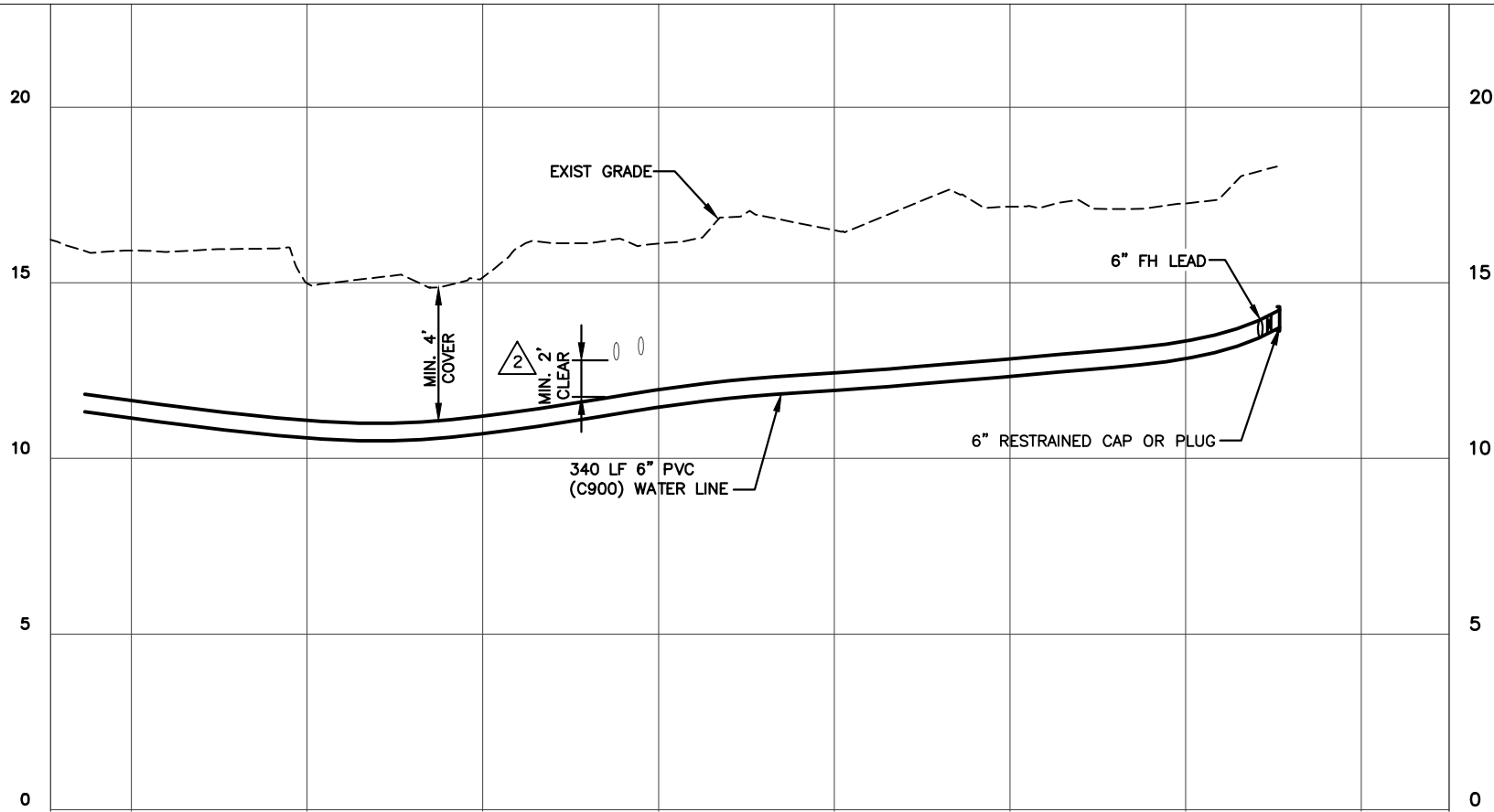
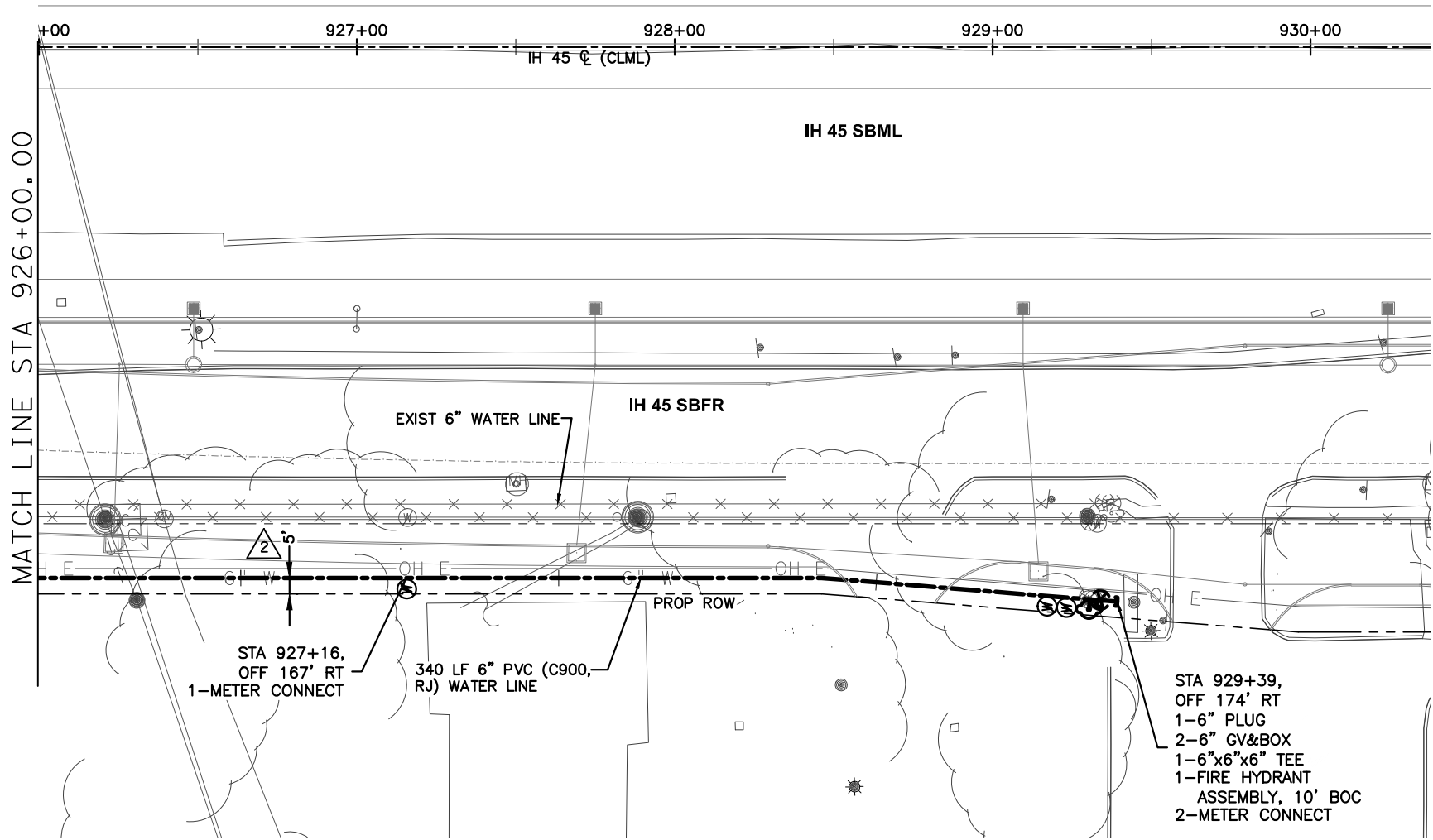
IH 45
UTILITY ADJUSTMENTS

SHEET 4 OF 32

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
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STATE	DIST.	COUNTY		
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CONT.	SECT.	JOB	HIGHWAY NO.	
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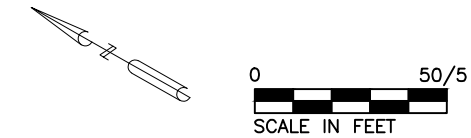
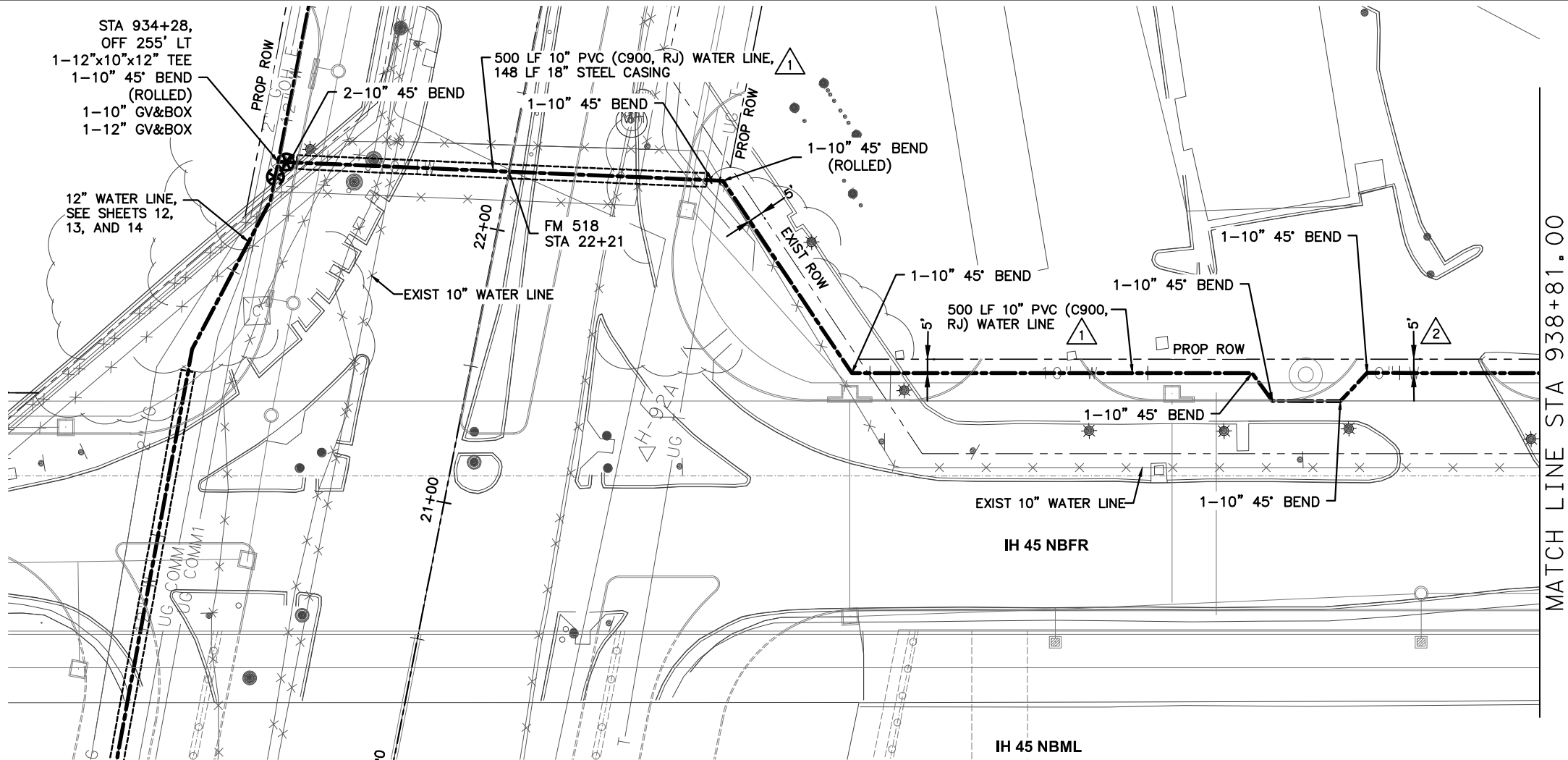
IH 45
UTILITY ADJUSTMENTS

SCALE:
HORZ : 1" = 50'
VERT : 1" = 5'

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STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
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UTILITY ADJUSTMENTS

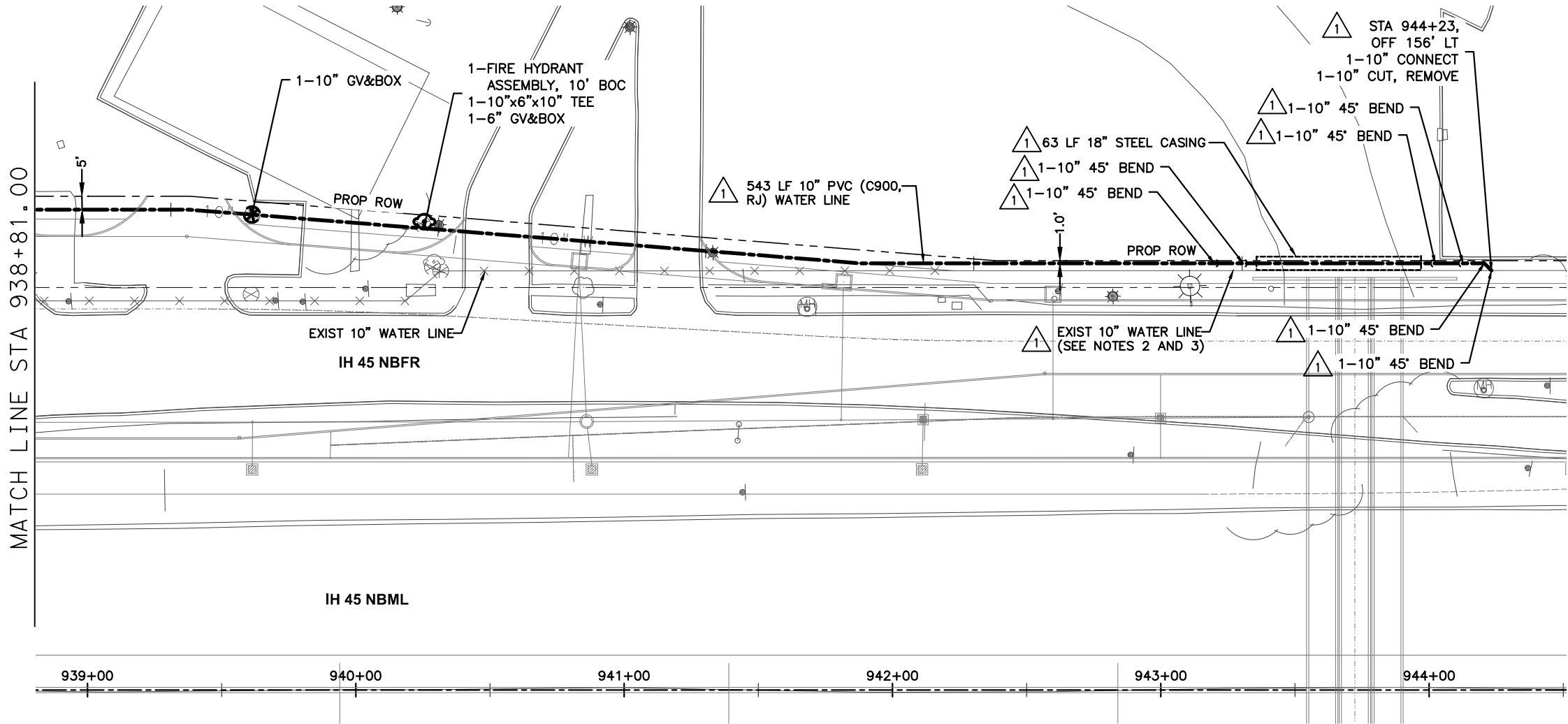
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SHEET 6 OF 32

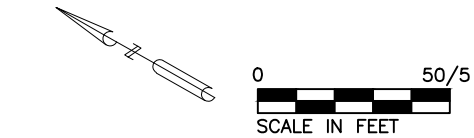
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STATE	DIST.	COUNTY		
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DATE: \$DATE\$
FILE: \$FILE\$



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NOTES:

1. COORDINATE WITH LEAGUE CITY FOR WORK ON THIS SHEET.
2. CONTRACTOR SHALL SECURE TEMPORARY CONSTRUCTION EASEMENT REQUIRED FOR THE INSTALLATION OF 10" WATER LINE CROSSING.
3. AFTER PROP. 10" WATER LINE CROSSING IS CONSTRUCTED AND CONNECTED TO THE EXISTING WATER SYSTEM, CONTRACTOR SHALL REMOVE/DEMOLISH THE EXISTING 10" WATER LINE AERIAL CROSSING, INCLUDING PIPE BRIDGE STRUCTURE. REMOVAL SHALL BE INCIDENTAL TO RIGHT-OF-WAY CLEARING WORK.



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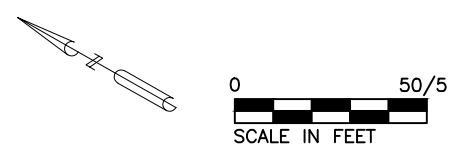
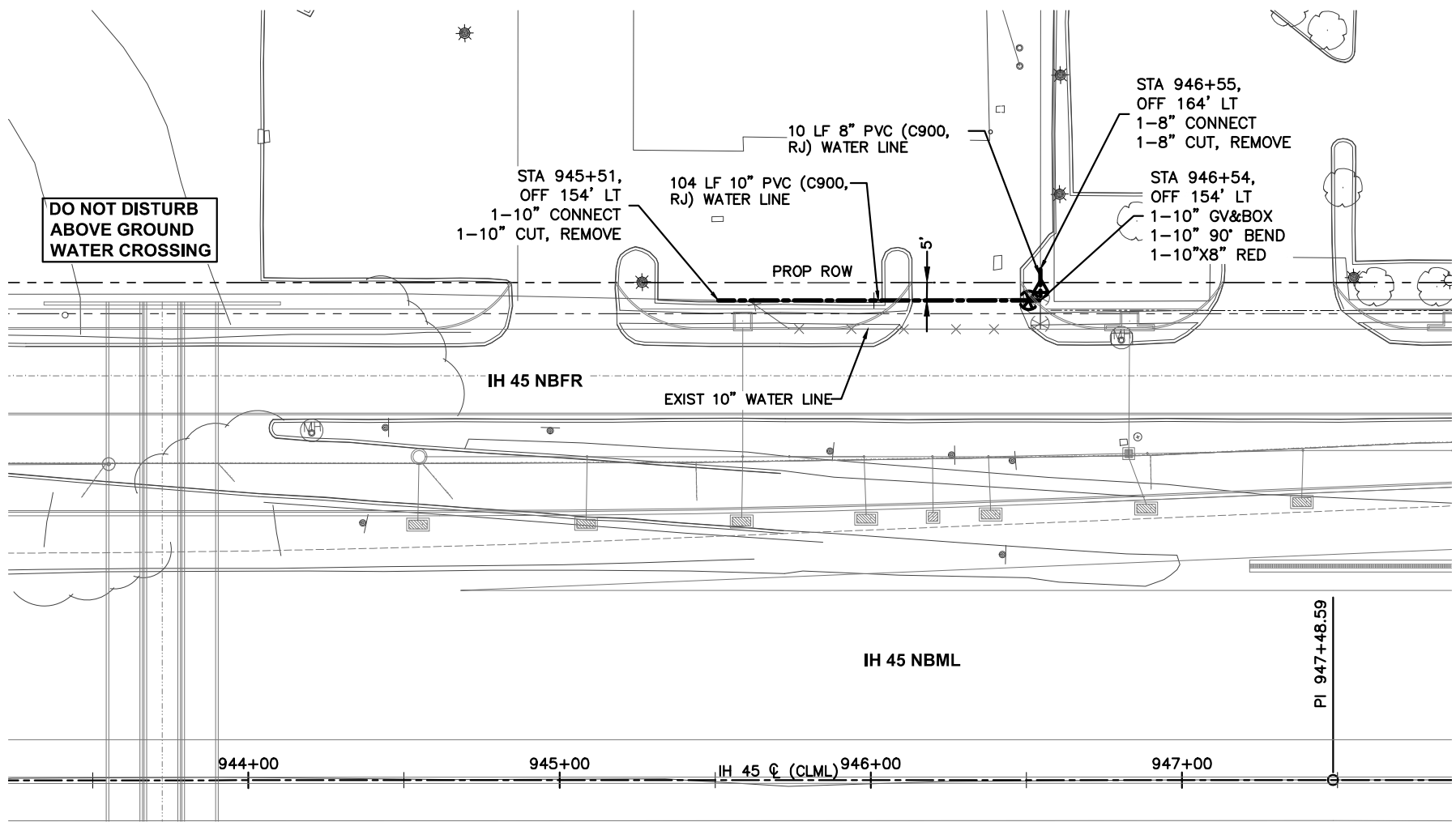
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UTILITY ADJUSTMENTS

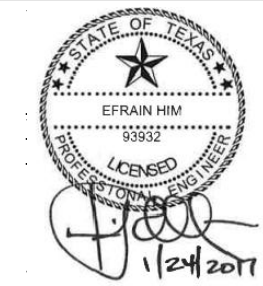
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VERT : 1" = 5'

SHEET 7 OF 32

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STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC



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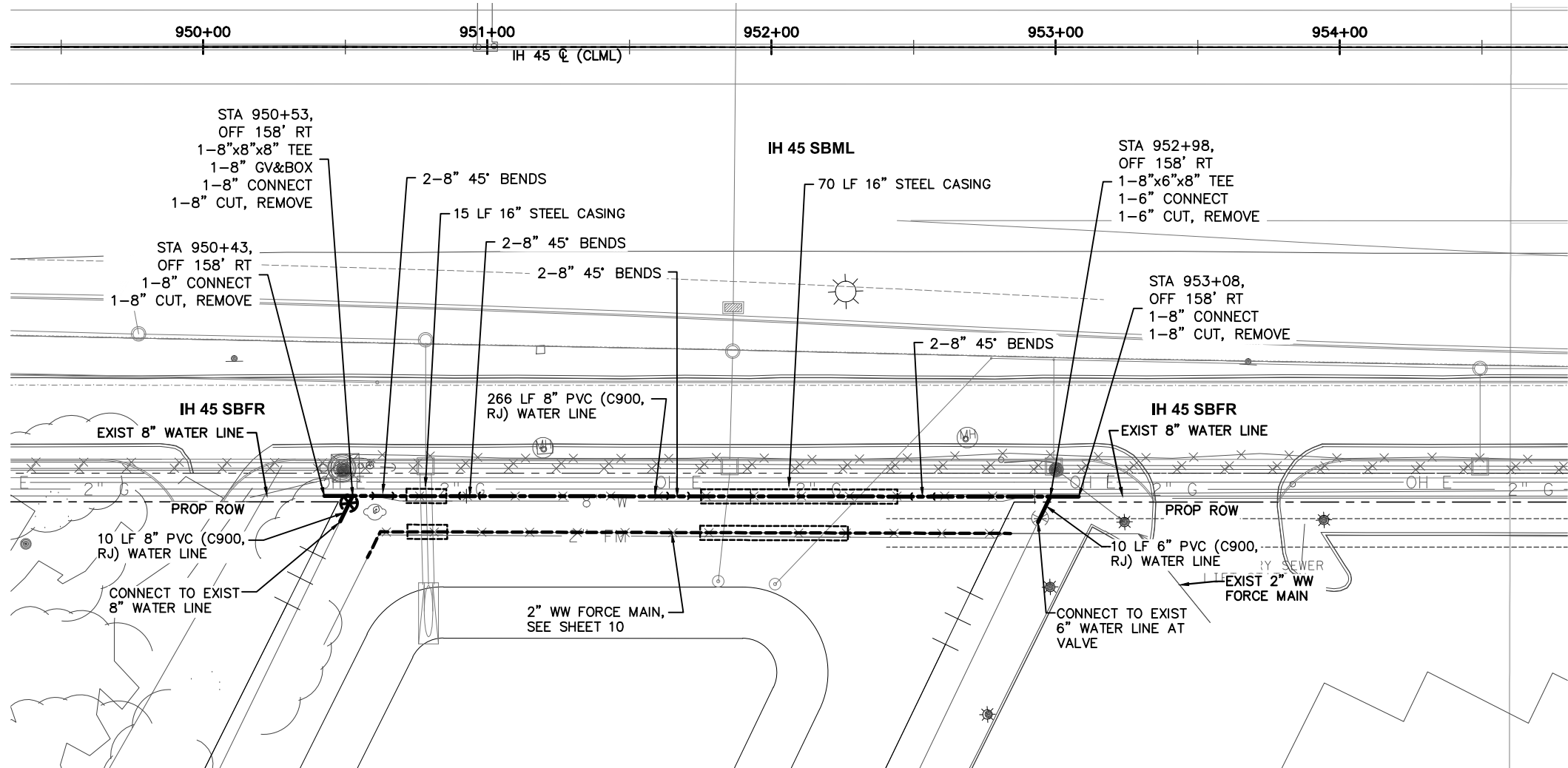
IH 45
UTILITY ADJUSTMENTS

SCALE:
HORZ : 1" = 50'
VERT : 1" = 5'

SHEET 8 OF 32

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
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STATE	DIST.	COUNTY	
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CONT.	SECT.	JOB	HIGHWAY NO.
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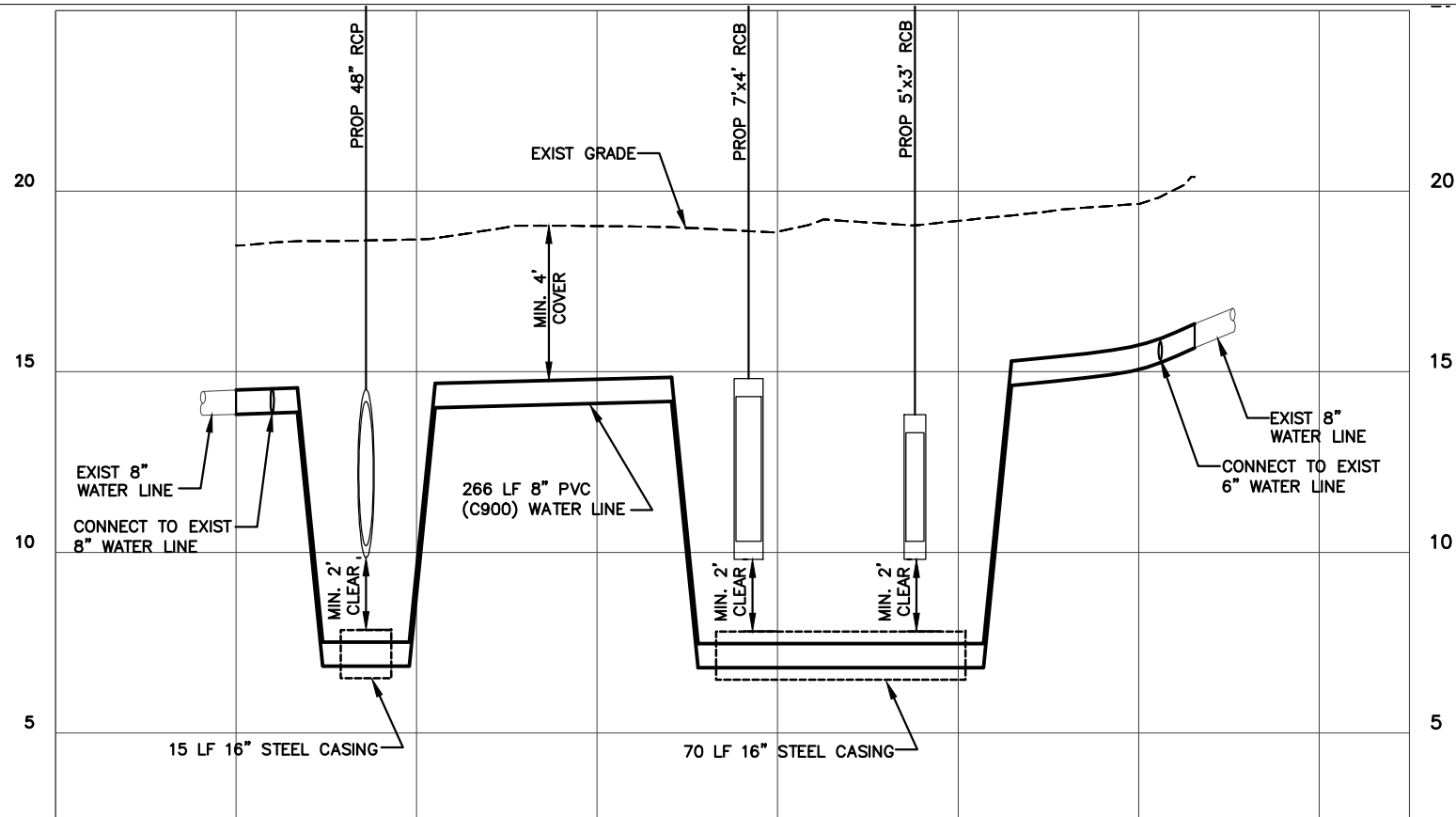
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UTILITY ADJUSTMENTS

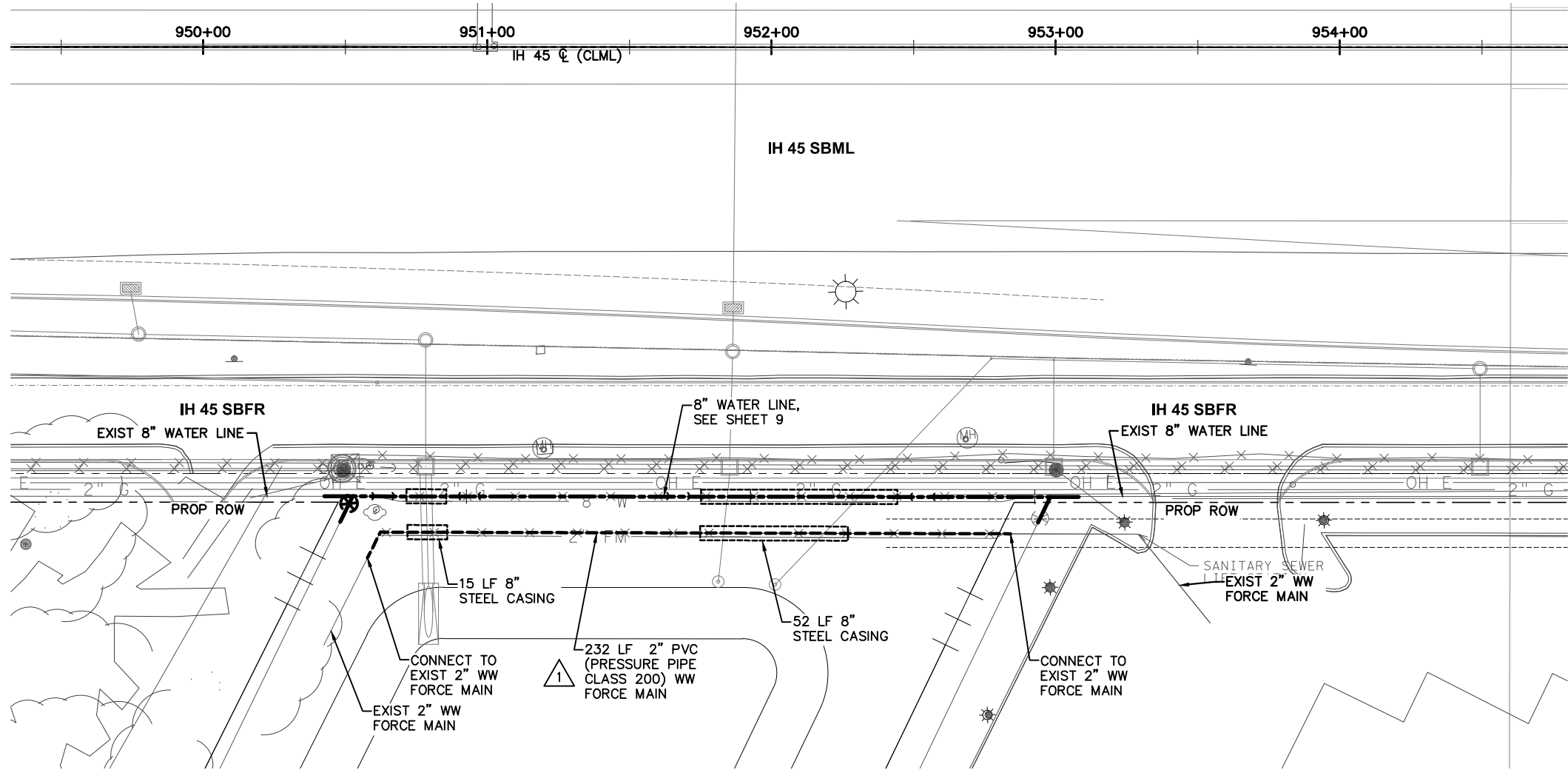
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STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
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FILE: \$FILE\$

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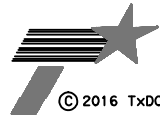
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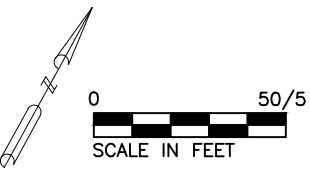
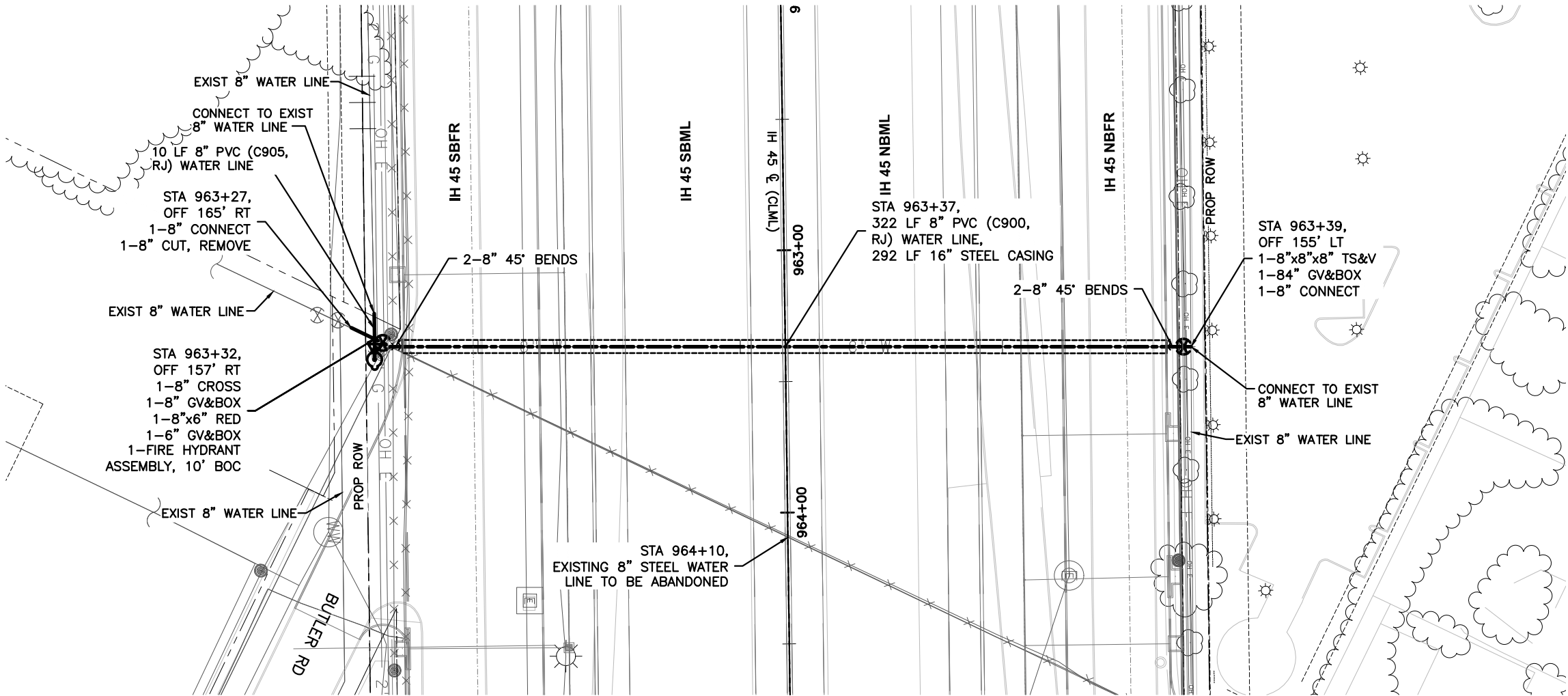
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UTILITY ADJUSTMENTS

SCALE:
HORZ : 1" = 50'
VERT : 1" = 5'

SHEET 10 OF 32

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6				2110
STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
CONT.	SECT.	JOB	HIGHWAY NO.	
0500	03	107, ETC	IH 45, ETC	



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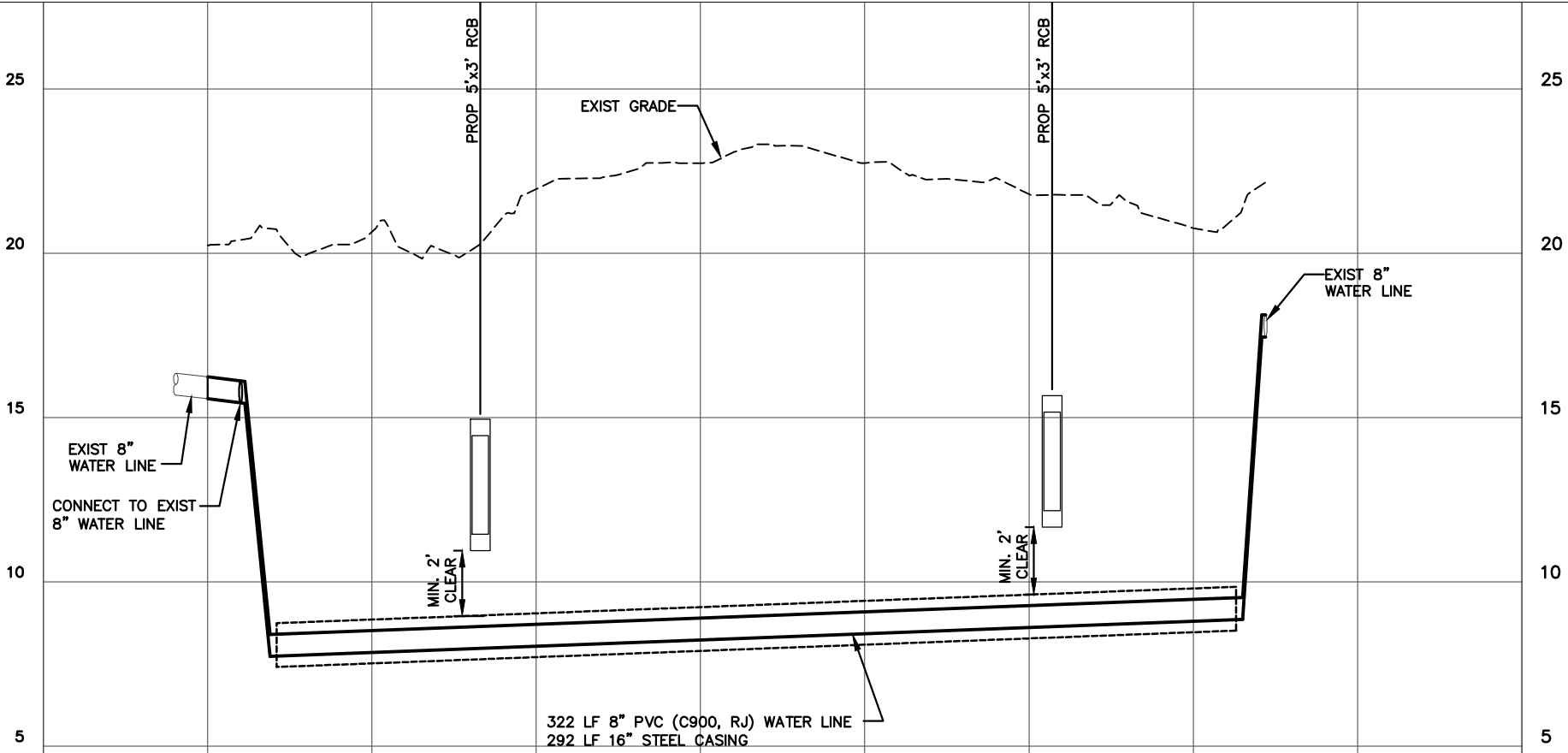
IH 45
UTILITY ADJUSTMENTS

SCALE:
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SHEET 11 OF 32

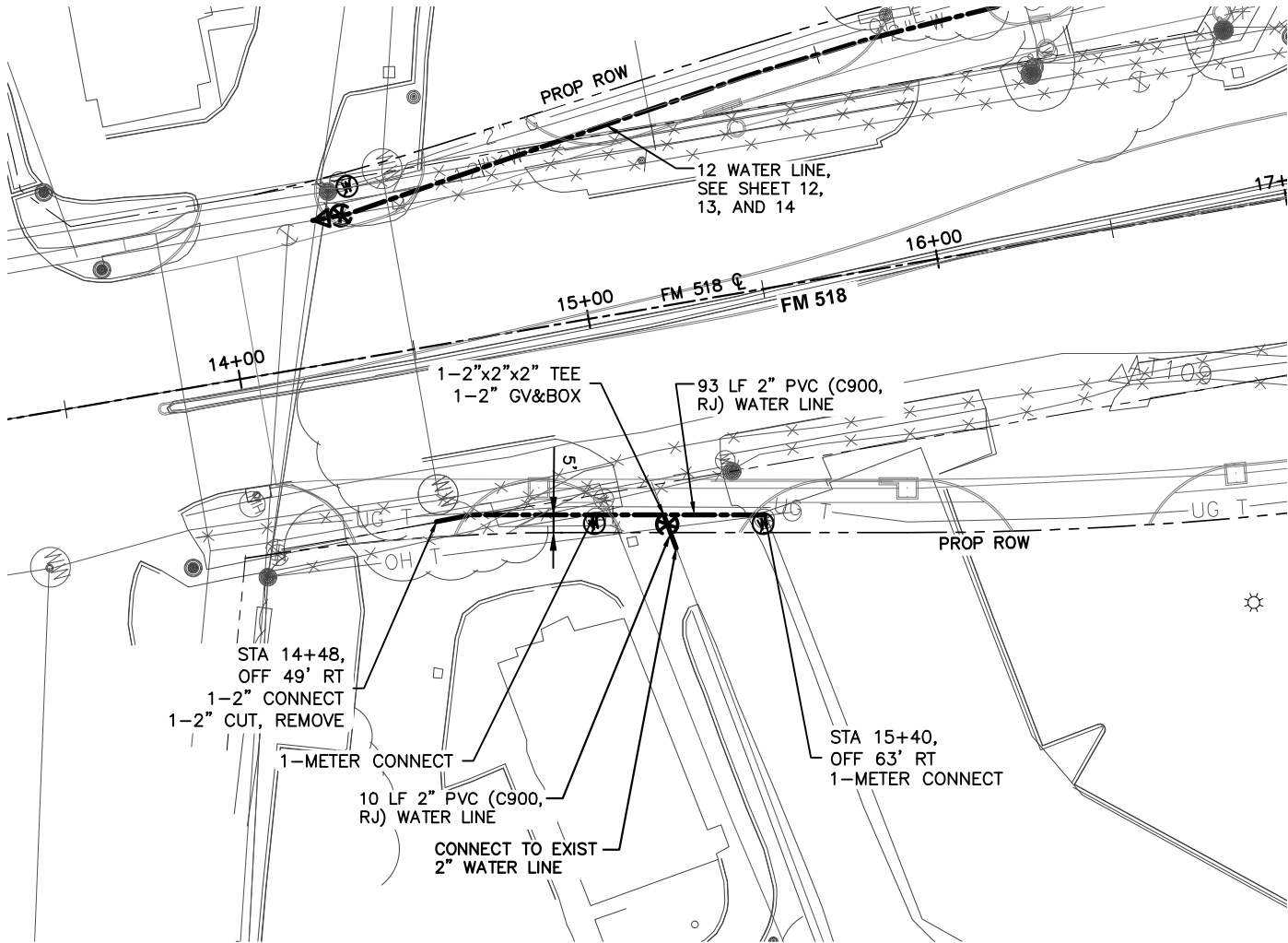
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STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
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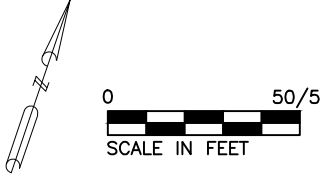
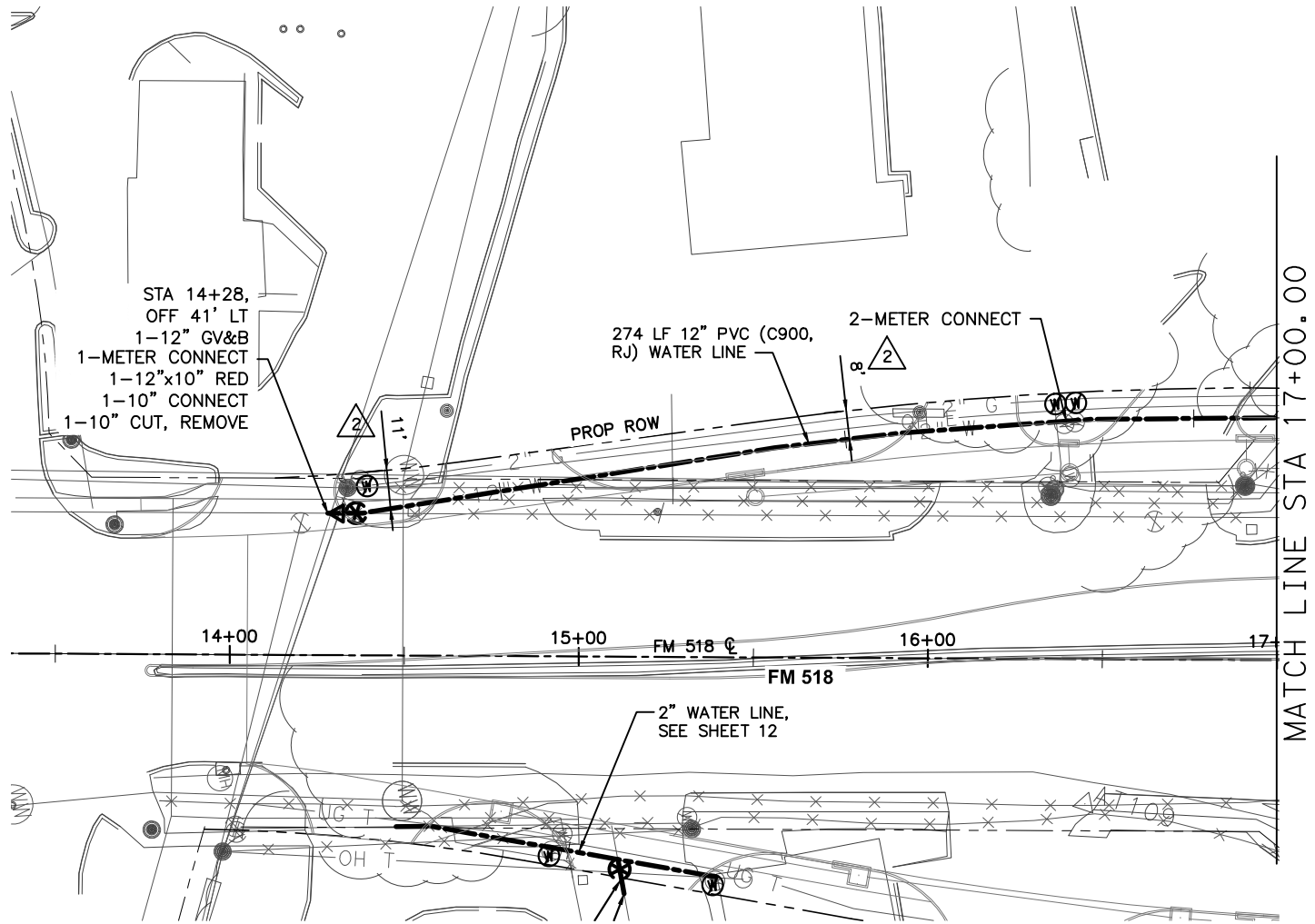
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SHEET 12 OF 32

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STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
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UTILITY ADJUSTMENTS

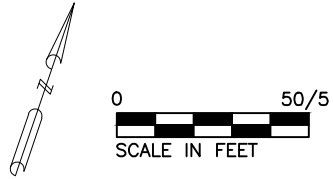
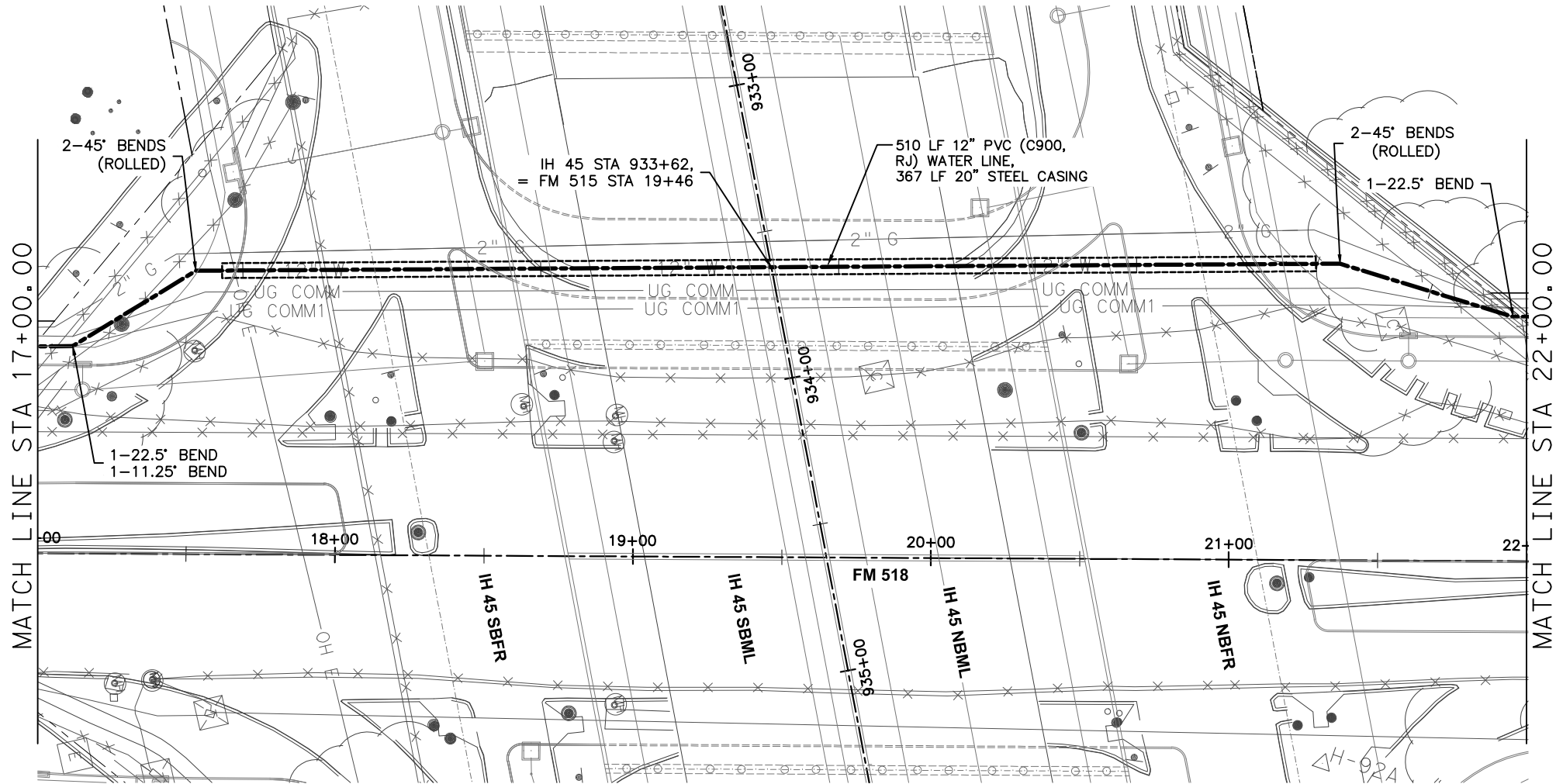
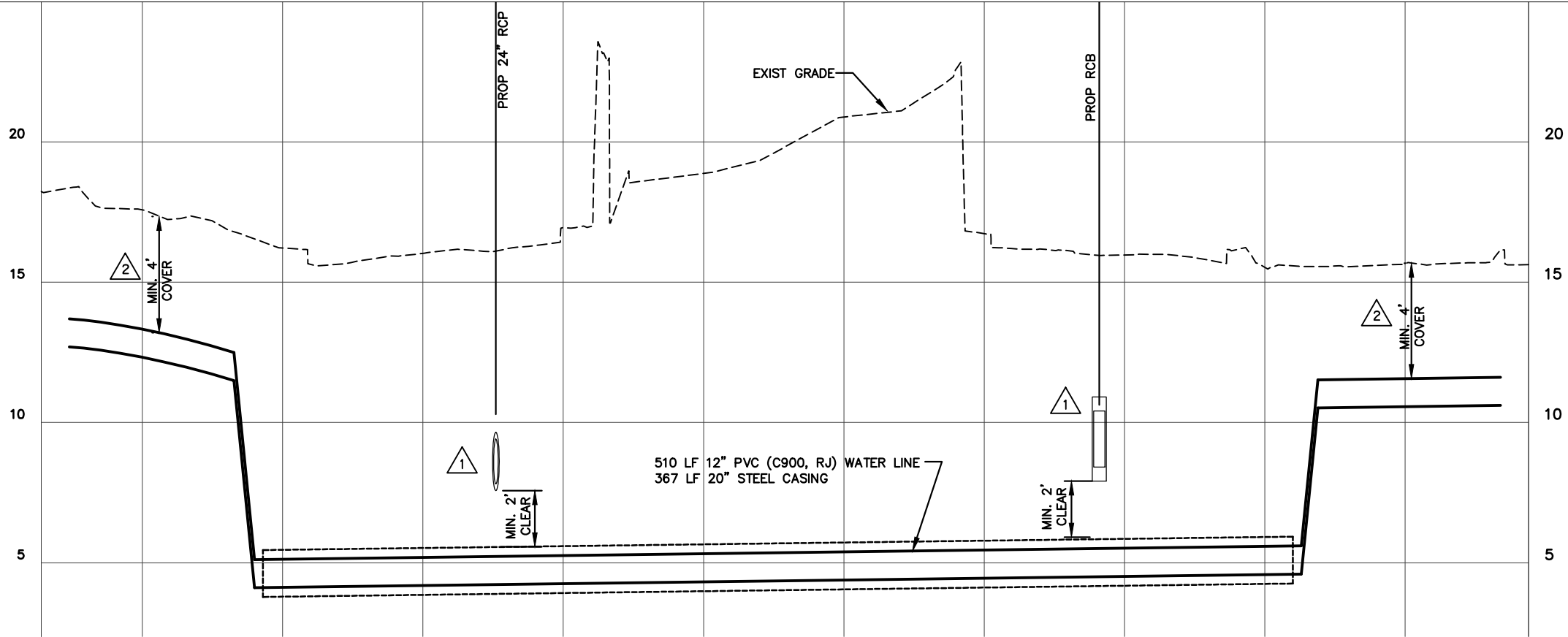
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SHEET 13 OF 32

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STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
CONT.	SECT.	JOB	HIGHWAY NO.	
0500	03	107, ETC	IH 45, ETC	

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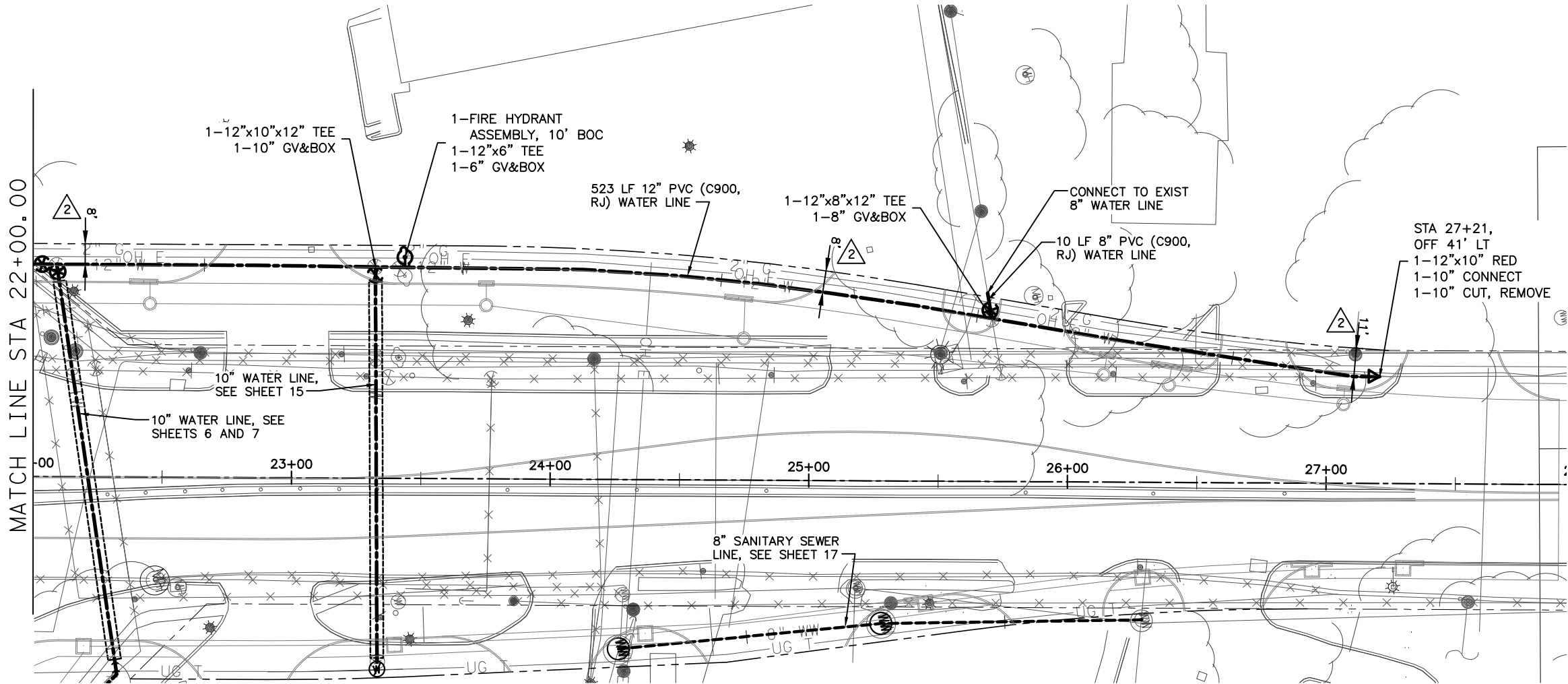
IH 45
UTILITY ADJUSTMENTS

SCALE:
HORZ : 1" = 50'
VERT : 1" = 5' SHEET 14 OF 32

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2114
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
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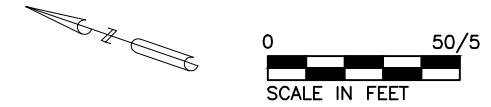
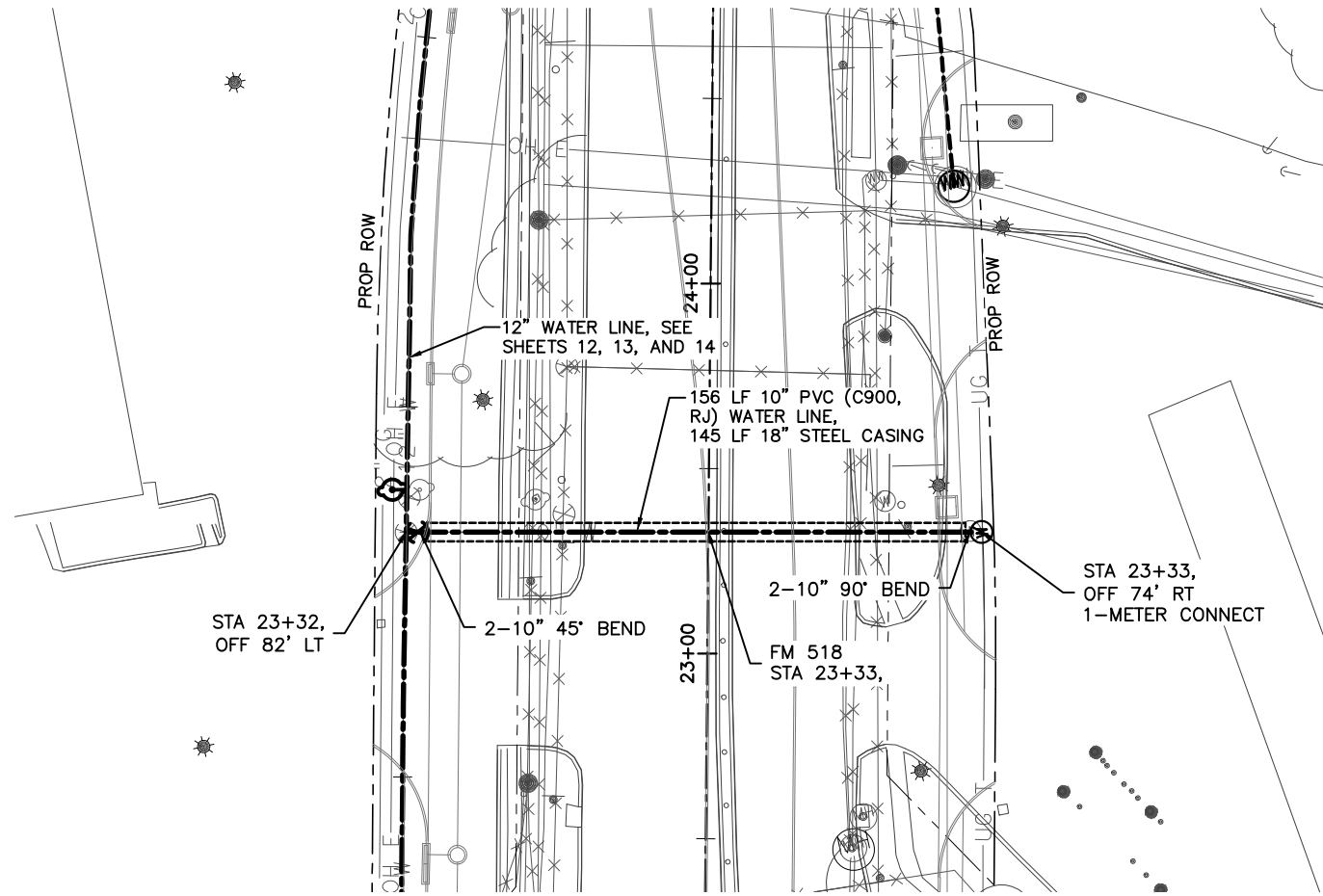
LEAGUE CITY
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UTILITY ADJUSTMENTS

SCALE:
HORZ : 1" = 50'
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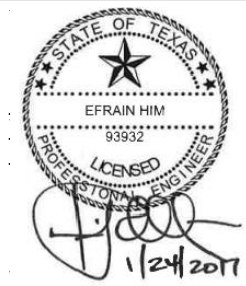
SHEET 15 OF 32

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TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC



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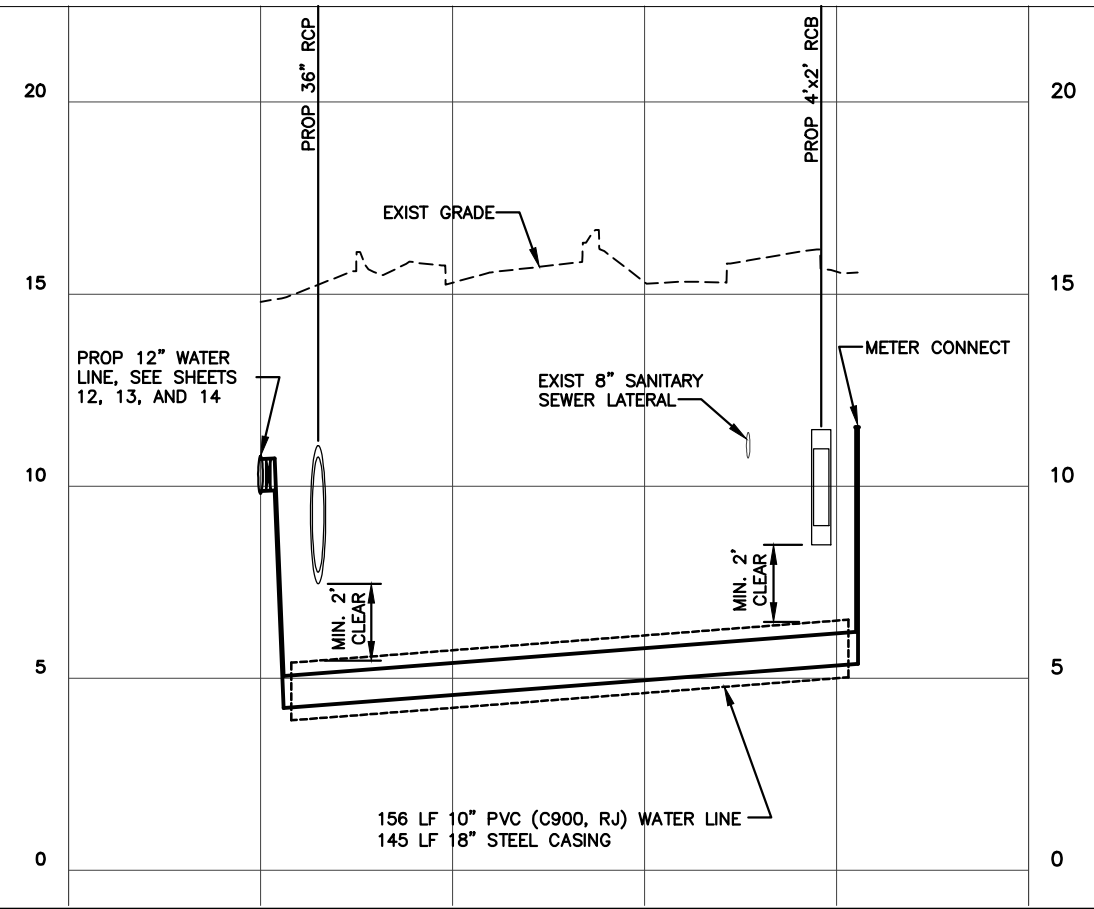
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UTILITY ADJUSTMENTS

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SHEET 16 OF 32

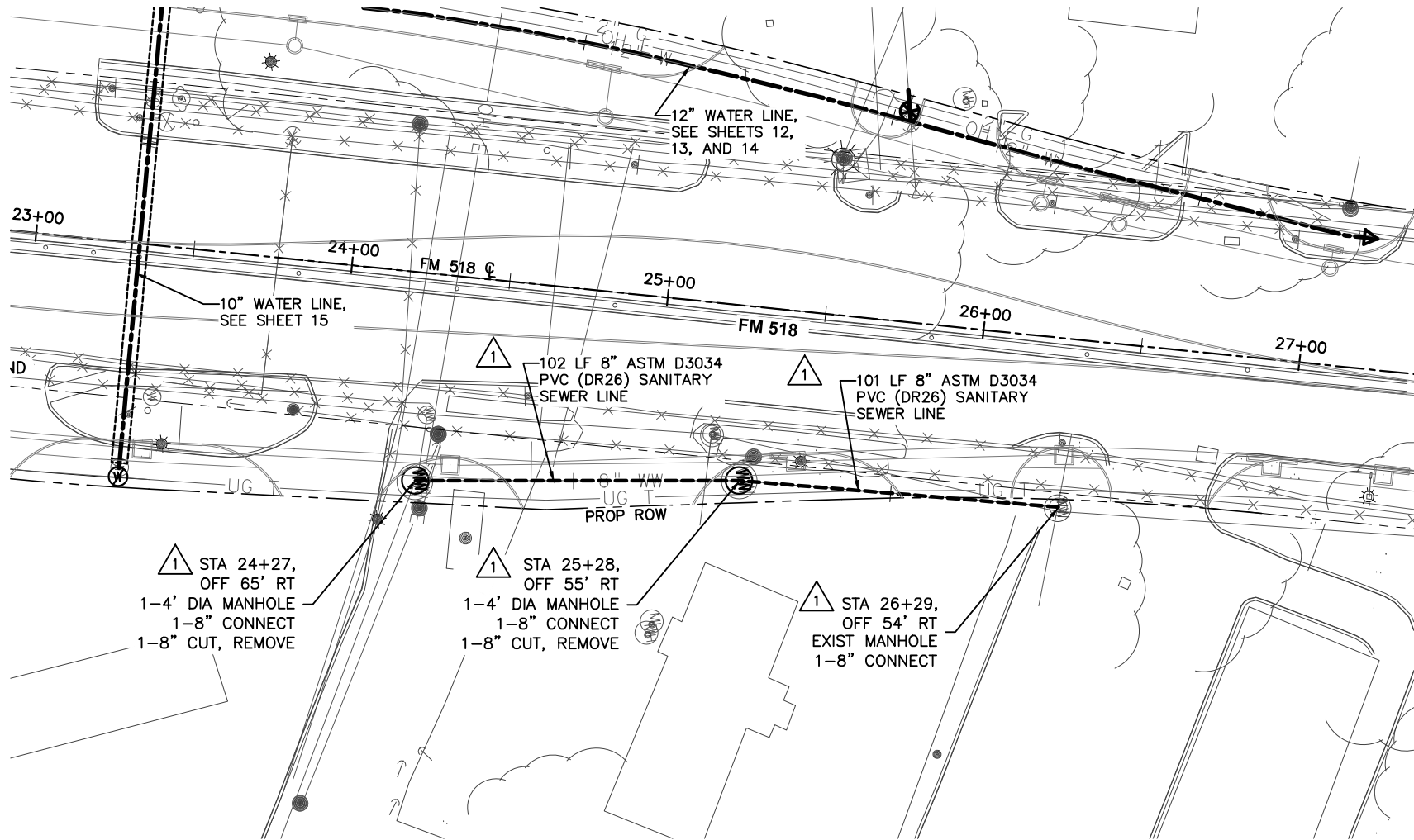
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(713) 622-9264
FAX (713) 622-9265

Texas P.E. Firm
Registration No. F-754



TEXAS DEPARTMENT OF TRANSPORTATION

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TEXAS

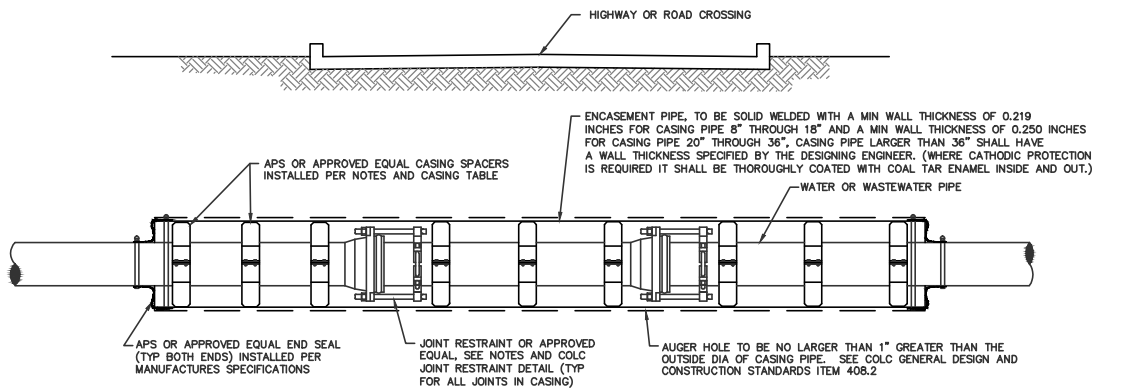
IH 45
UTILITY ADJUSTMENTS

SCALE:
HORZ : 1" = 50'
VERT : 1" = 5'

SHEET 17 OF 32

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2117
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

DATE: \$DATE\$
FILE: \$FILEL\$



LONGITUDINAL SECTION

NOTES:

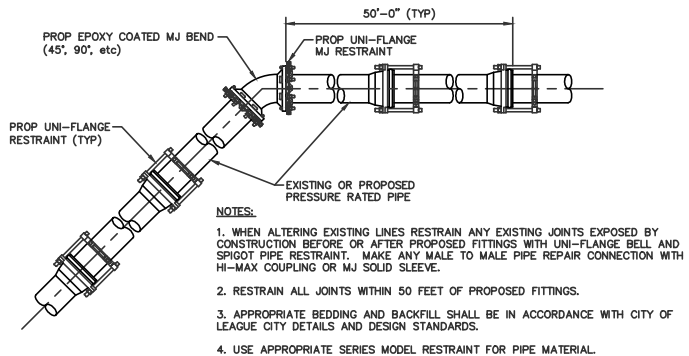
1. SPACERS FOR CARRIER PIPE SHALL BE ADVANCE PRODUCTS AND SYSTEMS, INC., STAINLESS STEEL, NEOPRENE OR APPROVED EQUAL AND SHALL BE INSTALLED TO CENTER CARRIER PIPE WITHIN CASING WITH A MAX. TOLERANCE OF $\frac{1}{8}$ " BETWEEN RUNNER AND CASING INSIDE AS WELL AS PREVENT THE CARRIER PIPE FROM RESTING ON THE BELLS WITHIN THE CASING. SEE CASING TABLE FOR SPACER DISTANCE AND NUMBER OF SPACERS.
2. CONTRACTOR TO TAKE INTO CONSIDERATION THE SIZE AND LIMITS OF PIPE RESTRAINTS WHEN ORDER AND INSTALLING CASING PIPE TO ALLOW FOR ADEQUATE CLEARANCE.
3. SPACERS TO BE PLACED A MIN OF 1' BACK FROM EACH JOINT THAT FALLS WITHIN CASING, A GREATER SET BACK MAY BE REQUIRED FOR LARGER PIPE. SEE CASING TABLE FOR ADDITIONAL INFO ON SPACING OF SUPPORTS.
4. WHEN INSTALLING GRAVITY PIPE WITH CASING CONTRACTOR SHALL TAKE INTO CONSIDERATION PIPE GRADE SO THAT THE SEWER PIPE MAINTAINS THE PROPER FALL.
5. JOINT RESTRAINTS ARE REQUIRED ON ALL JOINTS THAT FALL UNDER OR WITHIN 10' OF HIGHWAY CROSSINGS REGARDLESS OF PIPE MATERIAL, CASED OR NOT. SEE COLC PIPE RESTRAINT DETAIL. ALTERNATIVE RESTRAINT DEVICES OR PIPE WITH BUILD IN RESTRAINTS (w.CERTANTEED) MAY BE SUBMITTED BY DESIGN ENGINEER FOR APPROVAL.

SPECIAL NOTE: WHERE OPEN CUT GRAVITY SEWER, HIGHWAY, ROAD AND DITCH CROSSING CONSTRUCTION WILL BE DONE CONTRACTOR MAY USE GRIFFIN-20, AMSTED, H2SEWER SAFE, DUCTILE IRON SEWER PIPE, WITH SEMPER COAT LINING.

CASING TABLE		
NOMINAL PIPE SIZE DIA IN INCHES	CASING SIZE INSIDE DIA IN INCHES	MAX SKID SUPPORT SPACING IN FEET
4	8-10	4.7
6	10-12	6.3
8	14-16	7.4
10	16-18	8.5
12	18-20	9.6
15	20-22	11.0
18	24-26	12.0
21	28-30	12.0
24	31-33	12.0
27	34-36	12.0

PIPE CASING DETAIL

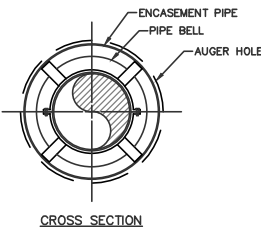
NTS 4-2013



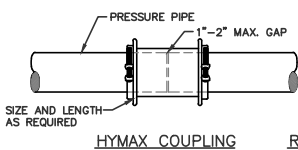
HORIZONTAL ADJUSTMENT RESTRAINT DETAIL FOR PRESSURE LINE WITH BEND

NTS

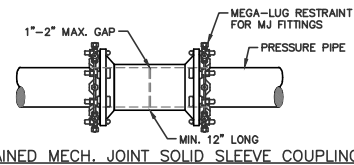
4-2012



CROSS SECTION



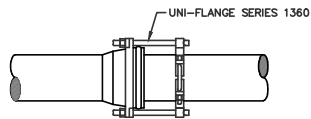
HYMAX COUPLING



RESTRAINED MECH. JOINT SOLID SLEEVE COUPLING

PIPE COUPLING DETAIL

NTS 8-2012



PVC BELL AND SPIGOT RESTRAINT

SPECIFICATIONS:

RESTRAINT DEVICES FOR P.V.C. (AWWA C-900) AND P.V.C. PRESSURE FITTINGS (AWWA C-907) SHALL CONSIST OF A SPLIT RING INSTALLED ON THE PIPE SPIGOT, CONNECTED TO A SPLIT BACK-UP RING SEATED BEHIND THE FITTING BELL.

THE SPLIT RESTRAINT RING SHALL INCORPORATE A SERIES OF MACHINED SERRATIONS (NOT "AS CAST") ON THE INSIDE DIAMETER TO PROVIDE POSITIVE RESTRAINT, EXACT FIT, AND 360° CONTACT AND SUPPORT OF THE PIPE WALL.

THE TWO HALVES OF THE SPLIT BACK UP RING SHALL INTER-LOCK WITHOUT THE NEED FOR ADDITIONAL BOLTS AND SHALL FORM A BEVELED LEADING EDGE TO ASSURE EXACT FIT BEHIND THE FITTING BELL.

RESTRAINT DEVICES SHALL BE OF DUCTILE IRON, ASTM A536, GRADE 65-45-12 AND CONNECTING BOLTS SHALL BE OF HIGH STRENGTH, LOW ALLOY MATERIAL IN ACCORDANCE WITH ANSI/AWWA C111/21.11

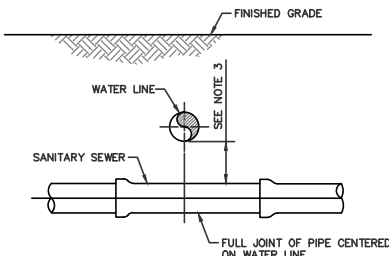
RESTRAINT DEVICES SHALL BE UNI-FLANGE SERIES 1360 OR APPROVED EQUAL.



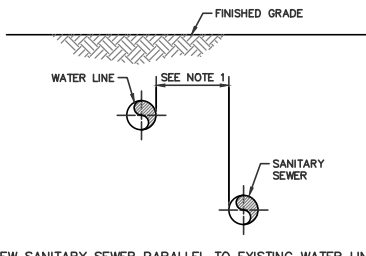
MECHANICAL JOINT RESTRAINT

PIPE RESTRAINT DETAIL

NTS 4-2012



NEW SANITARY SEWER CROSSING EXISTING WATER LINE



NEW SANITARY SEWER PARALLEL TO EXISTING WATER LINE

SANITARY SEWER INSTALLATION
CROSSING OR PARALLEL TO WATER LINE

NTS 4-2012

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COMBINATION WATER AND
SANITARY DETAILS
SHEET 1 OF 2



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STANDARD DETAILS

C-01

Project No.	00000		
Drawn	ARN	Checked	XXX
Scale	NTS	Date	OCT 2011
Sheet	0	of	00

SCALE: NONE SHEET 18 OF 32

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				2118
STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
CONT.	SECT.	JOB	HIGHWAY NO.	
0500	03	107, ETC	IH 45, ETC	

DATE: \$DATE\$
FILE: \$FILE\$

WATER DETAILS
SHEET 1 OF 7



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LEAGUE CITY
TEXAS

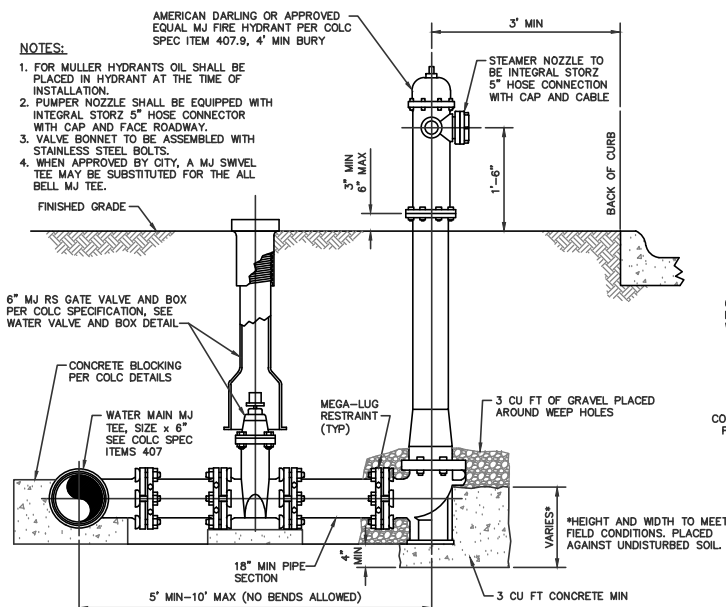
STANDARD DETAILS

W-01

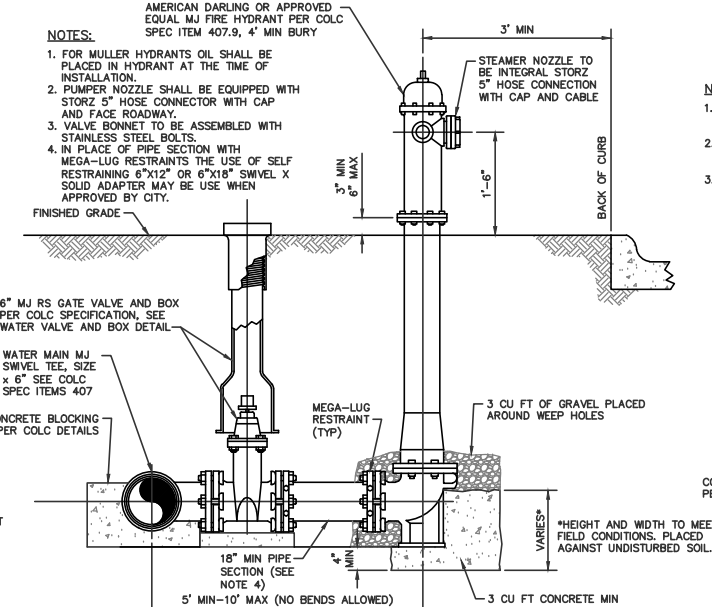
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Drawn	ARN
Checked	XXX
Scale	NTS
Date	April 2014
Sheet	0 of 00

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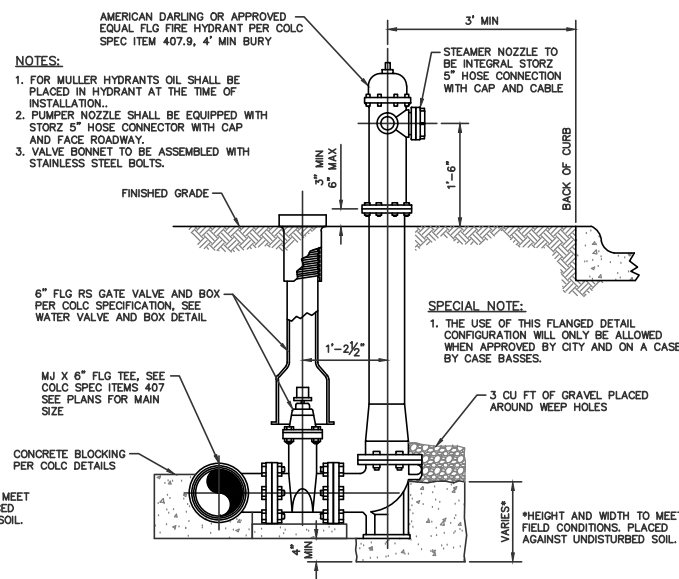
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STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
CONT.	SECT.	JOB	HIGHWAY NO.	
0500	03	107, ETC	IH 45, ETC	



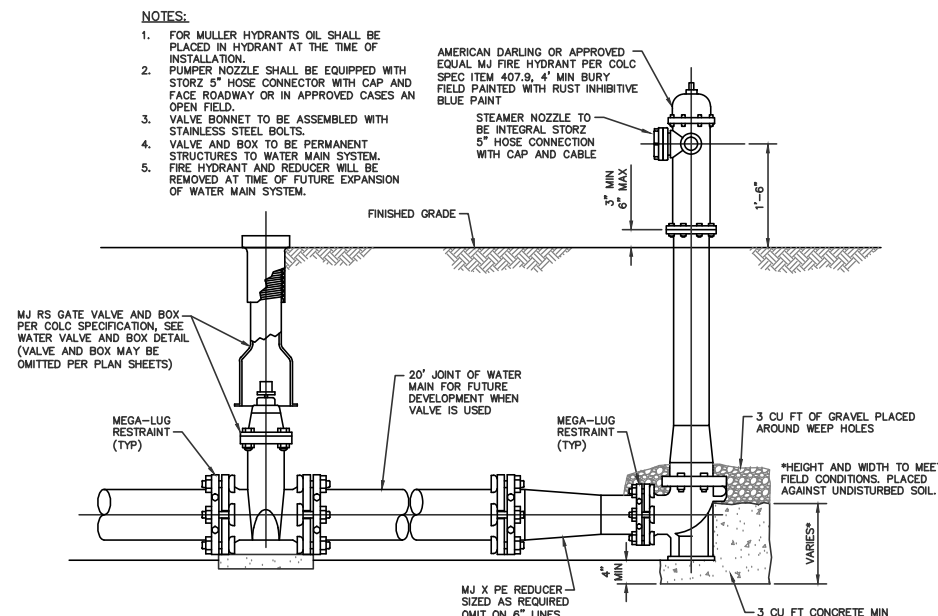
FIRE HYDRANT AND VALVE DETAIL
NTS 4-2014



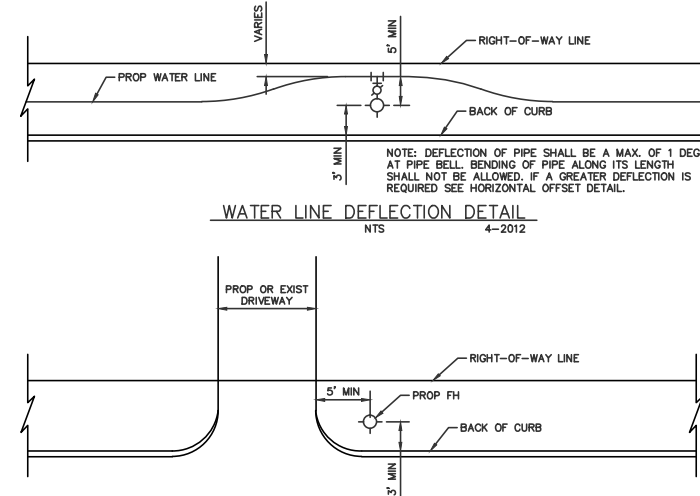
SPECIAL FIRE HYDRANT DETAIL #1
SWIVEL TEE FIRE HYDRANT AND VALVE DETAIL
NTS 4-2014



SPECIAL FIRE HYDRANT DETAIL #2
FLANGED FIRE HYDRANT AND VALVE DETAIL
NTS 4-2014



END OF LINE FIRE HYDRANT AND VALVE FOR FUTURE LINE EXTENSION
NTS 4-2014



WATER LINE DEFLECTION DETAIL
NTS 4-2012

FIRE HYDRANT TO PAVEMENT CLEARANCE DETAIL
NTS 4-2012

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FILE: \$FILE\$

WATER DETAILS
SHEET 2 OF 7



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STANDARD DETAILS

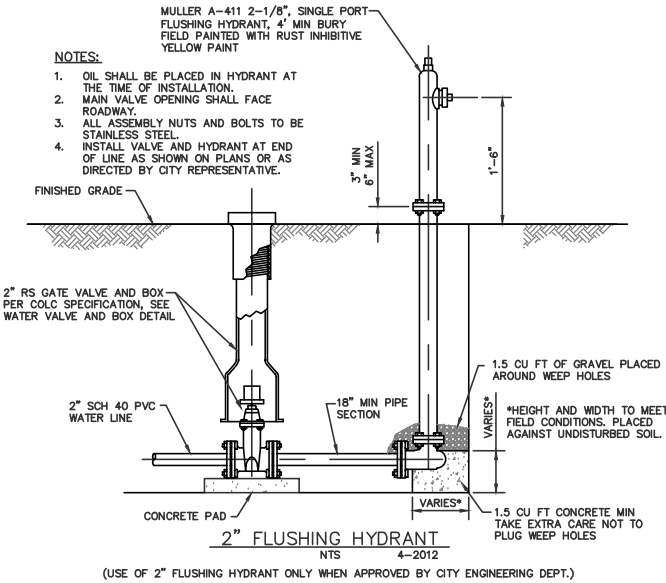
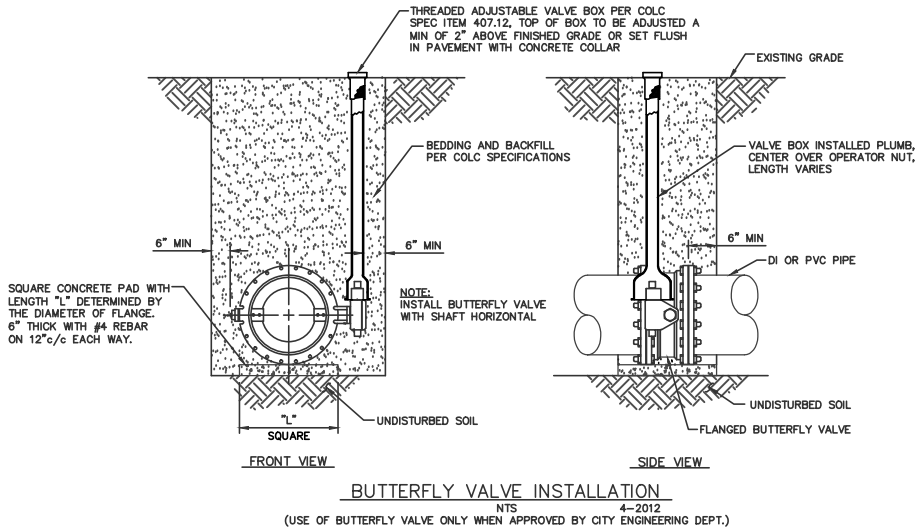
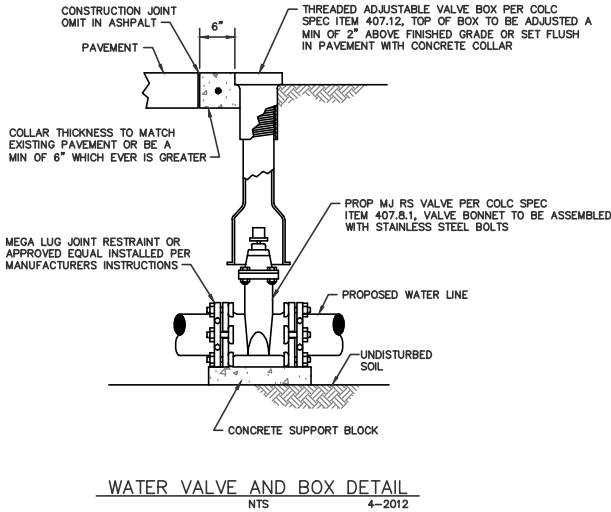
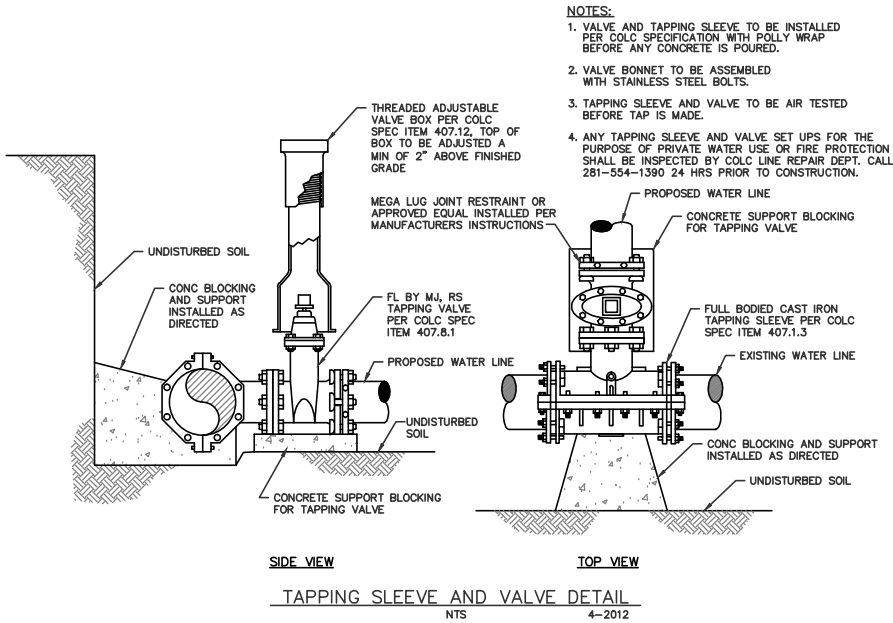
W-02

Project No.	00000		
Drawn	ARN	Checked	XXX
Scale	ARN	Date	OCT 2011
Sheet	0	of	00

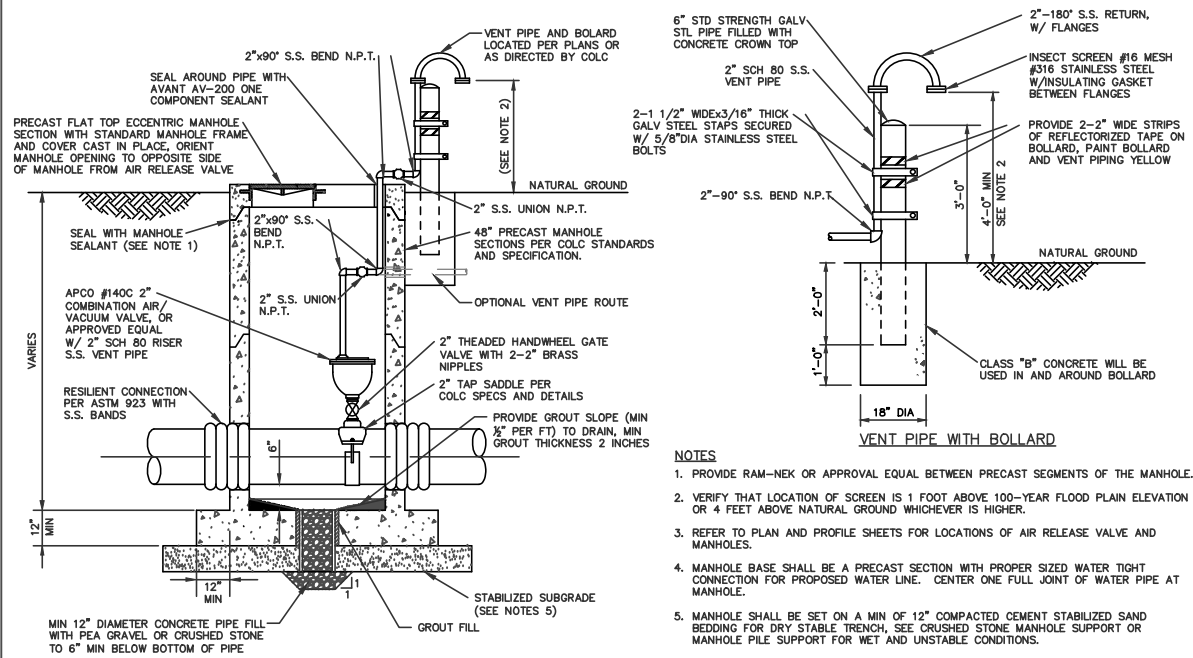
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SCALE: NONE SHEET 20 OF 32

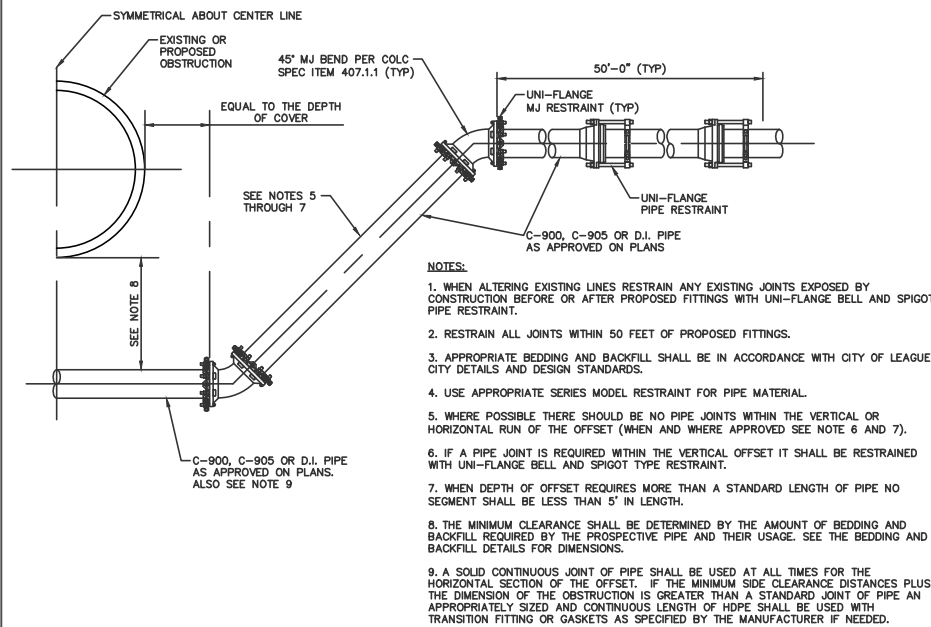
FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				2120
STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
CONT.	SECT.	JOB	HIGHWAY NO.	
0500	03	107, ETC	IH 45, ETC	



DATE: \$DATE\$
FILE: \$FILEL\$

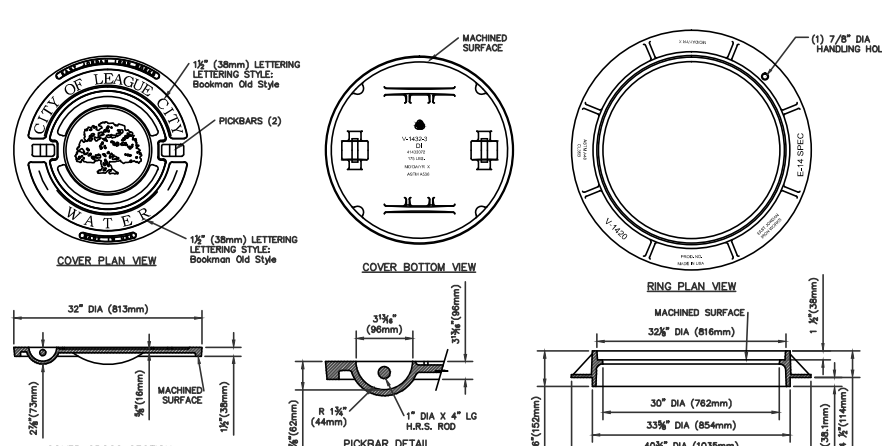


COMBINATION AIR RELEASE/AIR VACUUM VALVE ASSEMBLY DETAIL
NTS
4-2012



RESTRAINED MECHANICAL JOINT VERTICAL OFFSET
NTS
4-2012

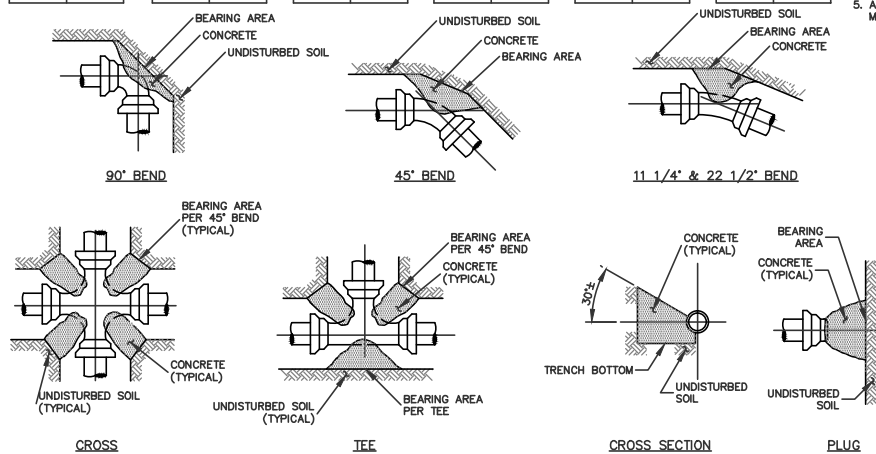
- NOTES:
1. PROVIDE RAM-NEK OR APPROVAL EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
 2. VERIFY THAT LOCATION OF SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND WHICHEVER IS HIGHER.
 3. REFER TO PLAN AND PROFILE SHEETS FOR LOCATIONS OF AIR RELEASE VALVE AND MANHOLES.
 4. MANHOLE BASE SHALL BE A PRECAST SECTION WITH PROPER SIZED WATER TIGHT CONNECTION FOR PROPOSED WATER LINE. CENTER ONE FULL JOINT OF WATER PIPE AT MANHOLE.
 5. MANHOLE SHALL BE SET ON A MIN OF 12" COMPACTED CEMENT STABILIZED SAND BEDDING FOR DRY STABLE TRENCH. SEE CRUSHED STONE MANHOLE SUPPORT OR MANHOLE PILE SUPPORT FOR WET AND UNSTABLE CONDITIONS.



- NOTES:
1. Cover Material Specs: Ductile Iron ASTM A 536, Shall Meet All AASHTO M 306 Proof-load Specifications and Requirements.
 2. Ring Material Specs: Gray Iron ASTM A 48 CL35B, Shall Meet All AASHTO M 306 Proof-load Specifications and Requirements.
 3. For Use On Public Water Mains Only. For Private Mains Use Generic List That Meet Above Specifications.
 4. Refer To City of League City General Design and Construction Standards Book Item 507.7.3 Paragraphs 1 and 2 For More Information.

HEAVY DUTY
WATER 32"
MANHOLE RING AND COVER DETAIL
NTS
4-2012

90° BEND			45° BEND			22 1/2° BEND			11 1/4° BEND			TEE			PLUG		
PIPE SIZE	BEARING AREA		PIPE SIZE	BEARING AREA		PIPE SIZE	BEARING AREA		PIPE SIZE	BEARING AREA		PIPE SIZE	BEARING AREA		PIPE SIZE	BEARING AREA	
4"	2 S.F.		4"	1 S.F.		4"	1 S.F.		4"	1 S.F.		4"	2 S.F.		4"	2 S.F.	
6"	4 S.F.		6"	3 S.F.		6"	1 S.F.		6"	1 S.F.		6"	3 S.F.		6"	3 S.F.	
8"	8 S.F.		8"	4 S.F.		8"	2 S.F.		8"	1 S.F.		8"	5 S.F.		8"	5 S.F.	
10"	12 S.F.		10"	6 S.F.		10"	3 S.F.		10"	2 S.F.		10"	8 S.F.		10"	8 S.F.	
12"	16 S.F.		12"	9 S.F.		12"	5 S.F.		12"	2 S.F.		12"	12 S.F.		12"	12 S.F.	
14"	22 S.F.		14"	12 S.F.		14"	6 S.F.		14"	3 S.F.		14"	15 S.F.		14"	15 S.F.	
16"	29 S.F.		16"	16 S.F.		16"	8 S.F.		16"	4 S.F.		16"	20 S.F.		16"	20 S.F.	
18"	36 S.F.		18"	20 S.F.		18"	10 S.F.		18"	5 S.F.		18"	25 S.F.		18"	25 S.F.	
20"	44 S.F.		20"	24 S.F.		20"	12 S.F.		20"	6 S.F.		20"	32 S.F.		20"	32 S.F.	
24"	64 S.F.		24"	36 S.F.		24"	18 S.F.		24"	9 S.F.		24"	45 S.F.		24"	45 S.F.	
30"	100 S.F.		30"	54 S.F.		30"	28 S.F.		30"	12 S.F.		30"	71 S.F.		30"	71 S.F.	
36"	103 S.F.		36"	72 S.F.		36"	38 S.F.		36"	15 S.F.		36"	77 S.F.		36"	77 S.F.	



HORIZONTAL THRUST BLOCKING DETAILS
NTS
4-2012

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WATER DETAIL
SHEET 3 OF 7



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STANDARD DETAILS

W-03

Project No.	00000
Drawn	ARN
Checked	XXX
Scale	NTS
Date	OCT 2011
Sheet	0

SCALE: NONE		SHEET 21 OF 32	
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
6		2121	
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

DATE: \$DATE\$
FILE: \$FILE\$

WATER DETAILS
SHEET 4 OF 7



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STANDARD DETAILS

W-04

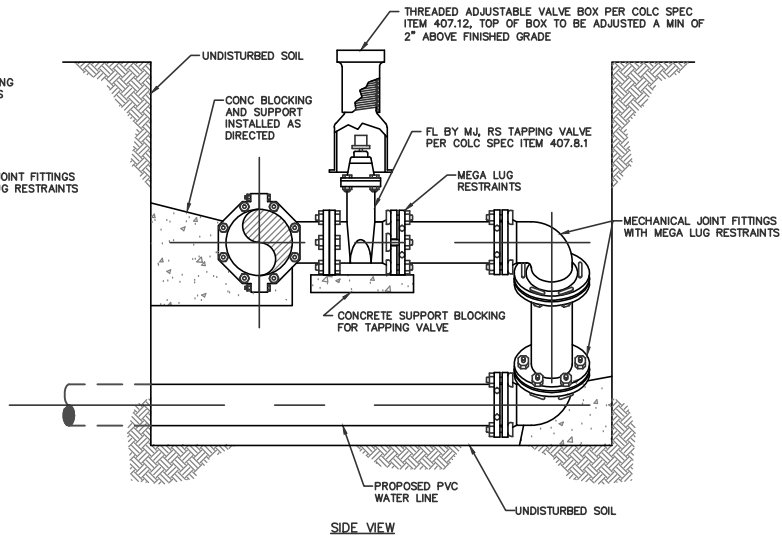
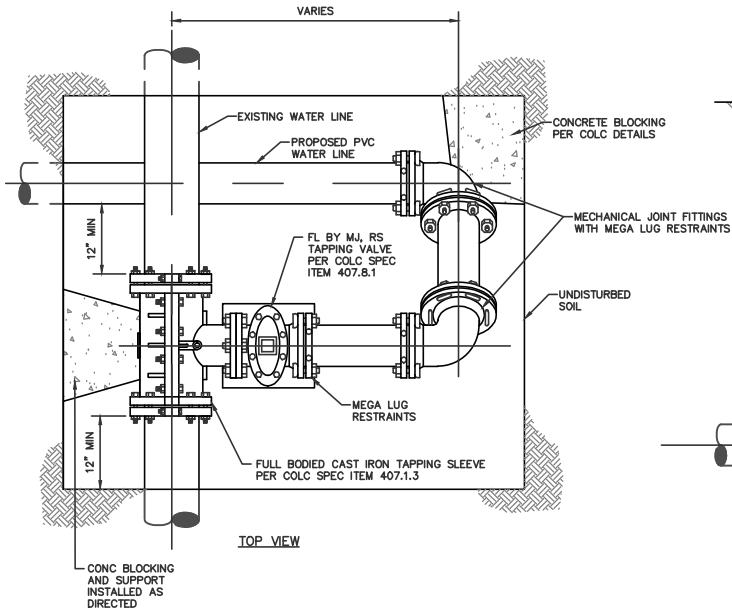
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Drawn	ARN	Checked	XXX
Scale	NTS	Date	OCT 2011
Sheet	0	of	00

SCALE: NONE SHEET 22 OF 32

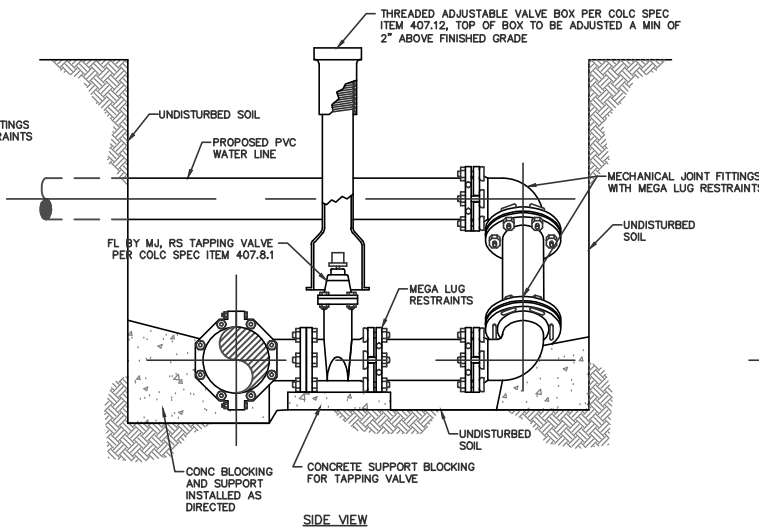
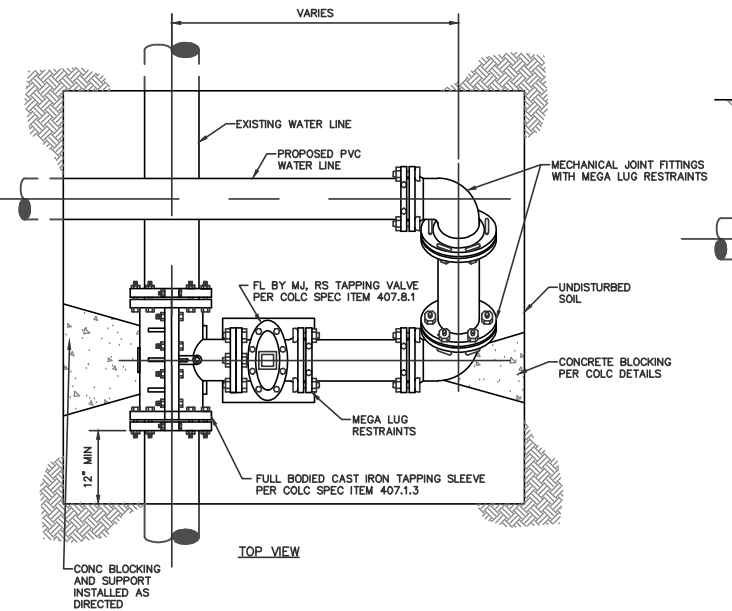
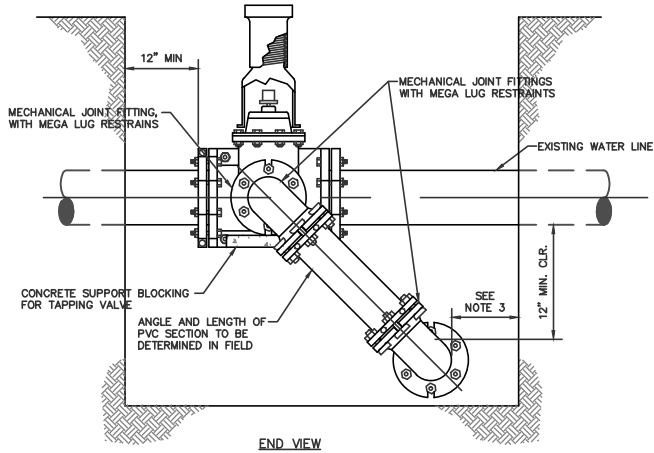
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6				2122
STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
CONT.	SECT.	JOB	HIGHWAY NO.	
0500	03	107, ETC	IH 45, ETC	

NOTES:

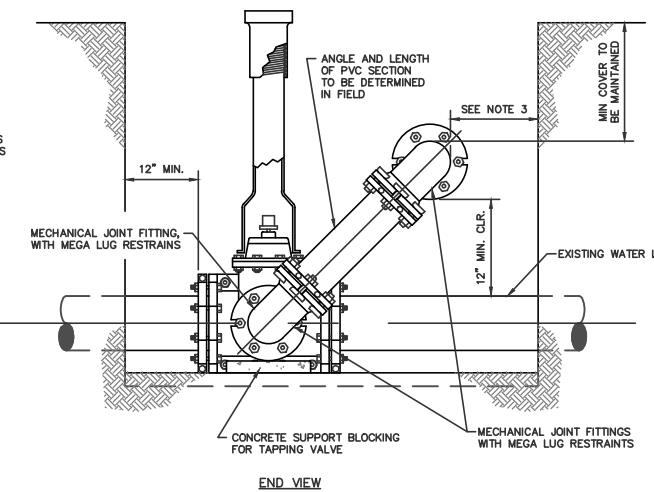
1. VALVE AND TAPPING SLEEVE TO BE INSTALLED PER COLC SPECIFICATION WITH POLY WRAP.
2. ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH SPECIFICATIONS FOR WATER MAIN CONSTRUCTION UNDER ITEM 407.
3. ALL CLEARANCES FOR BEDDING AND BACKFILL TO BE MAINTAINED. NO FITTING SHALL FALL UNDER PAVEMENT
4. SIZE OF TAP SADDLE, VALVE AND PIPING TO BE SHOWN ON PLANS.
5. VALVE BONNET TO BE ASSEMBLED WITH STAINLESS STEEL BOLTS.
6. SEE TAPPING SLEEVE AND VALVE DETAIL FOR ADDITIONAL NOTES.
7. ANY TAPPING SLEEVE AND VALVE SET UPS FOR THE PURPOSE OF PRIVATE WATER USE OR FIRE PROTECTION SHALL BE INSPECTED BY COLC LINE REPAIR DEPT. CALL 281-554-1390 24 HRS PRIOR TO CONSTRUCTION.
8. MINIMUM CLEARANCES NEAR OBSTRUCTIONS SUCH AS STORM SEWERS AND OTHER DRY UTILITIES SHALL BE 5' HORIZONTAL DISTANCE. OTHER OBSTRUCTION MAY REQUIRE ADDITIONAL FOOTAGE DETERMINED ON THE SIZE OF THE OBSTRUCTION AND ON A CASE BY CASE SITUATION.
9. UNLESS OTHERWISE APPROVED ALL BACK TAPS SHALL PASS UNDER THE MAIN LINE THAT IS BEING TAPPED. ANY BACK TAP PASSING OVER MAIN LINE SHALL MAINTAIN MINIMUM CLEARANCES AND COVER PER COLC DESIGN AND CONSTRUCTION STANDARDS.



BACK TAP UNDER MAIN
NTS 4-2012

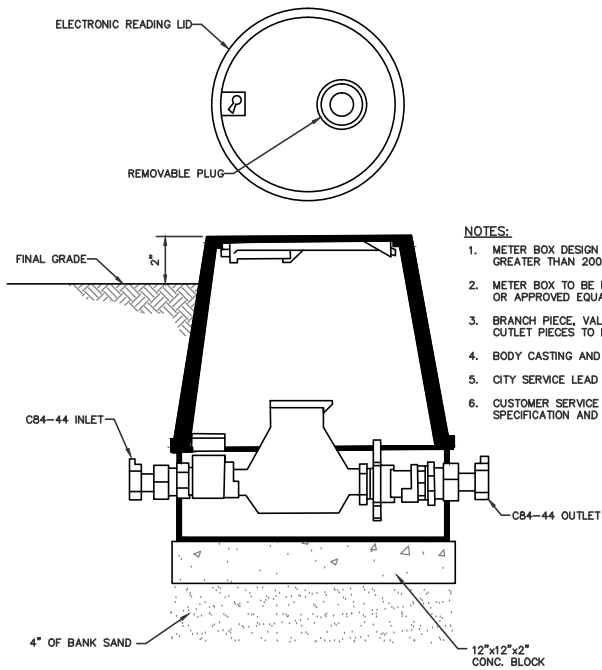


(SEE NOTE 9)
BACK TAP OVER MAIN
NTS 4-2012



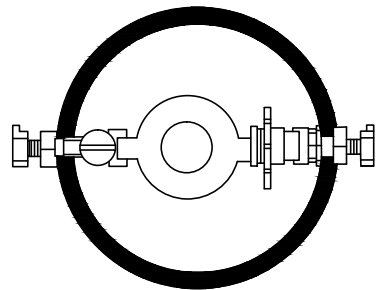
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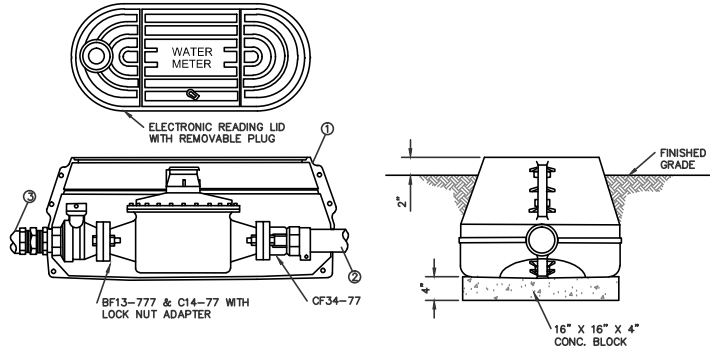


NOTES:

1. METER BOX DESIGN FOR SERVICE TO HOMES WITH GREATER THAN 2000 SQ. FT.
2. METER BOX TO BE FORD YL111-444-TP YOKE BOX OR APPROVED EQUAL.
3. BRANCH PIECE, VALVES EXPANSION CONNECTIONS, AND OUTLET PIECES TO BE WATER WORKS BRASS.
4. BODY CASTING AND LID TO BE CAST IRON LOCKING.
5. CITY SERVICE LEAD MATERIAL TO BE POLYETHYLENE.
6. CUSTOMER SERVICE LINE TO BE PER BUILDING CODE SPECIFICATION AND HAVE A MIN. ONE FOOT COVER.



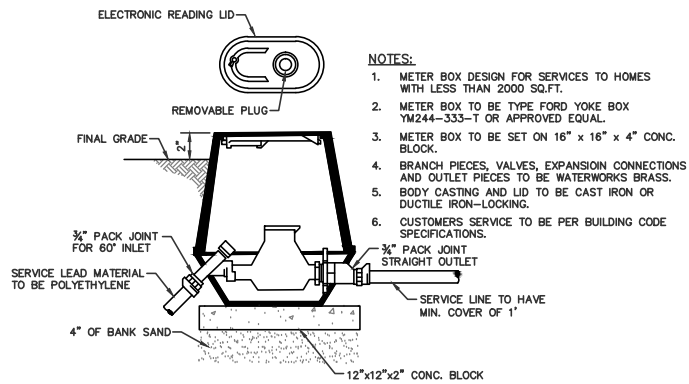
1" METER BOX DETAIL
NTS 4-2012



NOTES:

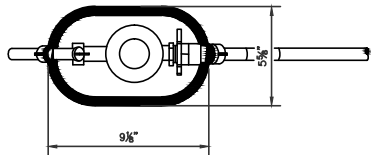
1. FORD 2" METER BOX WITH CAST IRON BODY, ASTM A48-CLASS 25, EPOXY COATED, FUSION BONDED, #FPM8-7EP-TP OR APPROVED EQUAL.
2. CUSTOMER SERVICE LINE MATERIAL TO BE PER CITY SPECIFICATIONS AND HAVE A MIN COVER OF 12 INCHES.
3. CITY SERVICE LEAD MATERIAL TO BE POLYETHYLENE.

1-1/2" & 2" METER BOX DETAIL
NTS 4-2012

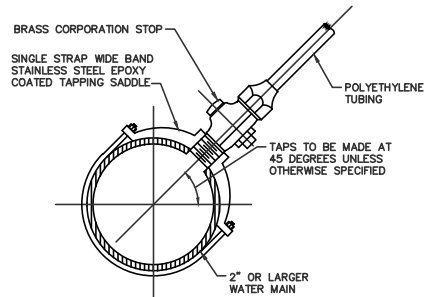


NOTES:

1. METER BOX DESIGN FOR SERVICES TO HOMES WITH LESS THAN 2000 SQ.FT.
2. METER BOX TO BE TYPE FORD YOKE BOX YM244-333-T OR APPROVED EQUAL.
3. METER BOX TO BE SET ON 16" x 16" x 4" CONC. BLOCK.
4. BRANCH PIECES, VALVES, EXPANSION CONNECTIONS AND OUTLET PIECES TO BE WATERWORKS BRASS.
5. BODY CASTING AND LID TO BE CAST IRON OR DUCTILE IRON-LOCKING.
6. CUSTOMERS SERVICE TO BE PER BUILDING CODE SPECIFICATIONS.



3/4" x 3/4" SINGLE SERVICE METER BOX DETAIL
NTS 4-2012



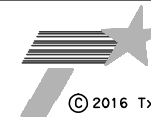
3/4" TO 2" SERVICE TAP DETAIL
NTS 4-2012

WATER DETAILS
SHEET 5 OF 7



4828 LOOP CENTRAL DRIVE,
SUITE 800
HOUSTON, TEXAS 77081
(713) 622-9264
FAX (713) 622-9265

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Registration No. F-754



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TEXAS

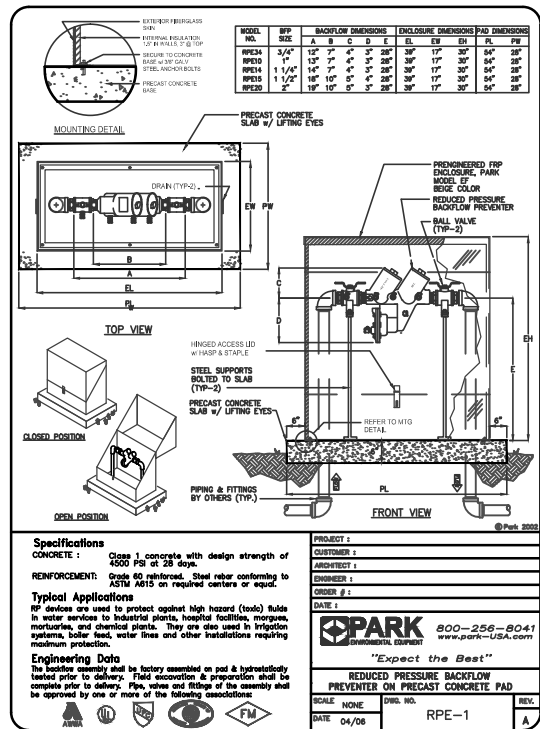
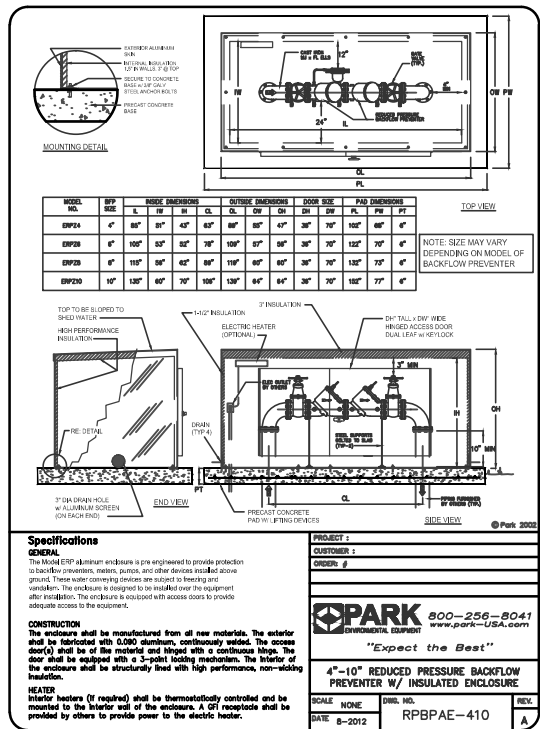
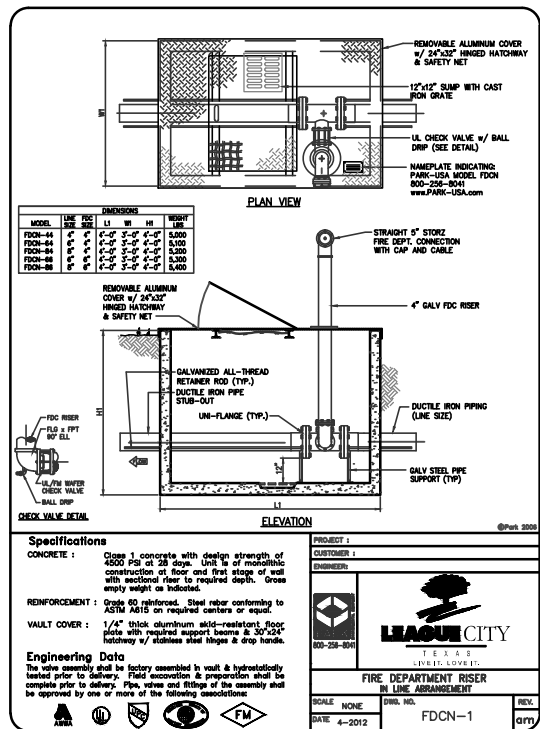
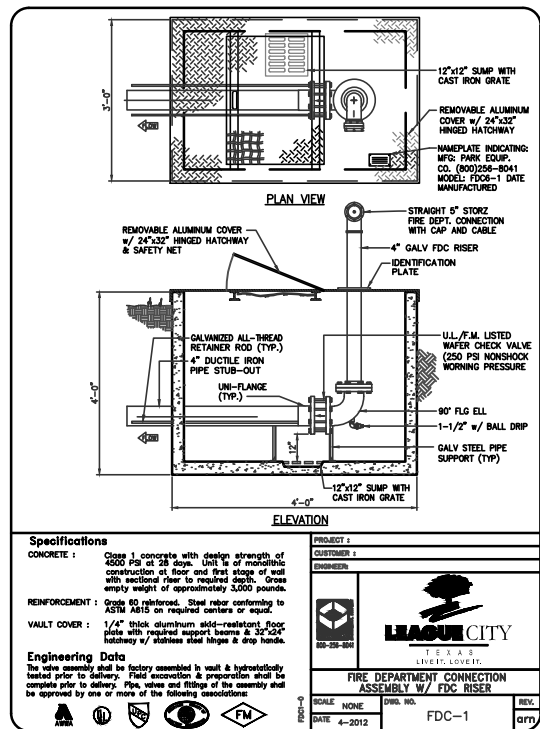
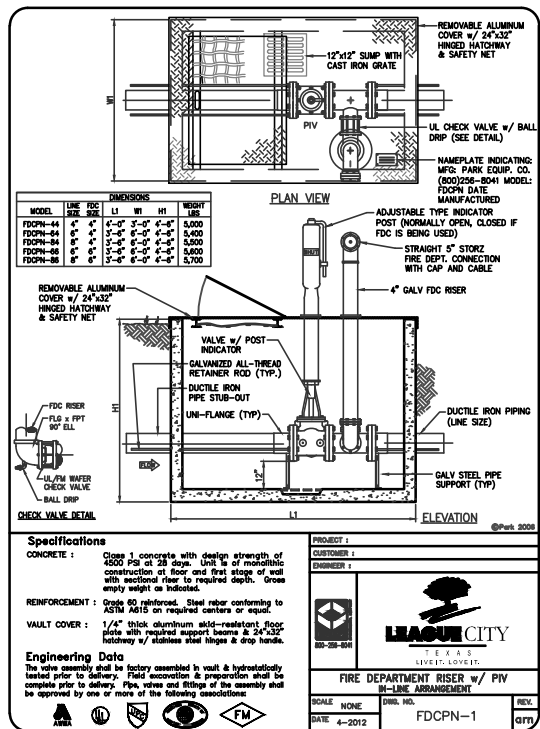
STANDARD DETAILS

W-05

Project No.	00000		
Drawn	ARN	Checked	XXX
Scale	NTS	Date	OCT 2011
Sheet	0	Of	00

SCALE: NONE SHEET 23 OF 32

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				2123
STATE	DIST.	COUNTY		
TEXAS	HOU	HARRIS, ETC		
CONT.	SECT.	JOB	HIGHWAY NO.	
0500	03	107, ETC	IH 45, ETC	



DISCLAIMER:

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WATER DETAILS
SHEET 7 OF 7



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TEXAS DEPARTMENT OF TRANSPORTATION

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STANDARD DETAILS

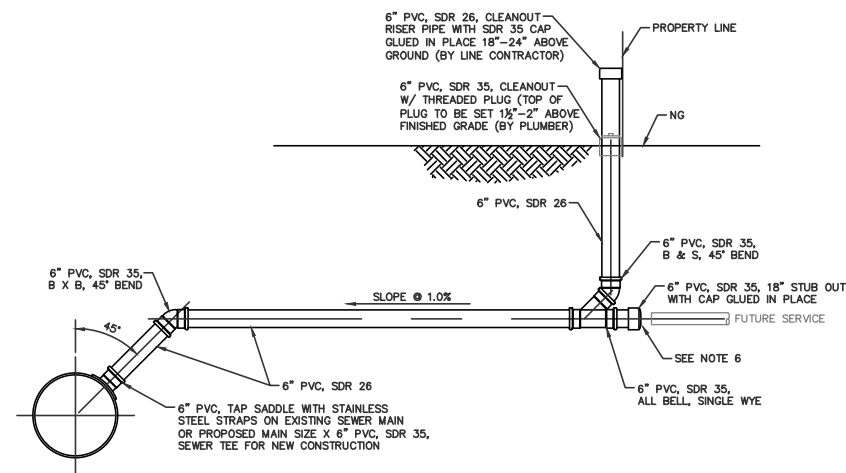
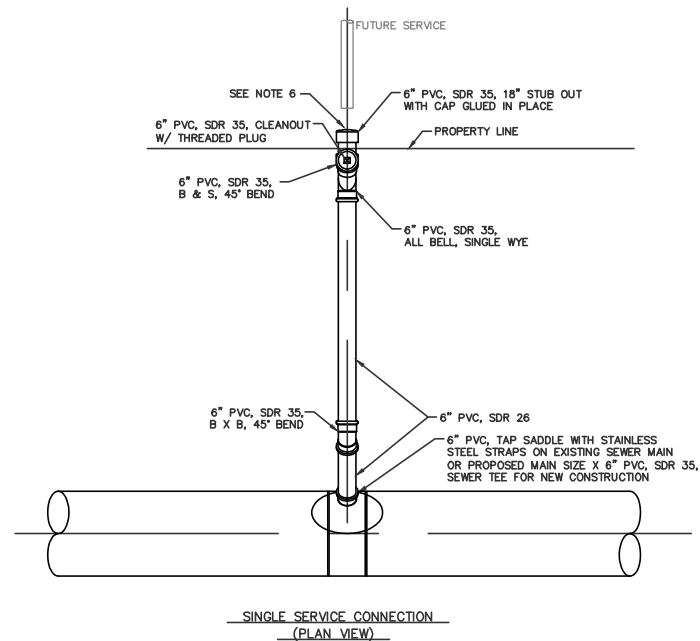
W-07

Project No.	00000
Drawn	ARN
Checked	XXX
Scale	NTS
Date	OCT 2011
Sheet	0 of 00

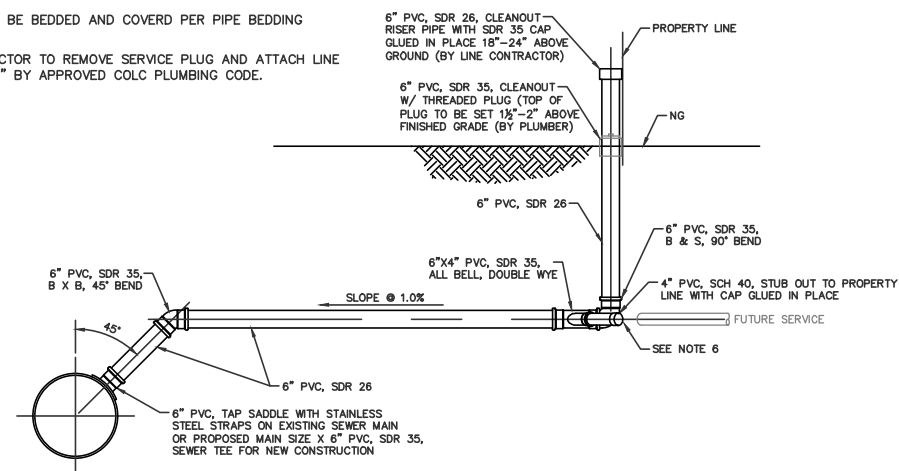
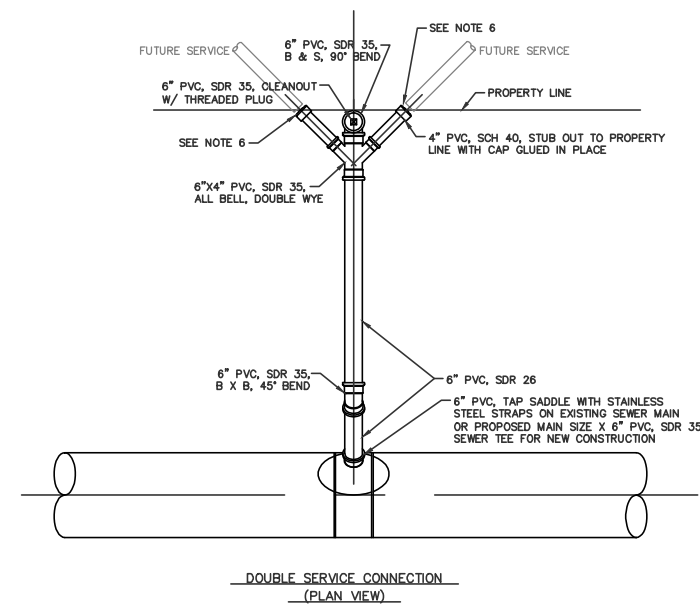
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FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		2125
STATE	DIST.	COUNTY
TEXAS	HOU	HARRIS, ETC
CONT.	SECT.	JOB
0500	03	107, ETC
		HIGHWAY NO.
		IH 45, ETC

SANITARY SERVICE TAP AND
CLEAN OUT DETAILS
SHEET 1 OF 3



- NOTES:**
1. CEMENT STABILIZED SAND TO BE PLACED AROUND TAPPING SADDLE OR SEWER TEE AT MAIN LINE.
 2. SEWER MAIN CONTRACTOR TO EXTEND 6" CLEAN OUT RISER PIPE 18" TO 24" ABOVE GRADE AT TIME OF CONSTRUCTION WITH CAP GLUED IN PLACE.
 3. PLUMBING CONTRACTOR TO SET TOP OF 6" THREADED ADAPTER CLEAN OUT WITH PLUG 1½" TO 2" ABOVE FINISHED GRADE.
 4. ALL FITTINGS AND PIPE TO BE GASKETED BELL AND SPIGOT EXCEPT WHERE NOTED ON DETAIL.
 5. SERVICE LEADS TO BE BEDDED AND COVERED PER PIPE BEDDING DETAILS.
 6. PLUMBING CONTRACTOR TO REMOVE SERVICE PLUG AND ATTACH LINE FROM HOUSE TO 6" BY APPROVED COLC PLUMBING CODE.

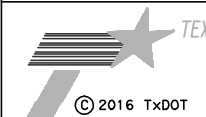


SERVICE TAP, LEAD AND CLEAN OUT DETAILS
NTS 4-2012

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LEAGUE CITY
TEXAS

STANDARD DETAILS

WW-01

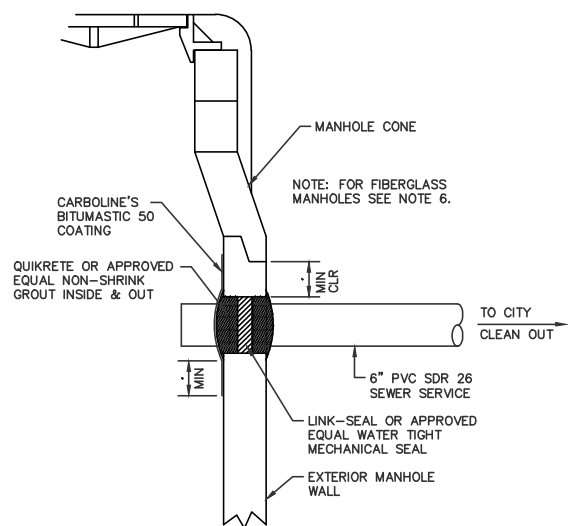
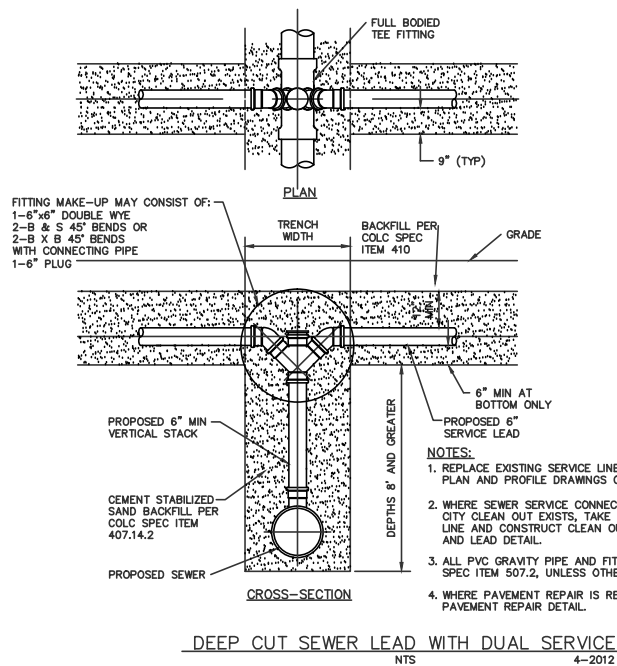
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Drawn	ARN	Checked	XXX
Scale	NTS	Date	OCT 2011
Sheet	0	Of	00

SCALE: NONE SHEET 26 OF 32

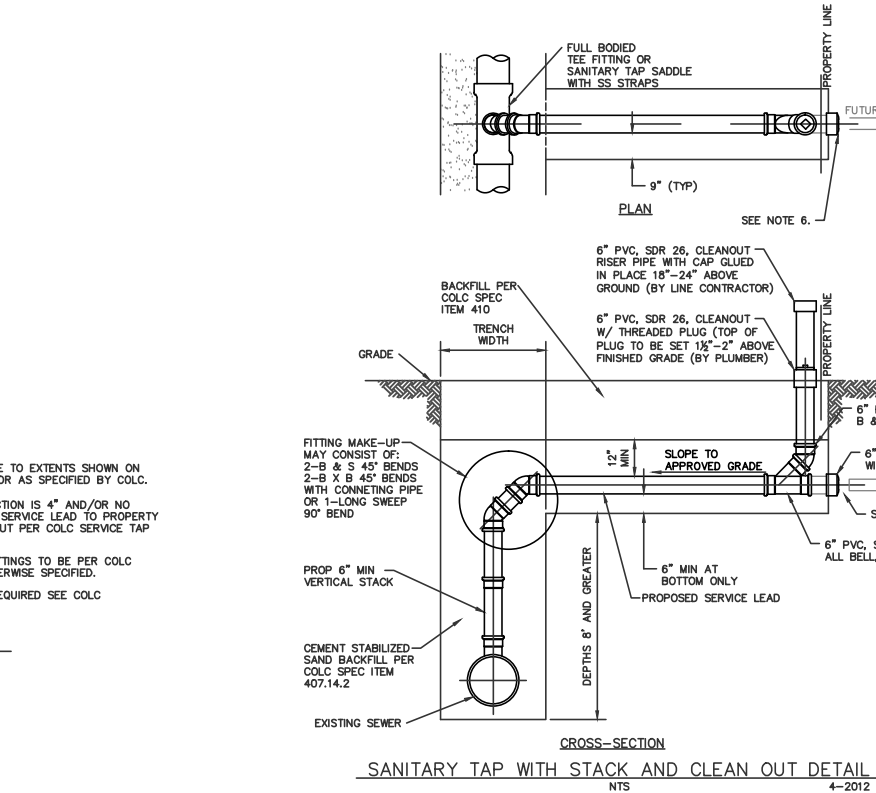
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6			2126
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107. ETC	IH 45. ETC

DATE: \$DATE\$
FILE: \$FILE\$

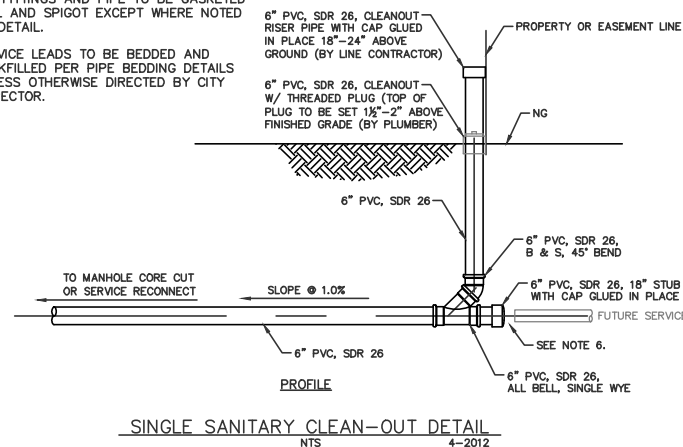
DATE: \$DATE\$
FILE: \$FILEL\$



- NOTES:**
1. NO TAPS WILL BE ALLOWED ON CONE SECTION OF MANHOLE.
 2. A MIN OF 6" CLEARANCE SHALL BE KEPT FROM ANY MANHOLE JOINT LINE.
 3. TAPS SHALL ENTER PERPENDICULAR TO MANHOLE.
 4. WATER TIGHT SEALING MATERIAL SHALL BE APPROVED BEFORE INSTALLING AND GROUTING OVER.
 5. PRELIMINARY INSPECTION OF TAP TO OCCURE BEFORE GROUT PLACEMENT; FINAL INSPECTION OF TAP TO OCCURE AFTER GROUT PLACEMENT AND INTERIOR PROTECTIVE COATING.
 6. IN CASES OF FIBERGLASS MANHOLES, TAPS SHALL BE MADE WITH AN "INSERTA-TEE" AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
 7. CONTACT COLC LINE REPAIR DEPT. © 281-554-1390 24 HRS IN ADVANCE OF MAKING TAP TO SCHEDULE INSPECTION.



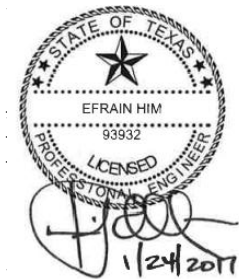
- NOTES:**
1. PLUMBING CONTRACTOR TO SET TOP OF 6" THREADED ADAPTER CLEAN OUT WITH PLUG, 1½" TO 2" ABOVE FINISHED GRADE.
 2. ALL FITTINGS AND PIPE TO BE GASKETED BELL AND SPIGOT EXCEPT WHERE NOTED ON DETAIL.
 3. SERVICE LEADS TO BE BEDDED AND BACKFILLED PER PIPE BEDDING DETAILS UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.



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SANITARY SERVICE TAP AND CLEAN OUT DETAILS SHEET 2 OF 3

- NOTES:**
1. CEMENT STABILIZED SAND TO BE PLACED AROUND TAPPING SADDLE OR SEWER TEE AT MAIN LINE.
 2. PRE ACCEPTANCE: SEWER MAIN CONTRACTOR TO EXTEND 6" CLEAN OUT RISER PIPE 18" TO 24" ABOVE GRADE AT TIME OF CONSTRUCTION WITH CAP GLUED IN PLACE.
 3. POST ACCEPTANCE: PLUMBING CONTRACTOR TO SET TOP OF 6" THREADED ADAPTER CLEAN OUT WITH PLUG 1½" TO 2" ABOVE FINISHED GRADE.
 4. ALL FITTINGS AND PIPE TO BE GASKETED BELL AND SPIGOT EXCEPT WHERE NOTED ON DETAIL.
 5. SERVICE LEADS TO BE BEDDED AND COVER PER PIPE BEDDING DETAILS.
 6. PLUMBING CONTRACTOR TO REMOVE SERVICE PLUG AND ATTACH LINE FROM HOUSE TO SERVICE LEAD BY APPROVED COLC PLUMBING CODE.
 7. ALL PVC GRAVITY PIPE AND FITTINGS TO BE PER COLC SPEC ITEM 507.2, UNLESS OTHERWISE SPECIFIED.
 8. WHERE PAVEMENT REPAIR IS REQUIRED SEE COLC PAVEMENT REPAIR DETAIL.



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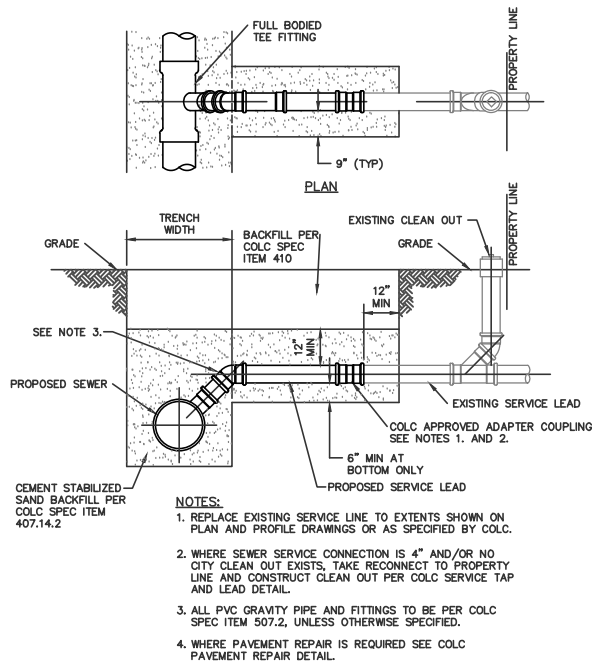
LEAGUE CITY TEXAS STANDARD DETAILS

WW-02

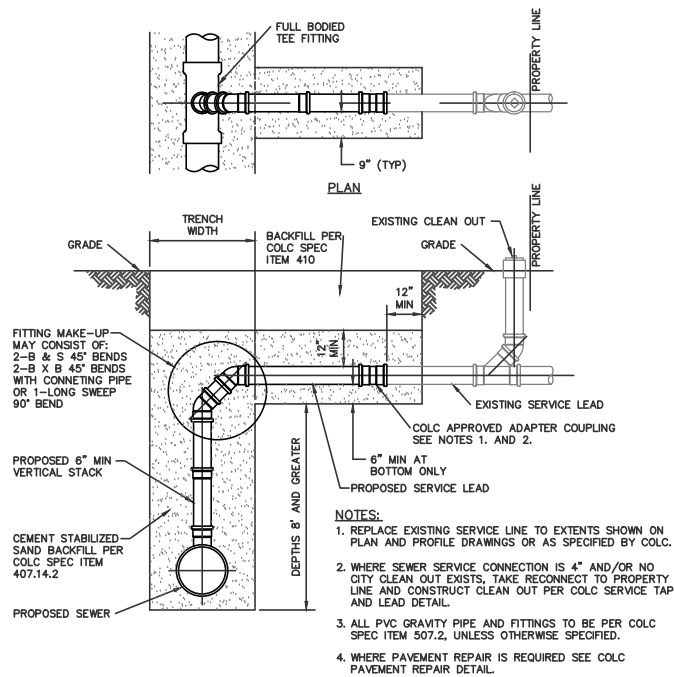
Project No.	00000
Drawn	ARN
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Scale	NTS
Date	OCT 2011
Sheet	0 of 00

SCALE: NONE		SHEET 27 OF 32	
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2127
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

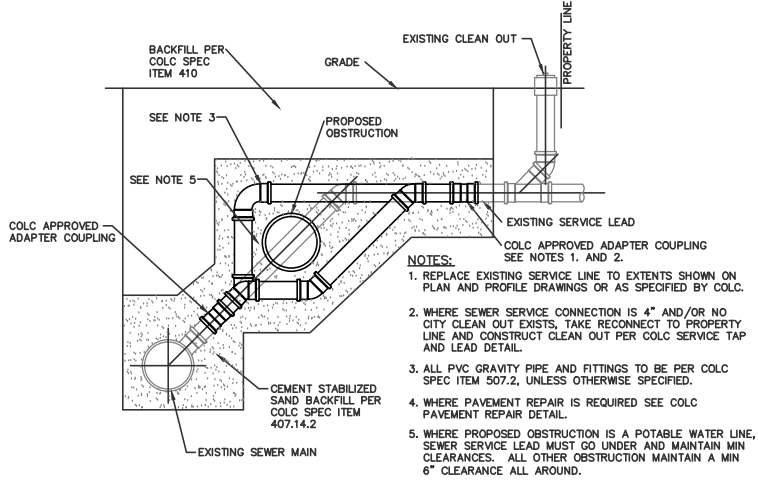
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CROSS-SECTION
SEWER LEAD RECONNECT DETAIL
NTS 4-2012



CROSS-SECTION
DEEP CUT SEWER LEAD AND RECONNECT
NTS 4-2012



SEWER LEAD OBSTRUCTION DETAIL
NTS 4-2012

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SANITARY SERVICE TAP AND
CLEAN OUT DETAILS
SHEET 3 OF 3



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LEAGUE CITY
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STANDARD DETAILS

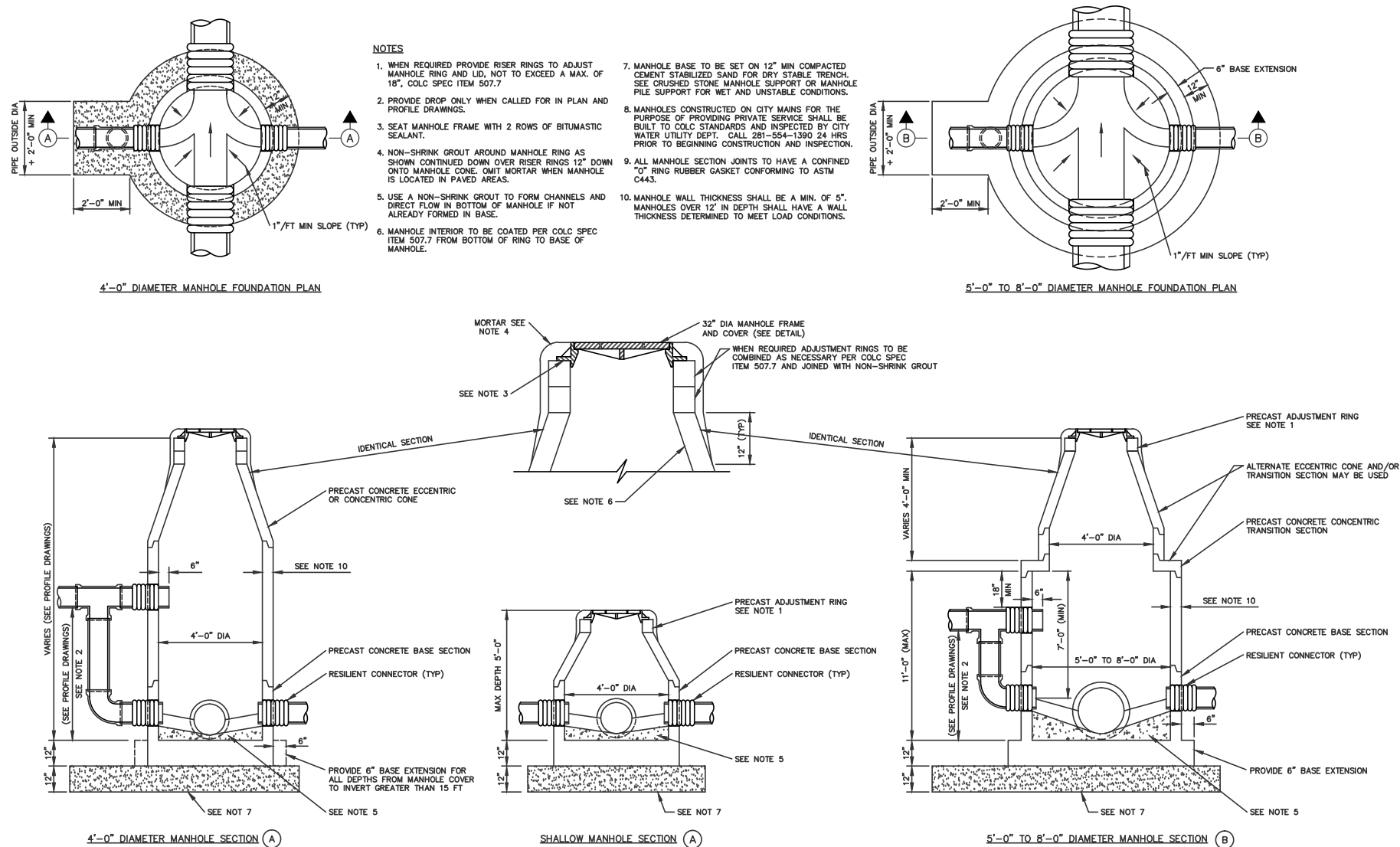
WW-03

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Drawn	ARN	Checked	XXX
Scale	NTS	Date	OCT 2011
Sheet	0	Of	00

SCALE: NONE		SHEET 28 OF 32	
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2128
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

DATE: \$DATE\$
FILE: \$FILE\$

SANITARY MANHOLE DETAILS
SHEET 1 OF 4



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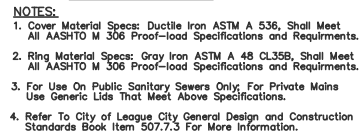
LEAGUE CITY
TEXAS

STANDARD DETAILS

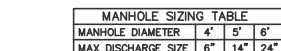
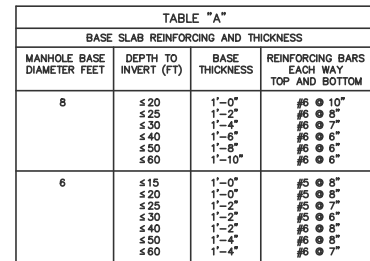
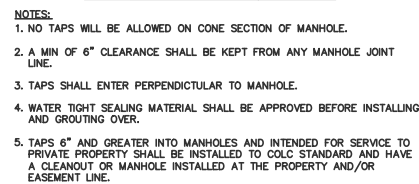
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Project No.	00000
Drawn	ARN
Checked	XXX
Scale	NTS
Date	OCT 2011
Sheet	0 of 00

SCALE: NONE		SHEET 29 OF 32	
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2129
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC



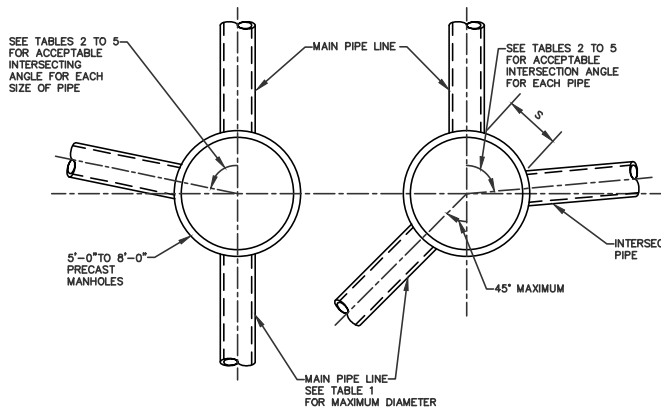
MANHOLE RING AND COVER DETAIL



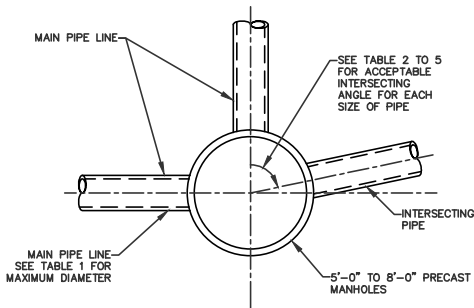
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STANDARD DETAILS

DATE: \$DATE\$
FILE: \$FILEL\$



MAX 24" ID MAIN PIPE ALLOWED FOR STRAIGHT THROUGH TO 45° DEFLECTION



MAX 21" ID MAIN PIPE ALLOWED FOR 45° TO 90° DEFLECTION

TABLE 1 MAXIMUM MAIN PIPE DIAMETER (ID) IN INCHES			
MANHOLE DIAMETER (FT)	STRAIGHT THROUGH TO 45° DEFLECTION	WITH 90° DEFLECTION	TABLE TO BE USED
5	36	27	2
6	42	33	3
7	48	36	4
8	60	42	5

TABLE 2 MIN ANGLE AND INTERSECTING PIPE SIZES FOR AN 5'-0" DIA MANHOLE												
INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES IN INCHES											
8	49	50	54	58	61	66	69	73	77	82	86	
10		53	57	61	64	68	71	76	79	84	88	
12			61	65	68	72	75	80	83	88		
15				68	71	75	79	83	87			
18					75	79	82	87	90			
21						83	86	90				
24							90					
27												
30												
33												
36												

TABLE 3 MIN ANGLE AND INTERSECTING PIPE SIZES FOR AN 6'-0" DIA MANHOLE													
INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES IN INCHES												
8	40	42	45	49	51	54	57	61	63	67	70	78	
10		44	47	50	53	56	59	62	66	68	72	79	
12			50	54	56	60	62	66	68	72	75	83	
15				57	59	62	65	69	71	75	78	85	
18					62	65	68	71	74	78	81	88	
21						68	71	74	77	81	84		
24							74	77	80	84	87		
27								83	85	89			
30													
33													
36													
42													

TABLE 4 MIN ANGLE AND INTERSECTING PIPE SIZES FOR AN 7'-0" DIA MANHOLE														
INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES IN INCHES													
8	35	36	39	42	44	47	49	52	54	57	59	65	71	
10		38	40	43	45	48	50	53	55	59	61	67	73	
12			43	46	48	51	53	56	58	61	64	70	76	
15				48	50	53	55	58	61	64	66	72	78	
18					53	56	58	61	63	66	69	74	81	
21						58	60	63	66	69	71	77	83	
24							63	66	68	71	74	79	86	
27								70	72	76	78	84	90	
30									78	81	83	89		
33										86	88			
36														
42														
48														

TABLE 5 MIN ANGLE AND INTERSECTING PIPE SIZES FOR AN 8'-0" DIA MANHOLE																	
INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES IN INCHES																
8	30	32	34	36	38	41	43	45	47	50	52	56	61	67	74		
10		33	35	38	40	42	44	46	48	51	53	58	63	68	77		
12			38	40	42	44	46	49	51	53	55	60	65	71	79		
15				42	44	47	48	51	53	56	58	62	67	73	81		
18					46	49	51	53	55	58	60	64	70	75	83		
21						51	53	55	57	60	62	67	72	77	85		
24							55	57	59	62	64	69	74	79	89		
27								61	63	66	68	73	78	83			
30									67	70	72	77	82	87			
33										74	76	81	86				
36											81	86					
42																	
48																	
54																	
60																	

5 FT TO 8 FT MANHOLE NOTE
NTS 4-2012

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SANITARY MANHOLE DETAILS
SHEET 4 OF 4



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LEAGUE CITY
TEXAS

STANDARD DETAILS

WW-07

Project No.	00000		
Drawn	ARN	Checked	XXX
Scale	NTS	Date	OCT 2011
Sheet	0	Of	00

SCALE: NONE SHEET 32 OF 32

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2132
STATE	DIST.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

LEAGUE CITY IH 45 UTILITY ADJUSTMENT QUANTITIES																
SHEET NO	ITEM NO.	7017									7049					
	DESC CODE	6005	6051	6074	6077	6091	6096	6097	6098	6099	6020	6021	6068	6069	6076	6083
	STATION LIMITS	SANITARY SEWER (8IN) (PVC) (C900)	MANHOLE (SAN SEWER) (4' DIA)	ABANDON SANITARY SEWER (2IN)	ABANDON SANITARY SEWER (8IN)	FM CONNECTION (FORCE MAIN)	SAN SWR (FM) PVC (RESTRAINED JT) 2IN	JCK BOR OR TUN CASING (STL) (SAN SWR) (8 IN)	CONNECTION TO EXIST MANHOLE (SANITARY SEWER)	CONNECT EXIST SAN SWR TO MANHOLE	WTR MAIN PIPE (PVC) (RESTRAINED JT) 8 IN	WTR MAIN PIPE (PVC) (RESTRAINED JT) 12 IN	JCK TUN BOR OR AUG CSG (STL) (16IN)	JCK TUN BOR OR AUG CSG (STL) (18IN)	SERVICE LINE (SHORT SIDE) (1-1/2" TO 2")	TAPPING SLEEVE AND VALVE (8 IN X 8 IN)
		LF	EA	EA	EA	EA	LF	LF	EA	EA	LF	LF	LF	LF	EA	EA
CSJ : 0500-04-117: IH 45																
4 of 32	922+13 to 926+00														1	
5 of 32	926+00 to 929+39														3	
6 of 32	934+28 to 938+50													148		
7 of 32	938+50 to 942+32													63 △1		
8 of 32	945+51 to 946+55										10					
9 of 32	950+53 to 953+28										276		85			
10 of 32	950+53 to 953+28			1		2	232	67								
11 of 32	963+27 to 963+39										332 △2		292			1
12 of 32	14+48 to 15+40														2	
13 of 32	14+28 to 17+00											274			3	
14 of 32	17+00 to 22+00											510				
15 of 32	22+00 to 27+21										10	523				
16 of 32	23+32 to 23+33													145	1	
17 of 32	24+27 to 26+29	203	2		1				1	2 △1						
QUANTITY TOTAL		203	2	1	1	2	232	67	1	2 △1	628	1,307	377	356 △1	10	1

IH45
SUMMARY OF LEAGUE CITY
IH 45 UTILITY ADJUSTMENTS

△1 REVISED




FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			2101A
STATE	STATE DIST. NO.	COUNTY	
TEXAS	HOU	HARRIS, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0500	03	107, ETC	IH 45, ETC

LEAGUE CITY IH 45 UTILITY ADJUSTMENT QUANTITIES														
SHEET NO	ITEM NO.	7049												
	DESC CODE	6104	6124	6126	6127	6128	6137	6139	6140	6141	6157	6158	6159	6160
	STATION LIMITS	FIRE HYDRANT ASSEMBLY	CUT AND PLUG WATER MAIN (2IN)	CUT AND PLUG WATER MAIN (6IN)	CUT AND PLUG WATER MAIN (8IN)	CUT AND PLUG WATER MAIN (10IN)	WET CONNECTION (2IN)	WET CONNECTION (6IN)	WET CONNECTION (8IN)	WET CONNECTION (10IN)	WTR MAIN PIPE (PVC) (RESTRAINED JT) 2 IN	WTR MAIN PIPE (PVC) (RESTRAINED JT) 6 IN	WTR MAIN PIPE (PVC) (RESTRAINED JT) 10 IN	JCK TUN BOR OR AUG CSG (STL) (20IN)
		EA	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	LF	EA
CSJ : 0500-04-117: IH 45														
4 of 32	922+13 to 926+00			1				1				397		
5 of 32	926+00 to 929+39	1										340		
6 of 32	934+28 to 938+50												500	
7 of 32	938+50 to 944+23	1				1				1			543	
8 of 32	945+51 to 946+55				1	1			1	1			104	
9 of 32	950+53 to 953+28			1	3			1	3					
10 of 32	950+53 to 953+28											10		
11 of 32	963+27 to 963+39	1			1				3					
12 of 32	14+48 to 15+40		1				2				103			
13 of 32	14+28 to 17+00					1				1				
14 of 32	17+00 to 22+00													367
15 of 32	22+00 to 27+21	1				1			1	1				
16 of 32	23+32 to 23+33												156	
17 of 32	24+27 to 26+29													
QUANTITY TOTAL		4	1	2	5	4	2	2	8	4	103	747	1,303	367

IH45
SUMMARY OF LEAGUE CITY
IH 45 UTILITY ADJUSTMENTS

△ REVISED

	FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	6			2101B
	STATE	STATE DIST. NO.	COUNTY	
	TEXAS	HOU	HARRIS, ETC	
	CONT.	SECT.	JOB	HIGHWAY NO.
© TxDOT 2016				
	0500	03	107, ETC	IH 45, ETC

CITY OF LEAGUE CITY, TEXAS

Clear Creek Village Lift Station Replacement

April, 2017



INDEX OF SHEETS	
SHEET NO.	SHEET TITLE
1	Cover / Location Map / Drawing Index
2	General Construction Notes
3	Existing Lift Station Demolition Plan
4	Lift Station Site Plan
5	Lift Station Plan & Section
6	Lift Station Details
7	Lift Station Structural Details I
8	Lift Station Structural Details II
9	Sanitary Sewer Details
10	Water Line Details
11	Paving, Fencing & SWPPP Details
12	Electrical Legend
13	Electrical Site Plan
14	Electrical One-Line Diagram
15	Electrical Controls Schematics I
16	Electrical Controls Schematics II
17	Electrical Details I
18	Electrical Details II
19	Electrical Instrumentation Legend
20	Electrical Process & Instrumentation Diagram

A PRE-CONSTRUCTION MEETING WITH THE CITY OF LEAGUE CITY ENGINEERING DEPARTMENT IS REQUIRED AT LEAST 10 WORKING DAYS PRIOR TO ON SITE CONSTRUCTION ACTIVITIES. CALL 281-554-1439 FOR A MEETING DATE AND TIME. A PRE-CONSTRUCTION MEETING FOR THIS PROJECT MAY NOT BE SCHEDULED AND CONSTRUCTION OF THE PROJECT MAY NOT COMMENCE PRIOR TO APPROVAL OF THESE PLANS BY THE CITY ENGINEER AS EVIDENCED BY HIS SIGNATURE.

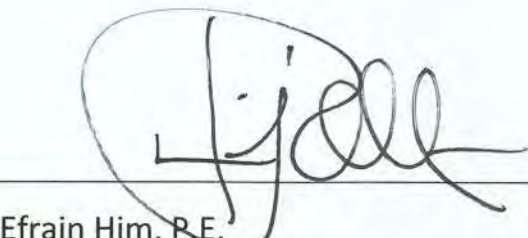
REVIEW SIGNATURES	
ENGINEERING:	DATE
TRAFFIC:	
FIRE MARSHAL:	
UTILITY LINE REPAIR:	
CONSTRUCTION MANAGEMENT:	

The review signatures above for this set of plans in no way implies approval or acceptance and is purely a reflection of the City's review process.

CHRISTOPHER SIMS, P.E. ASSISTANT CITY ENGINEER CITY OF LEAGUE CITY	DATE
--	------

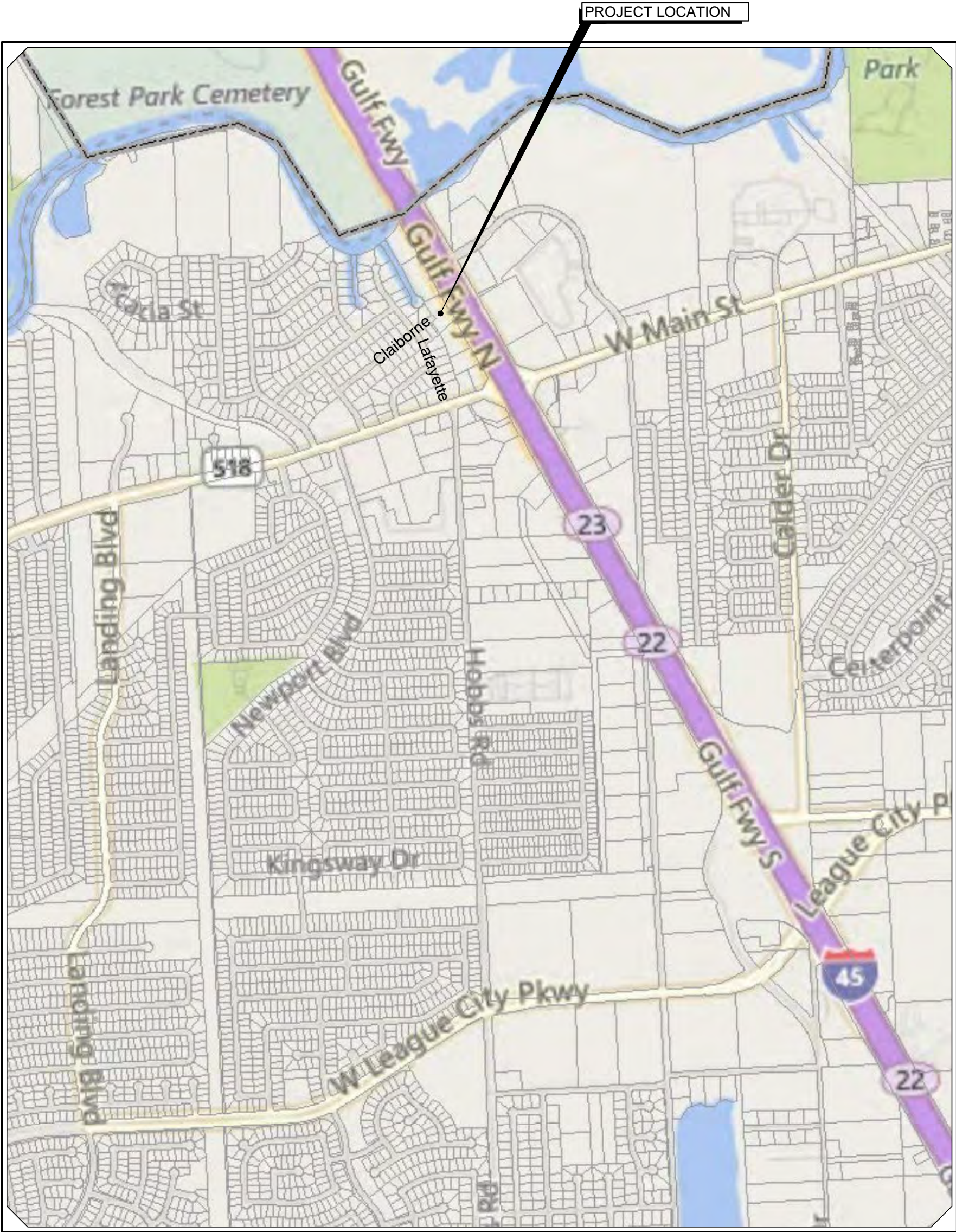
The signer of this set of plans has no objection to the design of these plans. Through the review process these plans have been found to be in general compliance with League City's "General Design and Construction Standards" manual and Construction Details. It should be noted that all calculations, measurements and overall line work within these plans should be checked and verified. This approval is good for 1 (one) year from the date of signing as shown. The plans submitted have been prepared, signed and sealed by a professional engineer licensed to practice engineering in the state of Texas, which conveys the engineer's responsibility and accountability. Design Engineer assumes all responsibility for any inconsistencies or imperfections in these plans.

SUBMITTED BY:



Efrain Him, P.E.
HDR Engineering, Inc.

DATE: 4/14/2017



City of League City
OVERALL LOCATION MAP

Not to Scale
GC Key Map 658 L

MAYOR
PAT HALLISEY

CITY COUNCIL

DAN BECKER
POSITION 1

HANK DUGIE
POSITION 2

LARRY MILLICAN
POSITION 3

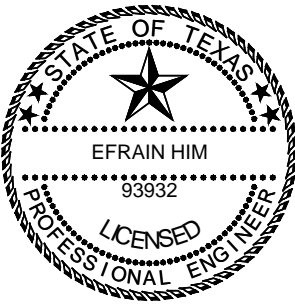
TODD KINSEY
MAYOR PRO TEM / POSITION 4

GREG GRIPON
POSITION 5

KEITH GROSS
POSITION 6

NICK LONG
POSITION 7

CITY MANAGER
JOHN BAUMGARTNER



LEAGUE CITY GENERAL CONSTRUCTION NOTES: 1-2015

- DESIGN AND CONSTRUCTION SHALL CONFORM TO THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED. CONTRACTOR SHALL OBTAIN (AND USE) COPY FROM THE CITY OF LEAGUE CITY.
- THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS, UNLESS SPECIFICALLY ESTABLISHED IN THE BID PROPOSAL SECTION OF THE CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.
- EXISTING UTILITY INFORMATION SHOWN IS NOT GUARANTEED TO BE ACCURATE AND ALL INCLUSIVE. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND SHOULD BE VERIFIED BY THE CONTRACTOR IN ADVANCE OF HIS CONSTRUCTION. ANY CONFLICT OR DISCREPANCY DISCOVERED MUST IMMEDIATELY BE BROUGHT TO THE ENGINEER'S ATTENTION.
- ANY DAMAGE TO EXISTING PUBLIC UTILITIES MUST BE REPAIRED IMMEDIATELY. THE CONTRACTOR MUST NOTIFY THE APPROPRIATE UTILITY OWNER, WHO WILL MAKE THE REPAIRS AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR ON BEHALF OF THE OWNER, SHALL OBTAIN ALL CONSTRUCTION PERMITS PRIOR TO THE COMMENCEMENT OF WORK.
- THE WORK AREA SHALL BE BARRICADED AND ILLUMINATED DURING DARKNESS AND PERIODS OF INACTIVITY, WHEN IN AN AREA OF DIRECT PUBLIC ACCESS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIAL AND EQUIPMENT IN A SAFE AND WORKMAN LIKE MANNER TO PREVENT INJURIES. DURING AND AFTER WORKING HOURS UNTIL PROJECT COMPLETION. THERE SHALL BE NO PAYMENT MADE TO THE CONTRACTOR FOR STORED MATERIAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SHIPPING OF ALL MATERIALS. THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL AT ALL TIMES BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE SUCH MATERIAL AT THE POINT OF DELIVERY AND TO REJECT ALL DEFECTIVE MATERIAL. THE DEFECTIVE MATERIAL MUST BE REPLACED WITH SOUND MATERIAL.
- ALL PIPE AND REINFORCEMENT STEEL SHALL BE KEPT FREE OF DIRT AND OTHER DEBRIS. ANY DAMAGE TO THE COATING OF THE VARIOUS MATERIALS MUST BE REPAIRED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE AND POSITIVE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED FACILITIES. NATURAL GROUND ADJACENT TO UTILITY TRENCH EXCAVATION TO BE GRUBBED PRIOR TO PLACEMENT OF EXCESS TRENCH MATERIAL. (NO SEPARATE PAY).
- ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
- THE CONTRACTOR IS REQUIRED TO FOLLOW ALL APPLICABLE OSHA RULES AND REGULATIONS. TRENCH SAFETY SHALL BE DONE IN ACCORDANCE WITH OSHA 29 CFR PART 1926, AS PUBLISHED IN THE FEDERAL REGISTER OCTOBER 31, 1989, AND EFFECTIVE JANUARY 2, 1990, AND AMENDMENTS THERETO.
- NO CONNECTIONS SHALL BE MADE TO THE EXISTING WATER LINES OR SANITARY SEWERS UNTIL ALL PROPOSED LINES OR SEWERS HAVE BEEN THOROUGHLY CLEANED, TESTED, AND APPROVED BY THE ENGINEER.
- ALL GEOTECHNICAL REPORTS (IF ANY) FOR THIS PROJECT ARE AVAILABLE AT THE OFFICE OF THE ENGINEER.
- SURFACE RESTORATION: AT THE END OF ALL CONSTRUCTION PROJECTS, THE CONTRACTOR SHALL RESTORE THE EXISTING FACILITIES, I.E., THE PROPERTY, INCLUDING DITCH, EQUAL TO OR BETTER THAN EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. ALL DISTURBED AREA SHALL BE SEEDED PROPERLY.
- FINAL ACCEPTANCE OF THE UTILITIES WILL NOT BE GIVEN TO THE CONTRACTOR UNTIL THEY ARE INSPECTED AND APPROVED BY THE CITY OF LEAGUE CITY.
- ALL MANHOLES ARE TO BE CONSTRUCTED TO ALLOW FOR A MINIMUM OF 1 FOOT OF VERTICAL ADJUSTMENT.
- ALL TRENCH EXCAVATION, BEDDING AND BACKFILL SHALL BE IN CONFORMANCE WITH THE CITY OF LEAGUE CITY STANDARD DETAILS - EXCAVATION AND BACKFILL FOR UTILITIES AND UTILITY BACKFILL MATERIAL SPECS.
- ALL UTILITY TRENCHES UNDER OR WITHIN THREE FEET OF EXISTING, PROPOSED, AND/OR FUTURE PAVEMENT OR CURB SHALL BE BACKFILLED WITH NO LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF CEMENT-STABILIZED SAND TO A POINT ONE FOOT BELOW PAVEMENT SUBGRADE. THE REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL.
- THE USE OF WELL POINT SYSTEMS, WHEN REQUIRED BY TRENCH CONDITIONS, SHALL BE REQUESTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA. NO TREES SHALL BE REMOVED WITHOUT PERMISSION OF OWNER.
- CONTRACTOR SHALL PROVIDE MINIMUM CLEARANCES AT STORM SEWER, SANITARY SEWER AND WATER LINE CROSSINGS AS DESIGNED PER THE PLANS AND ACCORDING TO THE BEDDING AND BACKFILL DETAILS.
- ALL AREAS DISTURBED ALONG SIDE AND BACK-OF-LOT EASEMENTS OR OTHER UNNECESSARY DISTURBANCES AS A RESULT OF CONSTRUCTION WORK SHALL BE SEEDED AND FERTILIZED IN ACCORDANCE WITH SEEDING SPECIFICATIONS (NO SEPARATE PAY).
- EXCAVATE MUCK, ORGANIC MATERIAL AND UNSUITABLE SOIL PRIOR TO PLACING FILL. PLACE SUITABLE MATERIAL IN 8" MAXIMUM LOOSE LIFT AND COMPACT TO 95% STANDARD PROCTOR DENSITY.
- ALL BACKFILL SHALL BE PLACED 8" LIFTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY AND BE TESTED BY AN APPROVED TESTING LAB.
- ALL TRENCH BACKFILL SHALL HAVE AT LEAST ONE DENSITY TESTING ON EACH LIFT. ONLY STANDARD BACKFILL PROCEDURES ARE ALLOWED. ANY DEVIATION TO THIS STANDARD MUST BE APPROVED BY THE CITY OF LEAGUE CITY.
- EXCEPT FOR WATER AND SANITARY SEWER FACILITIES, ALL PROPOSED FACILITIES MUST BE INSTALLED WITH A MINIMUM SEPARATION OF 4 FEET OUTSIDE TO OUTSIDE FROM ALL OTHER EXISTING OR PROPOSED FACILITIES.
- ALL TESTING PROCEDURES USED ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEAGUE CITY STANDARDS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTS REQUIRED. IF ANY TEST RESULTS DO NOT MEET THE TESTING STANDARDS, SUCH MATERIAL SHALL BE REMOVED AND REPLACED SO THAT THE TESTING STANDARDS CAN BE MET. COST OF TEST AND LABORATORY SERVICES SHALL BE INCIDENTAL AND INCLUDED IN UNIT PRICE OF BID ITEM. A COPY OF THE TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER AND THE CITY OF LEAGUE CITY.
- ALL UNSATISFACTORY AND OR WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE AND DEBRIS SHALL BE DISPOSED OF OFFSITE BY THE CONTRACTOR, NO DIRECT PAYMENT WILL BE MADE, BUT SHALL BE CONSIDERED AS INCIDENTAL TO THE VARIOUS BID PROPOSAL ITEMS.
- UTILITY CONTRACTOR SHALL ADJUST RIM ELEVATIONS TO 0.3 FEET ABOVE THE FINISHED GRADE AT EACH MANHOLE LOCATION AFTER PAVEMENT CONTRACTOR HAS COMPLETED FINAL GRADING (NO SEPARATE PAY). SLOPED FILL SHALL BE ADDED FOR STORM WATER DRAINAGE AWAY FROM THE MANHOLE RIM.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION BOTH DAY AND NIGHT IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
- UTILITY CONTRACTOR SHALL AT COMPLETION OF HIS WORK FILL AND GRADE ALL UTILITY EASEMENTS (WET AND DRY) FOR POSITIVE DRAINAGE, AS DIRECTED BY THE OWNER. (NOT SEPARATE PAY)
- CITY OF LEAGUE CITY SIGNATURES ARE VALID FOR 1 (ONE) YEARS ONLY AFTER DATE & SIGNING OF PLANS.
- UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURB INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
- CONTRACTOR SHALL CONTACT THE FOLLOWING A MINIMUM OF 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
 - CITY OF LEAGUE CITY PROJECT MANAGEMENT (281)-554-1439
 - CITY OF LEAGUE CITY FIRE MARSHALL (281)-554-1290
 - TEXAS ONE CALL SYSTEM 1-800-245-4545
 - LOVE STAR NOTIFICATION CENTER 1-800-669-8344
 - TEXAS EXCAVATION SAFETY SYSTEM INC. 1-800-344-8377
 - EL PASO PIPELINE : MR. J.R. LOGAN (281)-331-4693
 - BP PIPELINE : MR. DARREL BARBO (409)-938-6995 (MOBIL) (281)-636-6747
- CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AND PAVEMENT BEFORE CONSTRUCTION. ANY VERIFICATIONS THAT ARE INCONSISTENT WITH THE PLANS NEED TO BE REPORTED TO THE ENGINEER BEFORE CONSTRUCTION BEGINS.
- WITH CITY ENGINEERS APPROVAL, W. S. & D. SPOIL MAY BE SPREAD EVENLY IN THE STREET RIGHT-OF-WAY AFTER UTILITIES ARE IN PLACE.
- THERE WILL BE NO ADDITIONAL COST FOR INSTALLING WATER LINES AND SEWERS UNDER EXISTING UTILITIES AND PIPELINE. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.
- LAWS TO BE OBSERVED: THE DEVELOPER/CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH AND AT ALL TIMES SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, AND REGULATIONS WHICH IN ANY MANNER AFFECT THE CONDUCT OF THE WORK AND SHALL INDEMNIFY AND SAVE HARMLESS THE CITY AND ITS REPRESENTATIVES AGAINST ANY CLAIM ARISING FROM THE VIOLATION OF ANY SUCH LAW, ORDINANCE, OR REGULATIONS, WHETHER BY HIMSELF OR BY HIS EMPLOYEES.
- CONTRACTOR SHALL REMOVE ALL MUD, DIRT, AND DEBRIS DEPOSITED ON EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY DAILY.
- CONTRACTOR SHALL CONTACT THE WATER UTILITY DEPARTMENT AT 281-554-1390 TO COORDINATE VALVE OPERATIONS FOR PROPOSED TIE-INS.
- DISPOSAL OF EXCESS EXCAVATION MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. DISPOSAL OF EXCESS EXCAVATION MATERIAL WITHIN LEAGUE CITY SHALL COMPLY WITH ORDINANCE 2009-25 ARTICLE 2.

HDR, INC. GENERAL NOTES:

- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ALL EXISTING FACILITIES OR ANY OFF-SITE AREAS AFFECTED BY THIS CONSTRUCTION PROJECT TO EXISTING OR BETTER CONDITIONS UNLESS OTHERWISE NOTED AT NO ADDITIONAL COST TO THE OWNER.
- ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION, AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE "NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM" (NPDES) REQUIREMENTS.
- ALL UNSATISFACTORY AND WASTE MATERIAL INCLUDING VEGETATION, ROOTS, CONCRETE, AND DEBRIS SHALL BE DISPOSED OF OFFSITE BY THE CONTRACTOR. NO DIRECT PAYMENT WILL BE MADE, BUT SHALL BE CONSIDERED AS INCIDENTAL TO THE VARIOUS BID ITEMS.
- FINAL GRADE ALL AREAS OF THE SITE AS SHOWN ON GRADING PLAN AFTER COMPLETION OF ALL OTHER CONSTRUCTION ACTIVITIES. GRADE ALL AREAS OF THE SITE SMOOTH TO DRAIN. THOROUGHLY CLEAN SITE TO REMOVE ALL CONSTRUCTION DEBRIS SUCH AS CONCRETE RUBBLE, REBAR, ETC.
- PROVIDE PROTECTIVE COATING FOR THE EQUIPMENT AND PIPING IN ACCORDANCE WITH THE SPECIFICATIONS. PROVIDE OTHER PROTECTIVE COATINGS SUCH AS HOT DIP GALVANIZING AS INDICATED ON THE DRAWINGS AND IN SPECIFICATIONS. TOUCH-UP DAMAGED AREAS OF GALVANIZED FINISHED WITH ZINC PAINT (85% ZINC MINIMUM) INTENDED FOR THE APPLICATION.
- THE APPROXIMATE LOCATION OF EXISTING UTILITIES ARE GIVEN FOR REFERENCE ONLY. BEFORE COMMENCING THE WORK, THE CONTRACTOR SHALL VERIFY BY FIELD INVESTIGATION THE ACTUAL LOCATION OF ALL UTILITY FACILITIES WITHIN AND ADJACENT TO LIMITS OF THE WORK THAT MAY BE AFFECTED BY THE WORK. CONFLICTS WHICH RESULT DUE TO NEGLIGENCE BY THE CONTRACTOR TO LOCATE, HORIZONTALLY AND VERTICALLY, EXISTING UTILITIES WHICH ARE SHOWN ON THE CONSTRUCTION DRAWINGS, OR WHICH THE CONTRACTOR HAS BEEN GIVEN NOTICE OR HAS KNOWLEDGE, SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR FOR THE COST OF THE REMEDIAL WORK. REMOVAL OF PORTIONS OF THE WORK OR EXTENSIVE DESIGN CHANGES OCCASIONED BY THE FAILURE OF THE CONTRACTOR TO VERIFY THE LOCATION OF EXISTING UTILITIES AS DESCRIBED ABOVE SHALL BE DONE BY THE CONTRACTOR.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING RED LINE RECORD DRAWINGS AND O&M MANUALS AT THE COMPLETION OF THE PROJECT, AS PER THE SPECIFICATIONS, PRIOR TO FINAL PAYMENT.
- ELECTRICAL SHEETS ARE FOR ELECTRICAL WORK ONLY. STRUCTURAL AND MECHANICAL ITEMS SHOWN ON THE ELECTRICAL SHEETS ARE GENERAL IN NATURE AND SHOULD A CONFLICT EXIST, THE STRUCTURAL AND MECHANICAL SHEETS WILL CONTROL. STRUCTURAL SHEETS ARE FOR STRUCTURAL WORK ONLY. MECHANICAL AND ELECTRICAL ITEMS SHOWN ON THE STRUCTURAL SHEETS ARE GENERAL IN NATURE AND SHOULD A CONFLICT EXIST, THE MECHANICAL AND ELECTRICAL SHEETS WILL CONTROL.
- PRIOR TO BIDDING THE PROJECT, THE CONTRACTOR SHALL INSPECT THE WORK SITE TO VERIFY THAT ABOVE AND BELOW GRADE CONDITIONS OR THE SITE ARE ACCEPTABLE TO THEM FOR CONSTRUCTION.
- PROVIDE ISOLATION JOINTS BETWEEN ALL PROPOSED SIDEWALKS AND ALL SLABS, STRUCTURES, AND PAVEMENTS. ISOLATION JOINTS SHALL ALSO BE PROVIDED WHERE TIES PENETRATE CONCRETE SLABS OR PAVEMENT. ISOLATION JOINTS SHALL CONSIST OF ASPHALT IMPREGNATED FIBERBOARD AND JOINT SEALANT MATERIAL.
- SHOULD SOFT UNSTABLE AREAS APPEAR DURING THE COURSE OF GRADING, THE CONTRACTOR SHALL REMOVE UNSTABLE MATERIAL AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL REPLACE THIS WITH SUITABLE MATERIAL MATERIAL COMPACTED AS REQUIRED PER SPECIFICATIONS (LIMITED TO 18" AT NO COST TO THE OWNER).
- ALL ITEMS IN THE WET WELL WILL BE ACCESSIBLE FROM THE HATCH COVER. CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE WET WELL HATCHES PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS (MINIMUM SIZE SHOWN).
- UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS, ALL PIPE CENTERED IN WALLS SHALL HAVE A WALL FLANGE. ALL WALL FLANGES SHALL BE CAST-IN-PLACE WITH STRUCTURAL CONCRETE OR GROUTED IN BLOCK-OUTS WITH NON-SHRINK GROUT. ALL BLOCK-OUTS FOR THROUGH-WALL PIPING SHALL BE KEVED UNLESS OTHERWISE NOTED.
- PRIOR TO BIDDING THE PROJECT, THE CONTRACTOR IS REQUIRED TO VISIT THE LIFT STATION SITE. CONTRACTOR SHALL NOTE ANY VISIBLE CONFLICTS NOT SHOWN IN THE DRAWINGS AND BRING TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDDING THE PROJECT. SHOULD A CONSTRUCTION CONFLICT OCCUR DUE TO A VISIBLE CONFLICT APPARENT AT THE TIME OF BIDDING, ALL CONSTRUCTION AND ENGINEERING COSTS ASSOCIATED WITH THE CHANGES SHALL BE BORNE BY THE CONTRACTOR.
- ALL PUMP STATION AND FORCE MAIN HEADER PIPING SHALL BE IN DUCTILE IRON CLASS 53 WITH A MINIMUM WORKING PRESSURE OF 150 PSI PLUS A SURGE PRESSURE OF 100 PSI AND PRESSURE-TYPE JOINTS.

SANITARY SEWER CONSTRUCTION NOTES: 1-2015

- ALL SANITARY SEWER BEDDING SHALL BE AS PER THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED UNLESS OTHERWISE INDICATED.
- ALLOWABLE SANITARY SEWER PIPE MATERIAL FOR GRAVITY LINES SHALL BE POLYVINYL CHLORIDE (PVC) OR AS APPROVED BY CITY ENGINEER: 6-INCH TO 15-INCH: ASTM D-3034, SDR 26 (ALSO SEE SECTION 507.2 OF THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS MANUAL.)
B. ALL AUGURED CONSTRUCTION UNDER PAVEMENT SHALL BE CASED PER DETAIL AND ITEM 407.13.2 OF THE GENERAL DESIGN AND CONSTRUCTION STANDARDS MANUAL.
- IN WET OR DRY STABLE TRENCH CONSTRUCTION FOR SANITARY SEWER, BEDDING AND BACKFILL SHALL BE PER CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED.
- DEFLECTION TESTING OF THE GRAVITY SEWER LINE SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5.0%. THE DEFLECTION TEST SHALL BE CONDUCTED USING A RIGID MANDREL HAVING AN OUTSIDE DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES. I. & E. TEST FOR SANITARY SEWER SYSTEM WILL BE IN ACCORDANCE WITH CITY OF LEAGUE CITY REQUIREMENTS, FOR LOW PRESSURE AIR TEST AS PER TAC 317.2.
- CHEMICALLY WELDED SANITARY SEWER JOINTS ARE NOT ACCEPTABLE. USE RUBBER GASKETED BELL & SPIGOT SANITARY SEWER JOINTS.
- ALL SANITARY SEWER ADAPTERS REQUIRED TO CONNECT TO EXISTING SANITARY SEWERS ARE INCIDENTAL TO THE BID ITEM FOR SANITARY SEWER PIPE.
- MANHOLES (AS DESIGNATED ON PLAN & PROFILE) SHALL INCLUDE INFLOW PROTECTORS WHICH SHALL BE INCIDENTAL TO CONSTRUCTION OF MANHOLES. (NO SEPARATE PAY)
- UNLESS APPROVED NO CAST IN PLACE MANHOLES SHALL BE USED. ALL SANITARY MANHOLES SHALL BE PRECAST REINFORCED CONCRETE 4' TO 8' DIAMETER MOOR-TEX MANHOLE OR EQUAL IN ACCORDANCE WITH CITY OF LEAGUE CITY STANDARDS.
- UNIT PRICE FOR AUGER SENCING AND AUGER PIT INCLUDE DRY OR WET CONDITION. (NO EXTRA PAY)
- THE TOTAL FOOTAGE OF LINE 36" AND SMALLER SHALL BE INSPECTED WITH TELEVISION EQUIPMENT IN ACCORDANCE WITH THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AS CURRENTLY AMENDED.
- CONTRACTOR SHALL TEST ALL SANITARY SEWER SYSTEMS IN ACCORDANCE WITH THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AS CURRENTLY AMENDED.
- CONTRACTOR SHALL AIR TEST ALL GRAVITY SANITARY SEWER LINES. FORCE MAIN LINES SHALL BE HYDROSTATICALLY TESTED AT 125 PSI.
- WATER & SANITARY SEWER THAT ARE PARALLEL MUST BE INSTALLED IN SEPARATE TRENCHES WITH NO LESS THAN 9' (NINE FEET) MIN. HORIZONTAL CLEARANCE. SEE LEAGUE CITY DETAIL SANITARY SEWER INSTALLATION CROSSING OR PARALLEL TO WATER LINE.

CENTERPOINT ENERGY GAS FACILITIES

CAUTION: UNDERGROUND GAS FACILITIES

Location of CenterPoint Energy main lines (to include CenterPoint Energy, Intrastate Pipeline, LLC. where applicable) are shown in an approximate location only. Service lines are usually not shown. Our signature on these plans only indicates that our facilities are shown in approximate location. It does not imply that a conflict analysis has been made. 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) 945-8038 or (713) 945-8037 (7:00 a.m. to 4:30 p.m.) for status of line location request before excavation begins.
- When excavating within eighteen inches (18") of the indicated location of CenterPoint Energy Facilities, all excavation must be accomplished using non-mechanized excavation procedures.
- When CenterPoint Energy facilities are exposed, sufficient support must be provided to the facilities to prevent excessive stress on the piping.
- For emergencies regarding gas lines call (713) 659-3552 or (713) 207-4200.

The Contractor is fully responsible for any damages caused by his failure to exactly locate and preserve these underground facilities.

ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

No approval to use, cross or occupy CenterPoint fee or easement property is given. If you need to use CenterPoint property, please contact our Surveying & Right of Way Division at (713) 207-6348 or (713) 207-5769.

FRONTIER COMMUNICATIONS

The locations of Frontier facilities are shown in an approximate way only. Service lines are not shown. The Contractor shall determine the exact location before commencing work. Contractor agrees to be fully responsible for any and all damages which might be occasioned by this failure to exactly locate and preserve these underground facilities. The Contractor shall call DICTESS @ 1-800-344-8377 a minimum of 48 hours prior to construction to have underground telephone lines field located. When excavating within eighteen inches (18") of the indicated location of Frontier facilities, all excavations must be accomplished using non-mechanized excavation procedures. Whenever Frontier facilities are exposed, sufficient support should be provided to the facilities to prevent excessive stress on cable and/or conduit ducts. Contact Darrin Albrecht, Gulf District Supervisor, at 281-338-2221 for questions regarding Frontier facilities.

WATER CONSTRUCTION NOTES: 1-2015

- WATER MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LEAGUE CITY. GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED.
- ALL WATERLINES ARE TO BE HYDROSTATICALLY TESTED BY THE CONTRACTOR IN ACCORDANCE WITH CITY OF LEAGUE CITY CRITERIA.
- PIPE MATERIAL SHALL BE PVC WATER PIPE AWWA C900 (DR 18) FOR SIZES 6" THROUGH 12" OR C905 (DR 18) FOR SIZES 14" THRU 24", DUCTILE IRON PIPE FOR SIZES 6" THROUGH 36", STEEL CYLINDER CONCRETE PIPE (CLASS 150) FOR SIZES OVER 18" IN CONFORMANCE WITH MATERIAL SPECIFICATION OF THE CITY OF LEAGUE CITY. (ANY OTHER MATERIAL OR SIZES TO BE SUBMITTED FOR APPROVAL).
- ALL WATER VALVES SHALL OPEN COUNTER CLOCKWISE. ALL WATER VALVES SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND SHALL BE OF THE RESILIENT SEAT TYPE.
- ALL FLANGES BELOW GRADE SHALL BE INSULATED.
- ALL WATERLINES SHALL BE ENCASED IN BANK SAND TO AT LEAST 12" ABOVE THE PIPE. COST OF BANK SAND TO BE INCLUDED IN UNIT PRICE OF WATERLINE.
- WATERLINE TRENCHES UNDER PAVEMENT OR WITHIN THREE (3) FOOT OF PROPOSED CURBS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND (NO LESS THAN 1-1/2 SACK/PER TON) UP TO WITHIN ONE FOOT OF PAVEMENT. COST OF BACKFILL SHALL NOT BE PAID DIRECTLY BUT SHALL BE INCLUDED IN THE UNIT PRICE OF WATERLINE.
- ALL FLUSHING VALVES SHALL BE LOCATED A MIN. OF 3' BACK OF CURB, ON CURB AND GUTTER STREETS. ON STREETS HAVING NO CURB, THE FLUSHING VALVE SHALL BE LOCATED INSIDE THE RIGHT-OF-WAY OR ADJACENT EASEMENT.
- WATERLINE SHALL BE CONSTRUCTED SUCH THAT ALL CROSSES AND TEES WILL NOT BE LOCATED UNDER PROPOSED OR FUTURE PAVING.
- UTILITY CONTRACTOR TO TURN FLUSHING VALVES AND ALL FINAL ADJUSTMENTS AFTER COMPLETION OF PAVING. NO SEPARATE PAY.
- SANITARY PRECAUTIONS MUST BE TAKEN DURING WATERLINE CONSTRUCTION, AS CALLED FOR BY AWWA STANDARDS. PRECAUTIONS INCLUDE KEEPING PIPE CLEAN AND CAPPING OR OTHERWISE EFFECTIVELY COVERING OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.
- ALL NEWLY INSTALLED PIPES, COATINGS AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARDS AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.
- ALL DUCTILE IRON PIPE WATERLINE SHALL HAVE BEDDING AND BACKFILL EMBEDMENT IN ACCORDANCE WITH THE CITY OF LEAGUE CITY DETAILS AND DESIGN AND SPECIFICATIONS AS CURRENTLY AMENDED.
- WATER MAINS SHALL HAVE MINIMUM OF 4' COVER FROM TOP OF CURB. EXCEPT 16" AND LARGER WATER LINES SHALL HAVE MINIMUM OF 5' COVER FROM TOP OF CURB.
- FLUSHING VALVE UNIT CONSISTS OF: MAIN LINE SIZE X 6" TEE, 6" PVC PIPE LEAD, 6" GATE VALVE WITH BOX, AND ONE FLUSHING VALVE WITH 4" MIN. BURY. ANY OTHER PIPE MATERIAL SHALL BE IN ACCORDANCE WITH THE CITY'S DESIGN AND CONSTRUCTION STANDARDS MANUAL.
- WATER & SANITARY SEWER THAT ARE PARALLEL MUST BE INSTALLED IN SEPARATE TRENCHES WITH NO LESS THAN 9' (NINE FEET) MIN. HORIZONTAL CLEARANCE. SEE LEAGUE CITY DETAIL SANITARY SEWER INSTALLATION CROSSING OR PARALLEL TO WATER LINE.
- UNLESS MANHOLES CAN BE MADE WATERTIGHT AND TESTED FOR NO LEAKAGE THEY MUST BE INSTALLED SO AS TO PROVIDE A MINIMUM OF NINE FEET OF HORIZONTAL CLEARANCE FROM AN EXISTING OR PROPOSED WATER LINE. IF THE NINE FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE WATERLINE MUST BE ENCASED IN A JOINT OF 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE WATERLINE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT 5 FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEAL.
- COMPLETED WATERLINES MUST BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651, "DISINFECTING WATER MAINS."
- IF CLEARANCE IS BETWEEN SIX (6) INCHES TO TWO (2) FEET ONE 20 FOOT JOINT OF C-900 PVC, 150 PSI WATERLINE SHALL BE CENTERED AT SANITARY CROSSING.
- ALL STUB OUTS AND THEIR FITTINGS FOR FUTURE WATER MAIN AND LATERAL EXTENSIONS SHALL BE MECHANICALLY RESTRAINED WITH MEGA-LUG, UNI-FLANGE OR APPROVED EQUAL RESTRAINT DEVICES.
- ALL WATER LINES ON PRIVATE PROPERTY AND/OR UNDER PAVEMENT SHALL BE RESTRAINED.

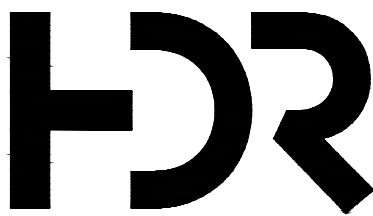
PAVING CONSTRUCTION NOTES: 1-2015

- GUIDELINES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE OBSERVED.
- ALL RETURNS HAVE 25' RADIUS AT BACK OF CURB UNLESS OTHERWISE NOTED.
- WHEN THE TOP OF CURB ELEVATION OR BOTTOM OF PAVEMENT SLAB IS ABOVE NATURAL GROUND, THE PAVING CONTRACTOR SHALL BACKFILL FROM THE NATURAL GROUND TO TOP OF CURB IN LAYERS NOT EXCEEDING 8 INCHES IN DEPTH AND EACH LAYER COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY AND SHALL FILL FROM CURB TO EDGE OF TREELINE. (NO SEPARATE PAY)
- PAVING CONTRACTOR SHALL PROTECT WATER, SEWER, AND DRAINAGE FACILITIES; AND WILL REPLACE AT HIS EXPENSE ANY FACILITIES DAMAGED DURING PAVING OPERATIONS. ALL MANHOLES AND VALVES FALLING WITHIN PAVEMENT AREA SHALL BE ADJUSTED TO FINISHED GRADE BY PAVING CONTRACTOR WITHOUT THE USE OF BLOCKOUTS WHEN DIRECTED BY OWNER (WITH NO SEPARATE PAY).
- PAVING SHALL BE IN ACCORDANCE WITH THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED.
- EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF LEAGUE CITY STANDARDS.
- CONDITION OF THE ROAD AND / OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.
- ALL ROAD WIDTHS, CURB RADII, AND CURB ALIGNMENT SHOWN INDICATE BACK OF CURB. T.C. INDICATES TOP OF CURB. T.P. INDICATES TOP OF PAVEMENT ELEVATIONS.
- DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 1 FOOT OFFSET OF THE CENTERLINE AT ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET. NO EXTRA PAY.
- AREAS TO RECEIVE FILL SHALL BE STRIPPED 4 INCHES AND SCARIFIED PRIOR TO FILL PLACEMENT. PAVEMENT FILL SHALL BE COMPACTED TO A MINIMUM 95% MAXIMUM DENSITY PER ASTM D698 IN MAXIMUM 8" LOOSE LIFTS.
- TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 80 FEET.
- THE SUBGRADE IS TO BE SCARIFIED TO A DEPTH DETERMINED BY TEST LAB, WITH LIME OR CEMENT STABILIZE AS DETERMINED BY LAB RESULTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM D698 OR ASTM D1557.
- WHEN A 6 INCH THICK CONCRETE ROADWAY INTERSECTS WITH A 7 INCH THICK CONCRETE ROADWAY, 7 INCH THICK CONCRETE SHALL BE CONSTRUCTED FOR THE ENTIRE INTERSECTION TO THE ENDS OF ALL CURB RETURNS.
- AREAS TO BE FILLED SHALL BE SCARIFIED AND COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY PER ASTM D-698, TO A DEPTH OF 8 INCHES PRIOR TO FILL PLACEMENT. FILL MATERIAL SHALL BE PLACED IN MAXIMUM 8 INCH THICK LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS PER ASTM D-698. MOISTURE CONTENT SHALL BE WITHIN 2% OF OPTIMUM UNLESS OTHERWISE DIRECTED BY OWNER'S TESTING LAB OR THE ENGINEER. FILL SHALL BE CLEAN EARTH, SAND, OR A COMBINATION, AND BE FREE FROM TRASH, VEGETATION AND LARGE STONES.
- A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
- STREET NAME SIGNS TO BE STANDARD CITY OF LEAGUE CITY SIGNS AND INSTALLED BY CONTRACTOR. CONTACT CITY OF LEAGUE CITY STREET DEPARTMENT FOR EXAMPLE. CONTRACTOR TO VERIFY STREET NAME WITH APPROVED PLAT.
- ALL EXCESS SUITABLE SOILS FROM WS&D AND PAVING CONSTRUCTION SHALL BE EVENLY APPLIED TO LOT AREAS IN ACCORDANCE WITH ITEM 15 OF THIS PAVING CONSTRUCTION NOTES, AND BE INCIDENTAL TO THE LOT GRADING ITEM OF THIS CONTRACT.
- CONTRACTOR SHALL GET A COPY OF THE APPROVED PLAT TO DETERMINE THE CORRECT NAMES OF THE STREETS BEFORE ORDERING AND PLACING STREET SIGN NAMES.
- SIDEWALKS FALLING WITHIN OR ADJACENT TO RESERVES PARALLEL WITH ROAD RITH-OF-WAYS AND ALL CROSS WALK RAMPS SHALL BE PLACED BY THE OWNERS CONTRACTOR.

TEXAS-NEW MEXICO POWER FACILITIES

CAUTION: OVERHEAD ELECTRICAL LINES

Overhead lines may exist on the property. The location of overhead lines has not been shown on these drawings as the lines are clearly visible, but you should locate them prior to beginning any construction. Texas law, Section 752, Health and Safety Code forbids activities that occur in close proximity to high voltage lines, specifically: (1) Any activity where person or things may come within six (6) feet of live overhead high voltage lines; and (2) Operating a crane, derrick, power shovel, drilling rig, pile driver, hoisting equipment, or similar apparatus within 10 feet of live overhead high voltage lines. Parties responsible for the work, including Contractors are legally responsible for the safety of construction workers under this law. This law carries both criminal and civil liability.



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PROJECT FOR

CLEAR CREEK VILLAGE
LIFT STATION
REPLACEMENT



MARK	DATE	DESCRIPTION

PROJECT NUMBER	10030969
CHECKED BY	E. Him
DRAWN BY	L. Tefft



SHEET NAME

General
Construction Notes

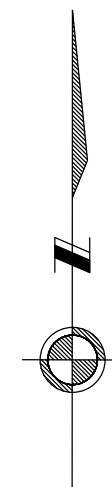
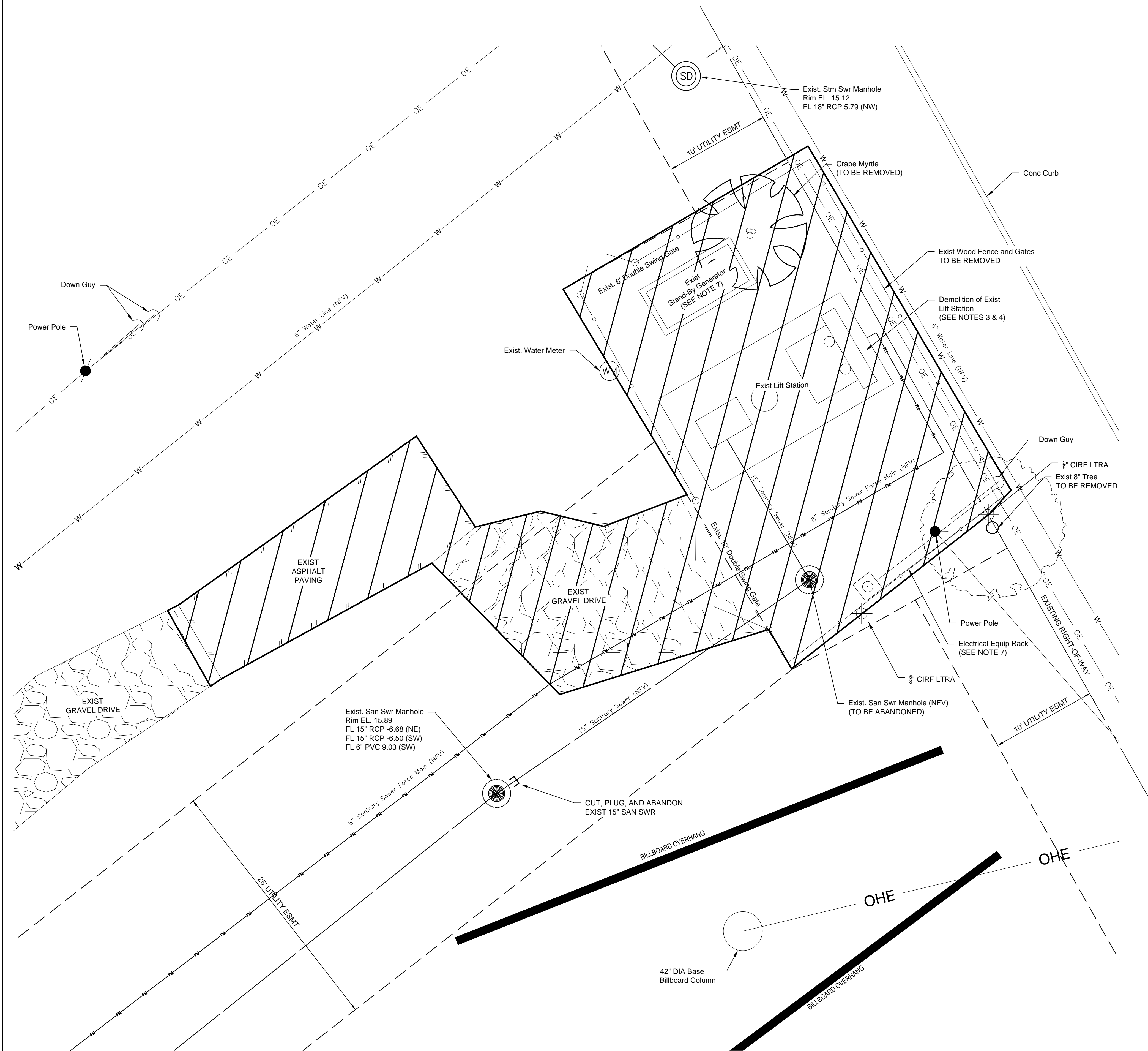
SCALE

NTS

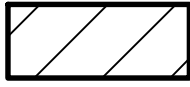
SHEET NUMBER

SHEET 2 OF 20

FILE NAME



LEGEND:

-  PROP CONSTRUCTION ZONE AND CLEARING AND GRUBBING LIMITS

DEMOLITION PLAN NOTES:

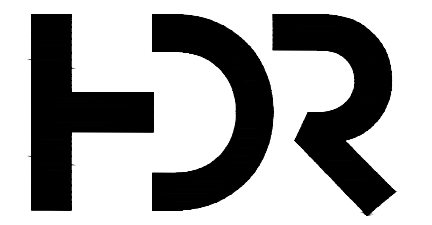
1. EXISTING LIFT STATION SHALL REMAIN IN OPERATION UNTIL PROPOSED LIFT STATION IS READY FOR OPERATION.
2. REMOVE TREES, BRUSH AND STUMPS WITHIN THE CONSTRUCTION WORK LIMITS FROM THE WORK SITE.
3. CONTRACTOR SHALL SUBMIT A DEMOLITION PLAN COMPLETE WITH MEANS AND METHODS FOR APPROVAL BY ENGINEER BEFORE LIFT STATION DEMOLITION WORK CAN BEGIN.
4. EXISTING LIFT STATION STRUCTURE SHALL BE DEMOLISHED TO A DEPTH OF 3 FT BELOW NATURAL GROUND WITH REMAINING SECTION TO BE ABANDONED IN PLACE. PLACE FILL WITH CEMENT STABILIZED SAND BACK TO NATURAL GROUND LEVEL.
5. REFER TO SPECIFICATIONS FOR MATERIAL DISPOSAL.
6. CONTRACTOR SHALL REMOVE AND SALVAGE ALL EXISTING LIFT STATION PIPING AND EQUIPMENT.
7. REFER TO ELECTRICAL DEMOLITION PLAN FOR ADDITIONAL REQUIREMENTS.



EXISTING LIFT STATION
DISCHARGE PIPING



EXISTING LIFT STATION
WET WELL



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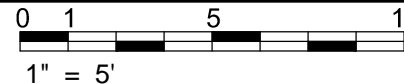


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DRAWN BY	L. Tefft	



SHEET NAME

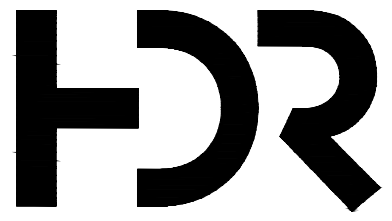
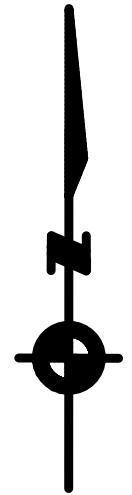
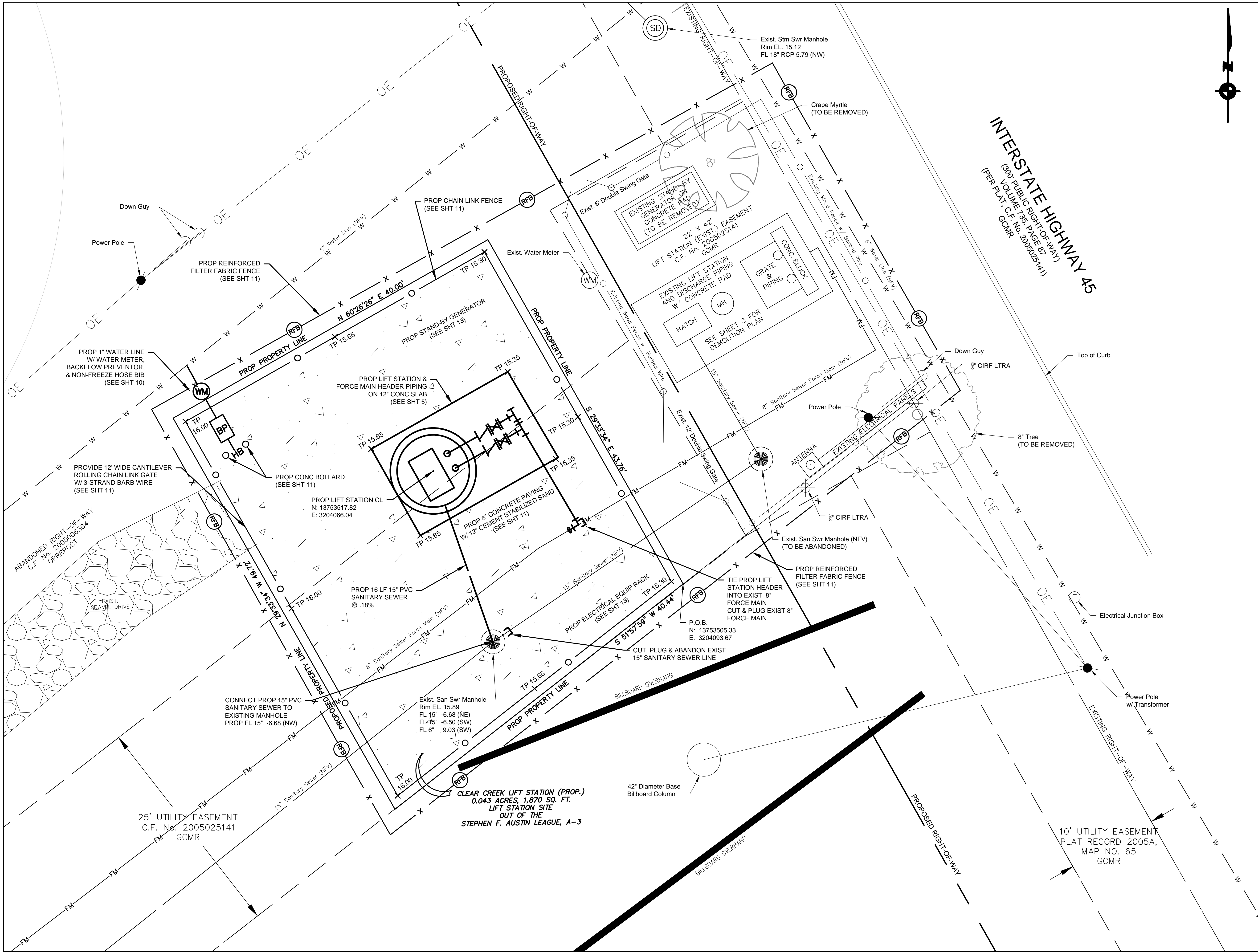
Existing Lift Station
Demolition Plan

SCALE 

SHEET NUMBER

SHEET 3 OF 20

FILE NAME



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PROJECT FOR

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SHEET NAME

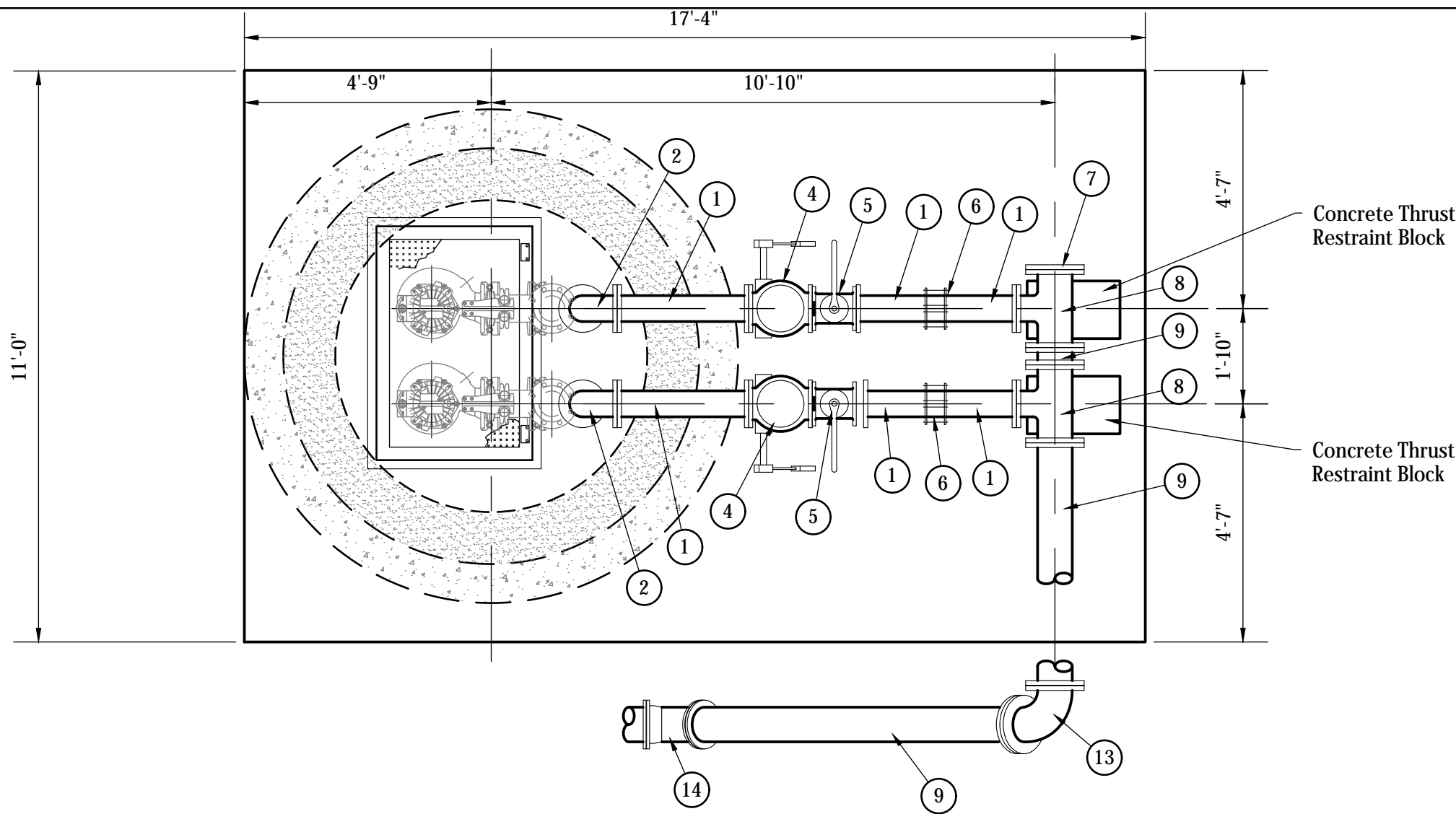
Lift Station
Site Plan

SCALE 0 1 5 10
1" = 5'

SHEET NUMBER

SHEET 4 OF 20

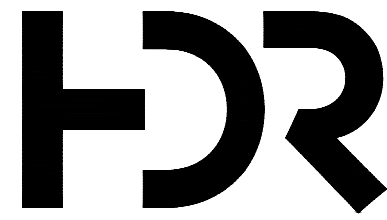
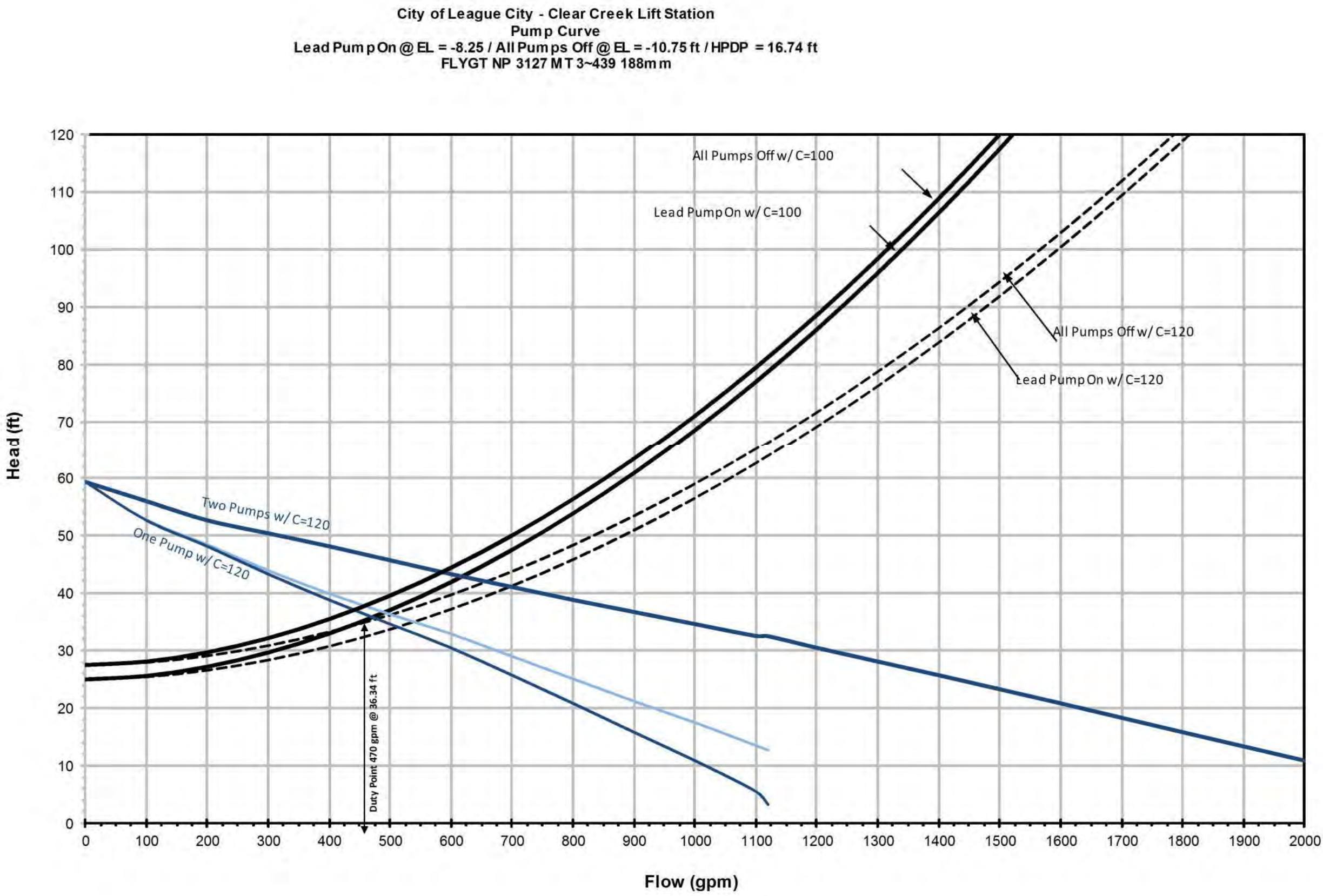
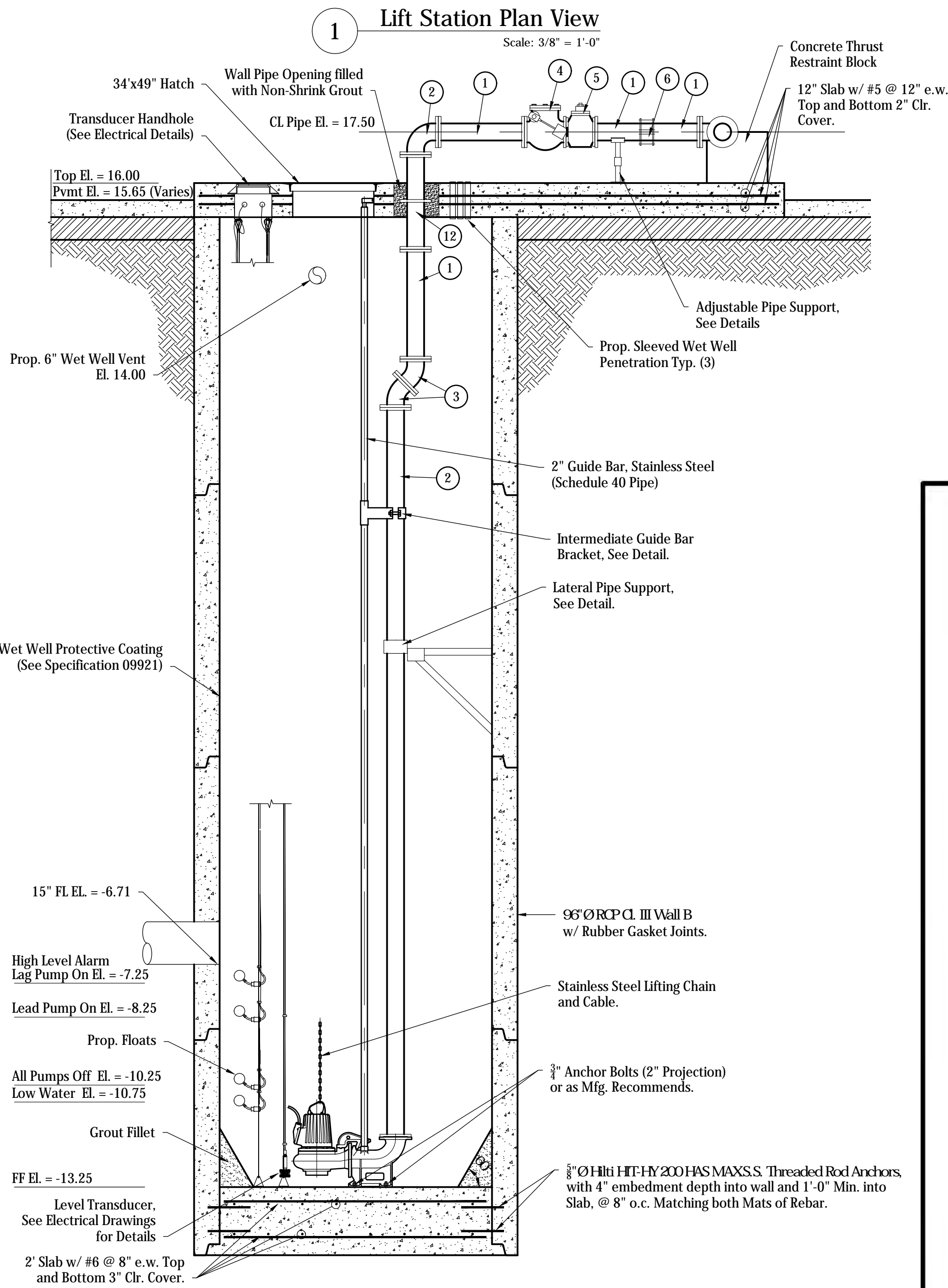
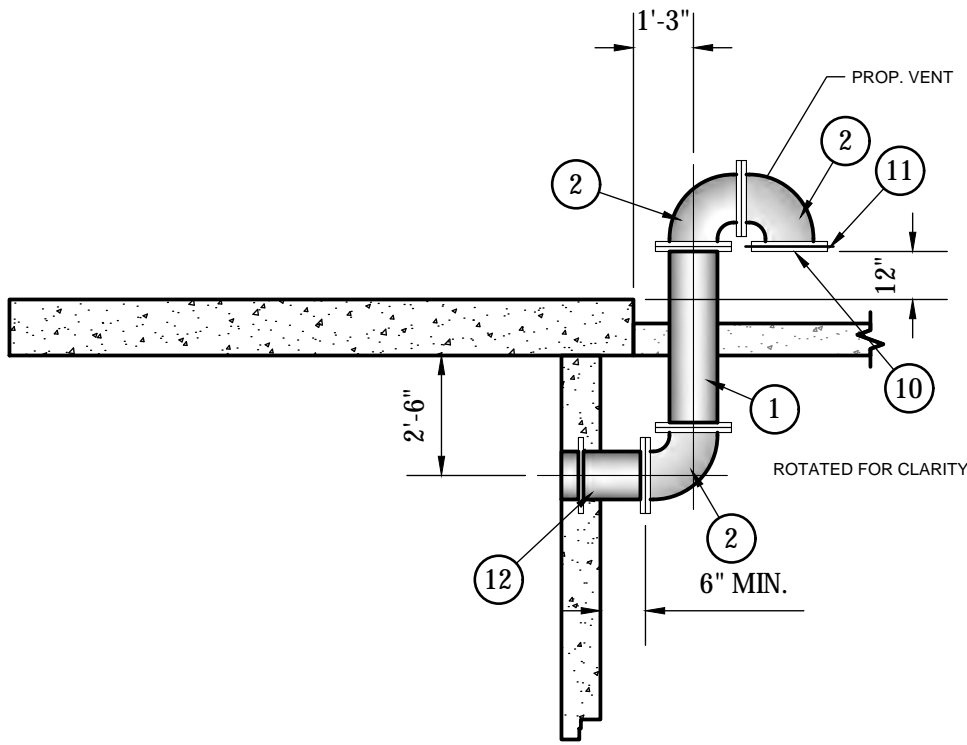
FILE NAME



Mark	Fitting	Type
1	6" Spool Piece	Flg
2	6" 90° Bend	Flg
3	6" 45° Bend	Flg
4	6" Check Valve	Flg
5	6" Plug Valve	Flg
6	6" Dressler Coupler	Flg
7	8" Blind Flange	Flg
8	8"x6" Tee	Flg
9	8" Spool Piece	Flg
10	6" S O Flange	Flg
11	6" SST Bird and Insect Screen	Flg
12	6" Wall Pipe	Flg
13	8" 90° Bend	Flg
14	8" 45° Bend	MI

STATION OPERATION TABLE		
RISING LEVEL CYCLE		
ELEVATION	ACTION	PUMP(S) IN OPERATION
-10.25	PUMPS LEVEL OFF	ALL PUMPS OFF
-8.25	LEAD PUMP TURNS ON	LEAD PUMP ON
-7.25	HIGH LEVEL ALARM ON	LEAD AND LAG PUMP ON
FALLING LEVEL CYCLE		
ELEVATION	ACTION	PUMP(S) IN OPERATION
-7.25	HIGH LEVEL ALARM OFF	LEAD AND LAG PUMP ON
-10.25	ALL PUMPS TURN OFF	ALL PUMPS OFF

PROPOSED PUMP DATA - 470 gpm	
PUMP DATA	1 PUMP OPERATING IN NEW D.L.P. PIPING (C=120)
FLOW (GPM)	475
TDH (FT.)	36
MIN. OVERALL EFF. (%)	57
STATIC HEAD (FT.)	24.99
RPM	1740



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PROJECT FOR

CLEAR CREEK VILLAGE LIFT STATION REPLACEMENT



MARK	DATE	DESCRIPTION
PROJECT NUMBER	10030969	
CHECKED BY	E. Him	
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SHEET NAME

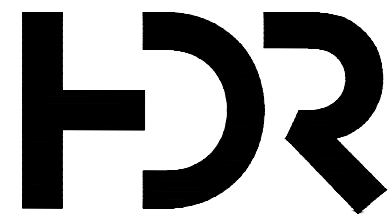
Lift Station Plan and Section

SCALE As Shown

SHEET NUMBER

SHEET 5 OF 20

FILE NAME



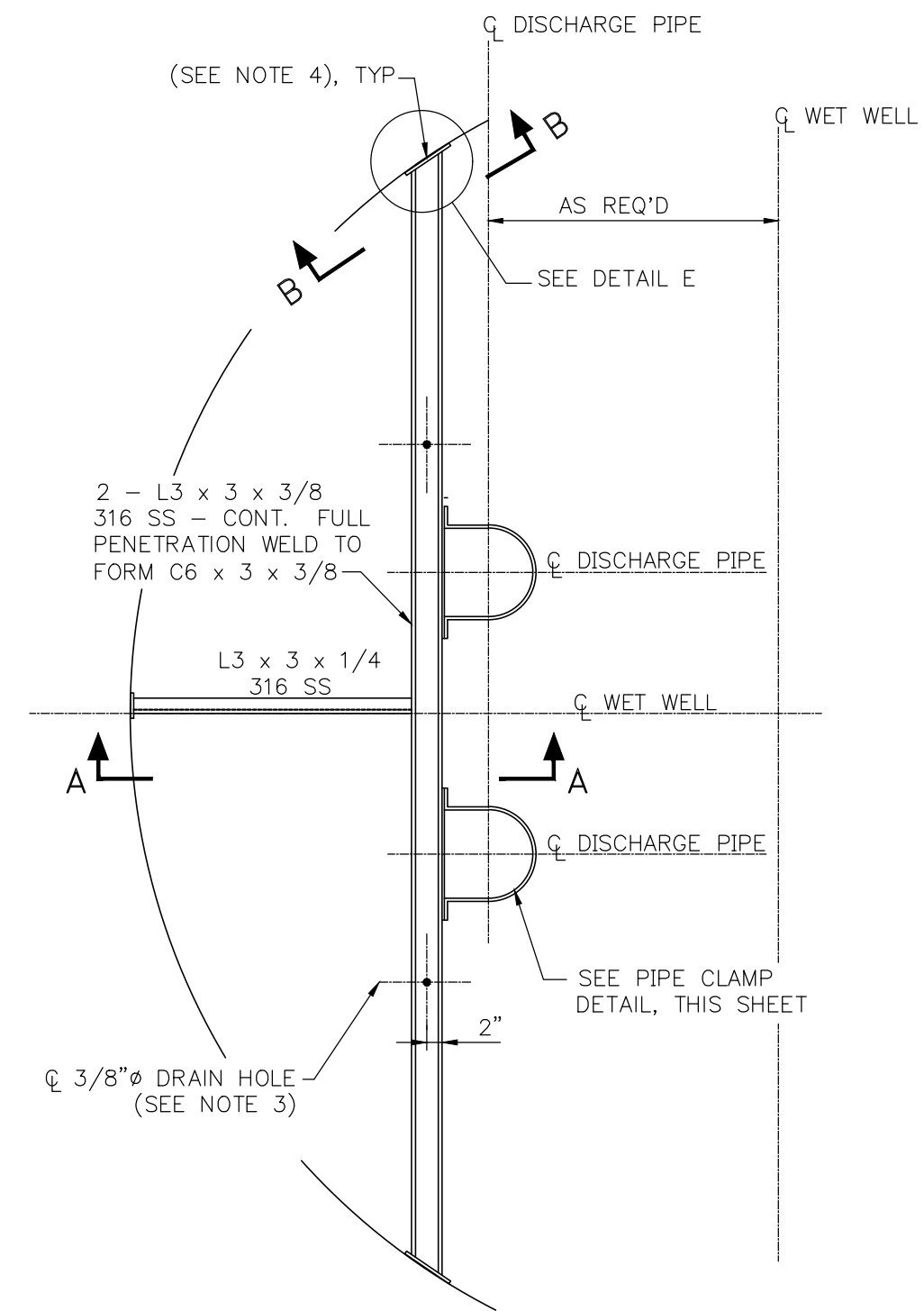
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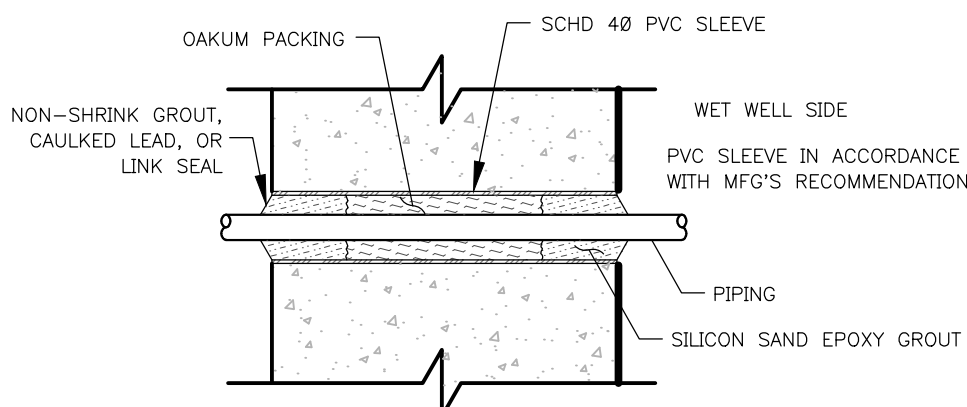
Typical Discharge Piping Support
Plan for 2 Pumps

MECHANICAL NOTES:

- CONCRETE ANCHOR BOLTS SHALL HAVE 6" MINIMUM EMBEDMENT AND SHALL BE TYPE 316 STAINLESS STEEL, PER SPECIFICATIONS.
- SEE STATION AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- DRILL 3/8" Ø HOLES, 1" OFF C OF C6 AT MIDSPAN BETWEEN LATERAL PIPE SUPPORTS TO ALLOW FOR DRAINAGE. 3 HOLES PER CHANNEL WHERE 2 LATERAL SUPPORTS REQUIRED; 2 HOLES PER CHANNEL WHERE 1 LATERAL SUPPORT REQUIRED.
- SET 1/4" NEOPRENE GASKET ON WALL SURFACE IN SIKI 1A (OR EQUAL) SEALANT.

PIPING NOTES:

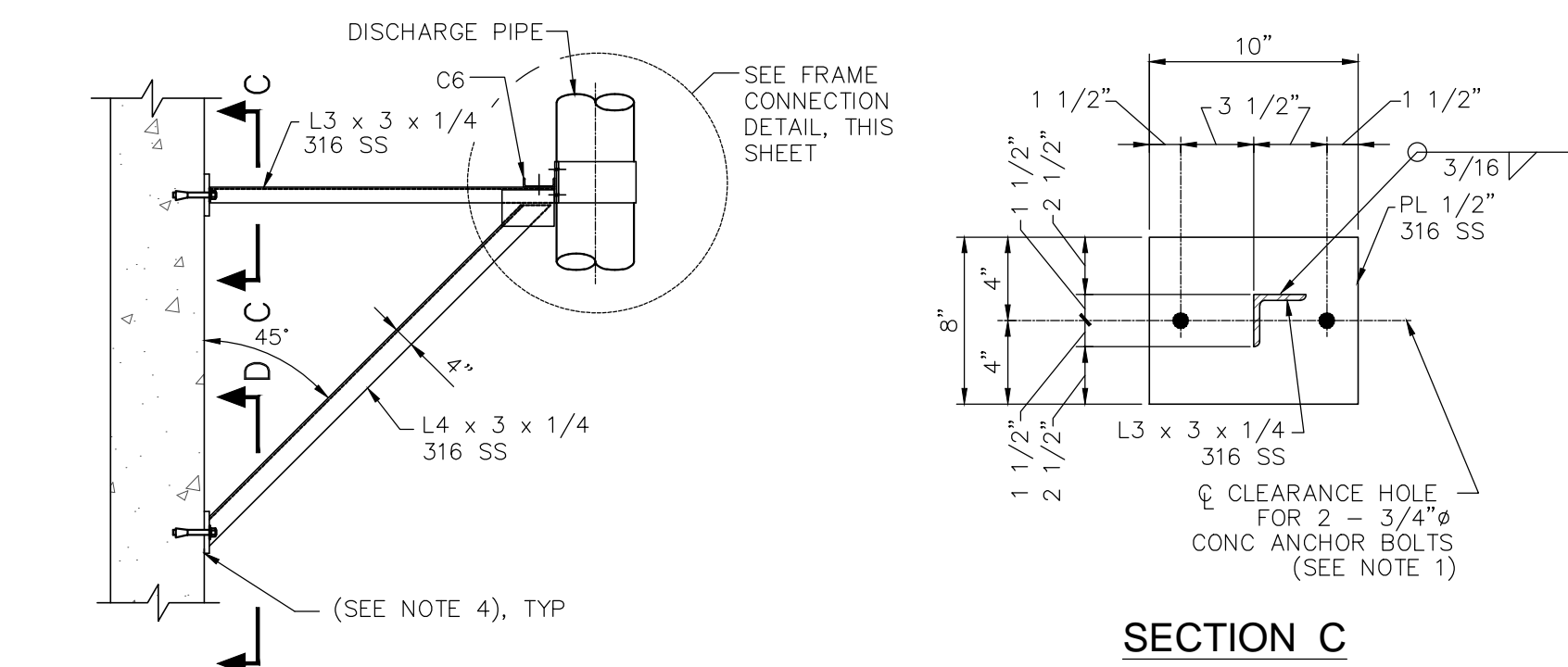
- SEE PUMP PLANS FOR WET WELL INTERIOR PIPING.
- PIPING LOCATION AND SPACING IS DEPENDANT ON PUMP MANUFACTURERS RECOMMENDATIONS. SPOOL PIECE LENGTHS SHALL BE SHOWN ON CONTRACTORS SHOP DRAWINGS.
- CLEARANCE FROM CONCRETE WALLS TO FIRST FLANGE SHALL BE A MINIMUM OF 3".
- THE CONTRACTOR SHALL NOT REUSE ANY EXISTING PIPING, FITTINGS OR VALVES IN THE CONSTRUCTION OF THESE IMPROVEMENTS.
- THE CONTRACTOR MAY USE CONCRETE SUPPORTS DETAIL PROVIDED, ADJUSTABLE PIPE SUPPORTS AS CALLED OUT IN THE FITTINGS AND VALVE SCHEDULE AS AN ALTERNATE OPTION, TO BE APPROVED BY ENGINEER PRIOR TO CONSTRUCTION.



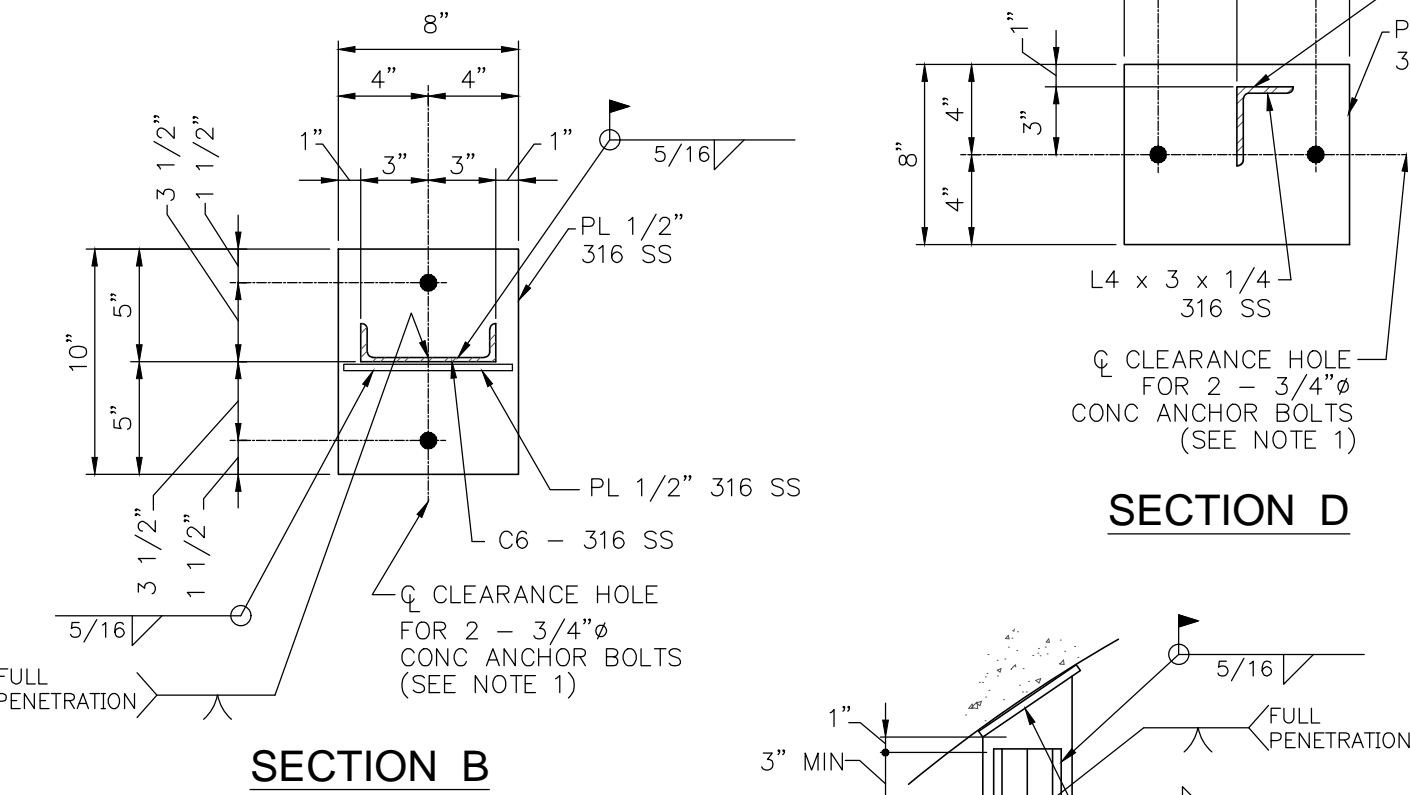
Sleeved Wet Well Penetration
Scale: Not to Scale

NOTES:

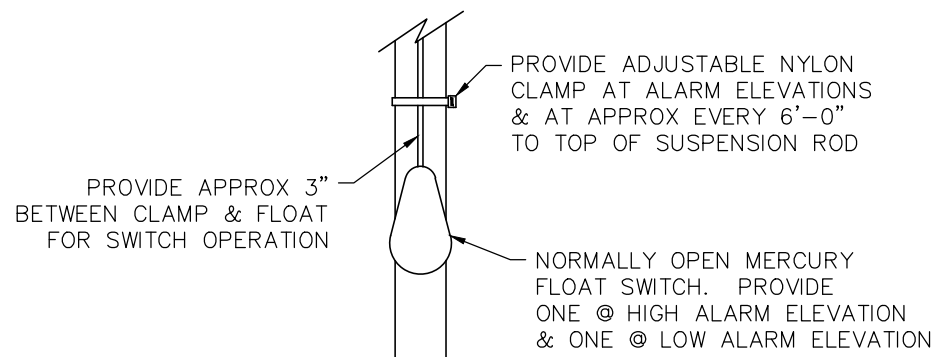
- ADJUSTABLE PIPE SUPPORT ASSEMBLY TO BE HOT DIPPED GALVANIZED AFTER FABRICATION. COLD GALVANIZING COMPOUND TO BE USED AS TOUCH UP AFTER INSTALLATION.
- AT CONTRACTOR'S OPTION, THE ADJUSTABLE PIPE SUPPORT MAY BE AN EQUAL PURCHASED PRODUCT AS MANUFACTURED BY MATERIAL RESOURCES, GRINNELL, OR OTHER MANUFACTURER.



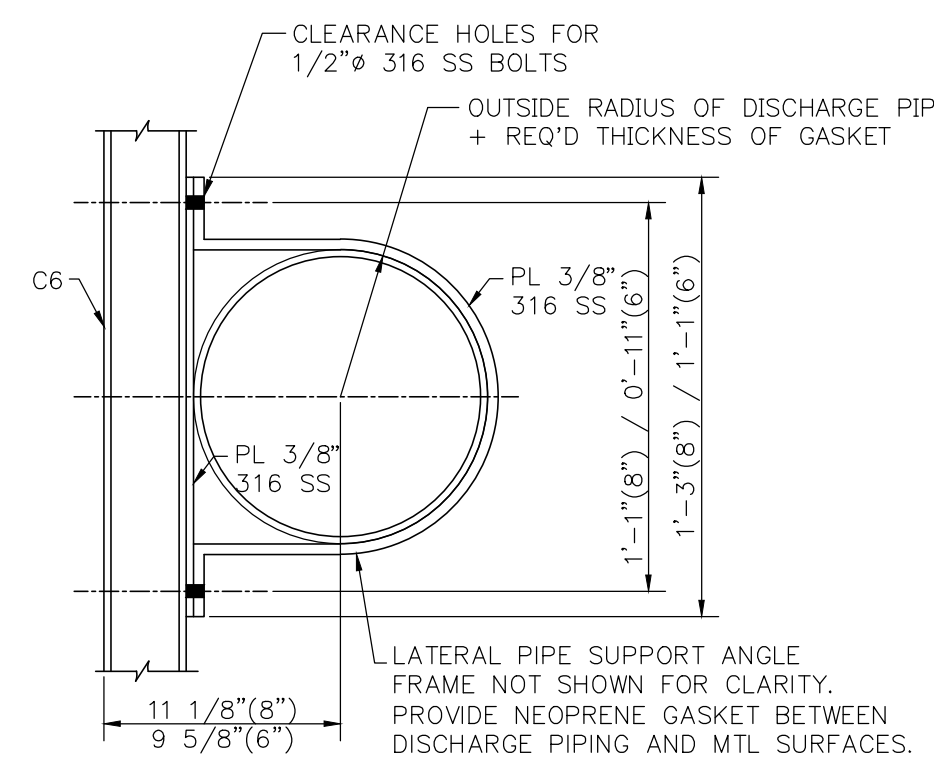
Typical Adjustable Pipe Support
Scale: Not to Scale



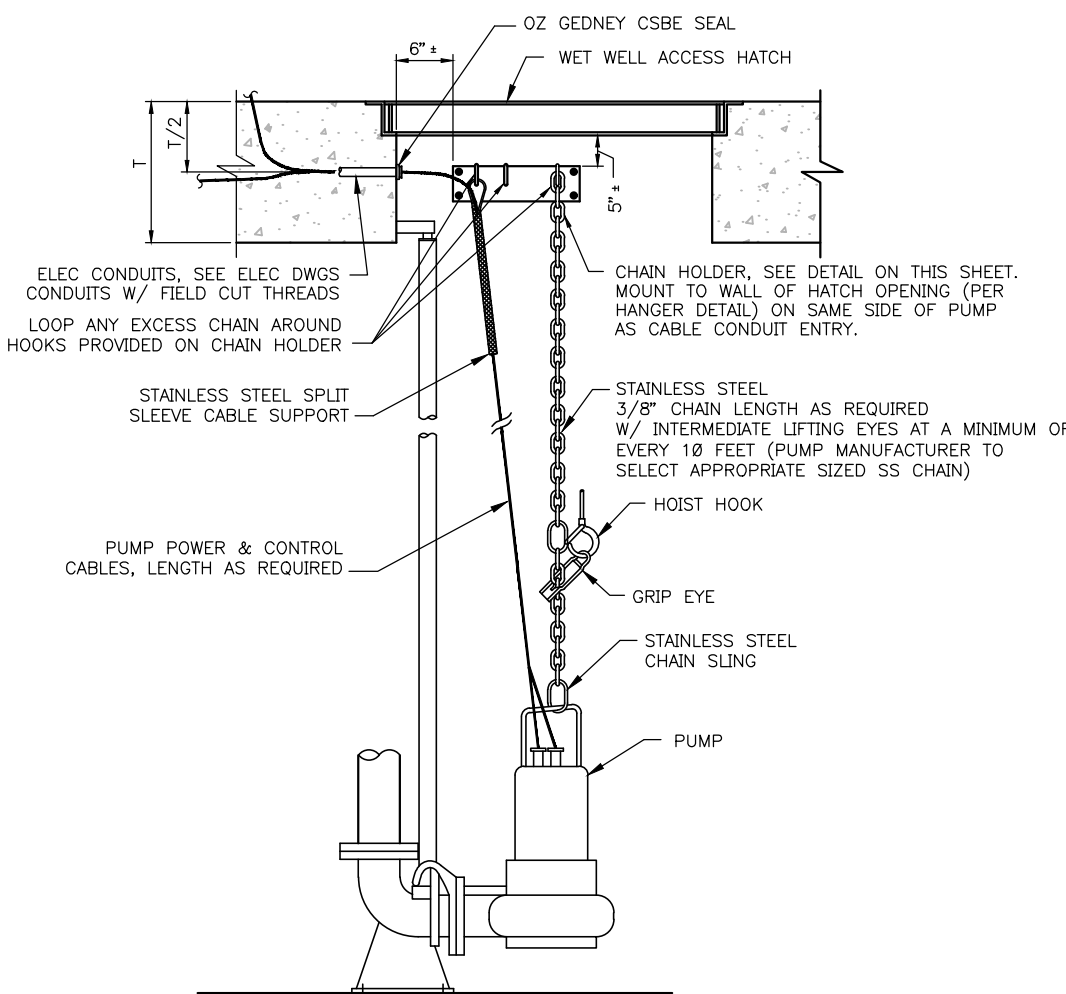
Typical Air & Vacuum Valve Assembly
Scale: Not to Scale



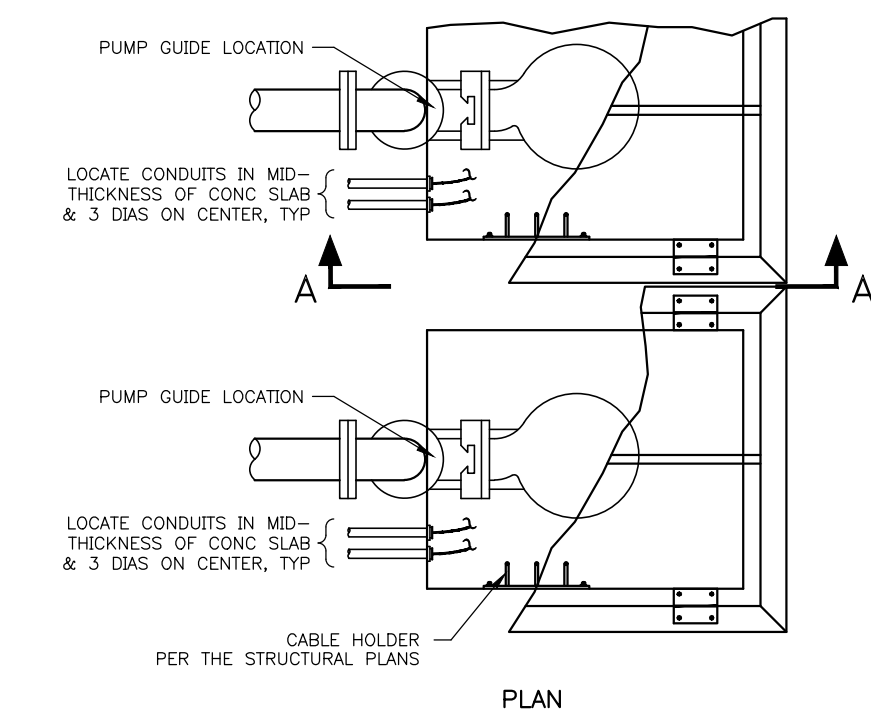
Typical Float Switch Installation
Scale: Not to Scale



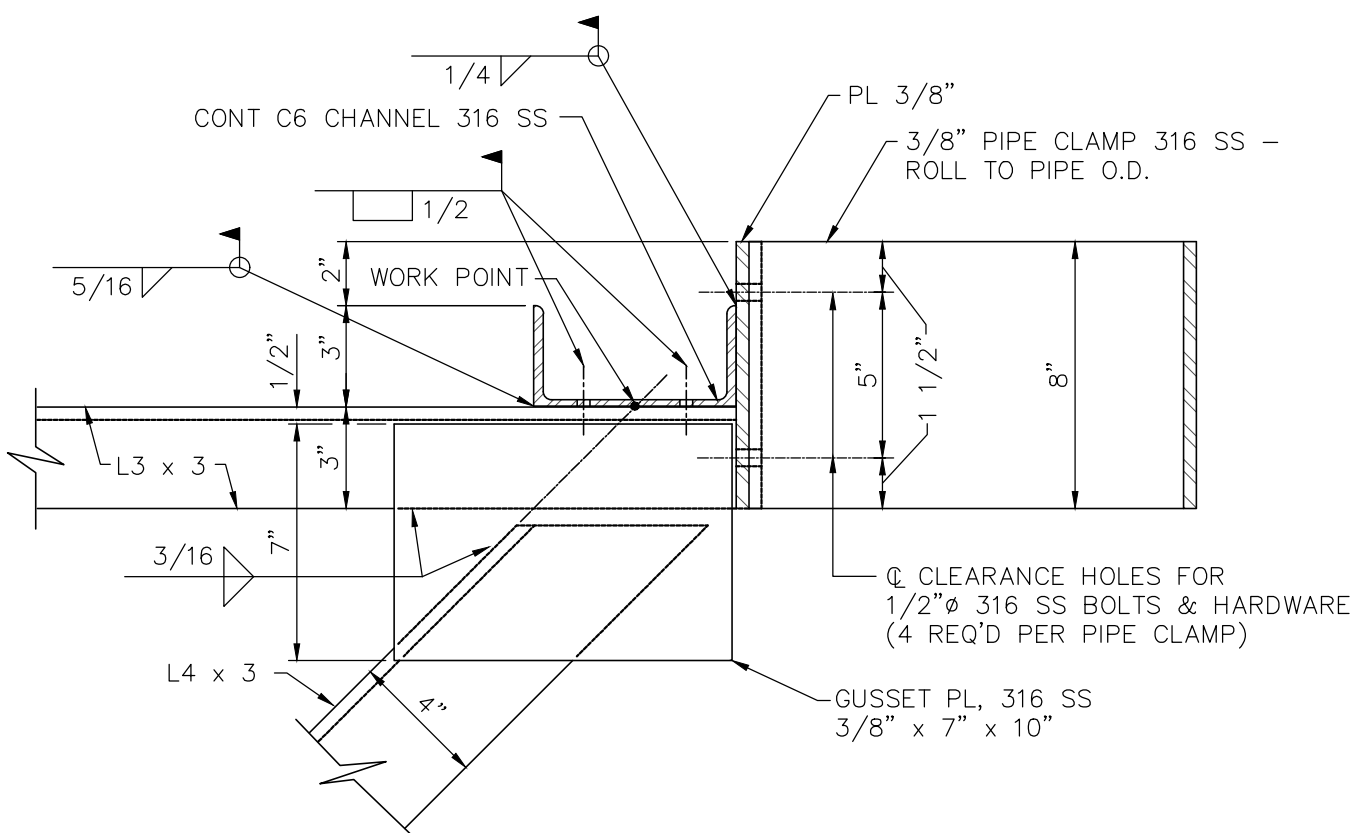
Pipe Clamp Detail
Scale: Not to Scale



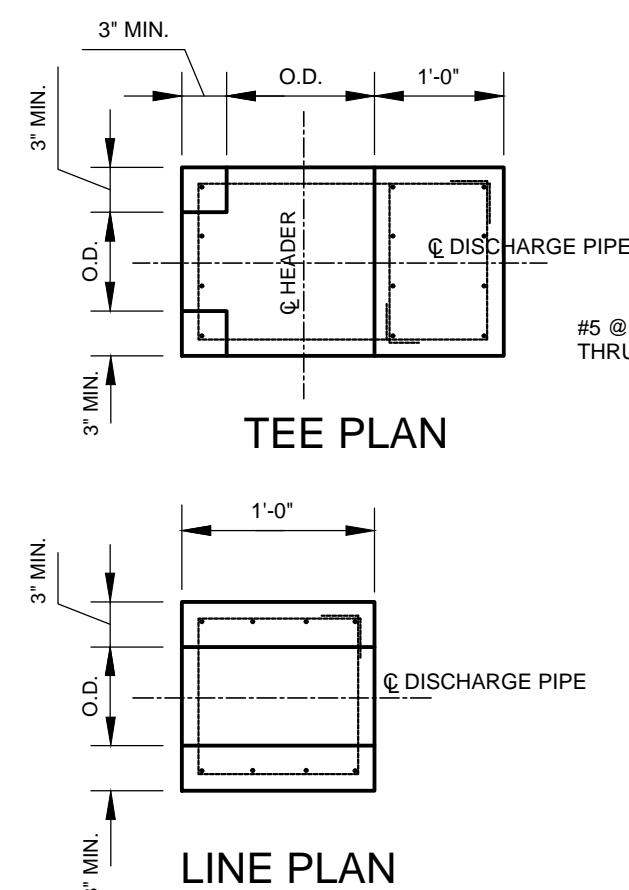
SECTION A



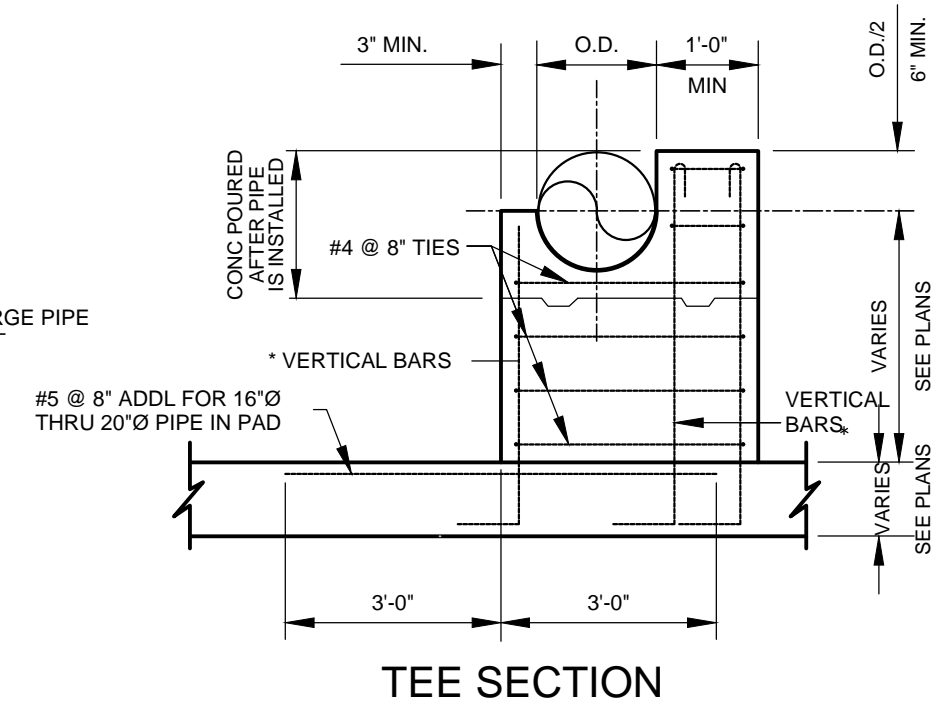
Pump Lifting and Cabling Detail
Scale: Not to Scale



Frame Connection Detail
Scale: Not to Scale



Concrete Thrust Block Details
Scale: Not to Scale



*VERTICAL BARS

PIPE DIA.	NO. OF VERT BARS
4" - 8"	3 - 2#5
10" - 12"	3 - 3#5
14" - 16"	3 - 4#5
18" - 20"	3 - 4#5

MARK	DATE	DESCRIPTION
PROJECT NUMBER	10030969	
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SHEET NAME

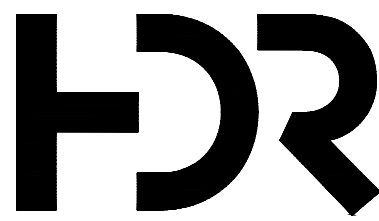
Lift Station
Details

SCALE NTS

SHEET NUMBER

SHEET 6 OF 20

FILE NAME



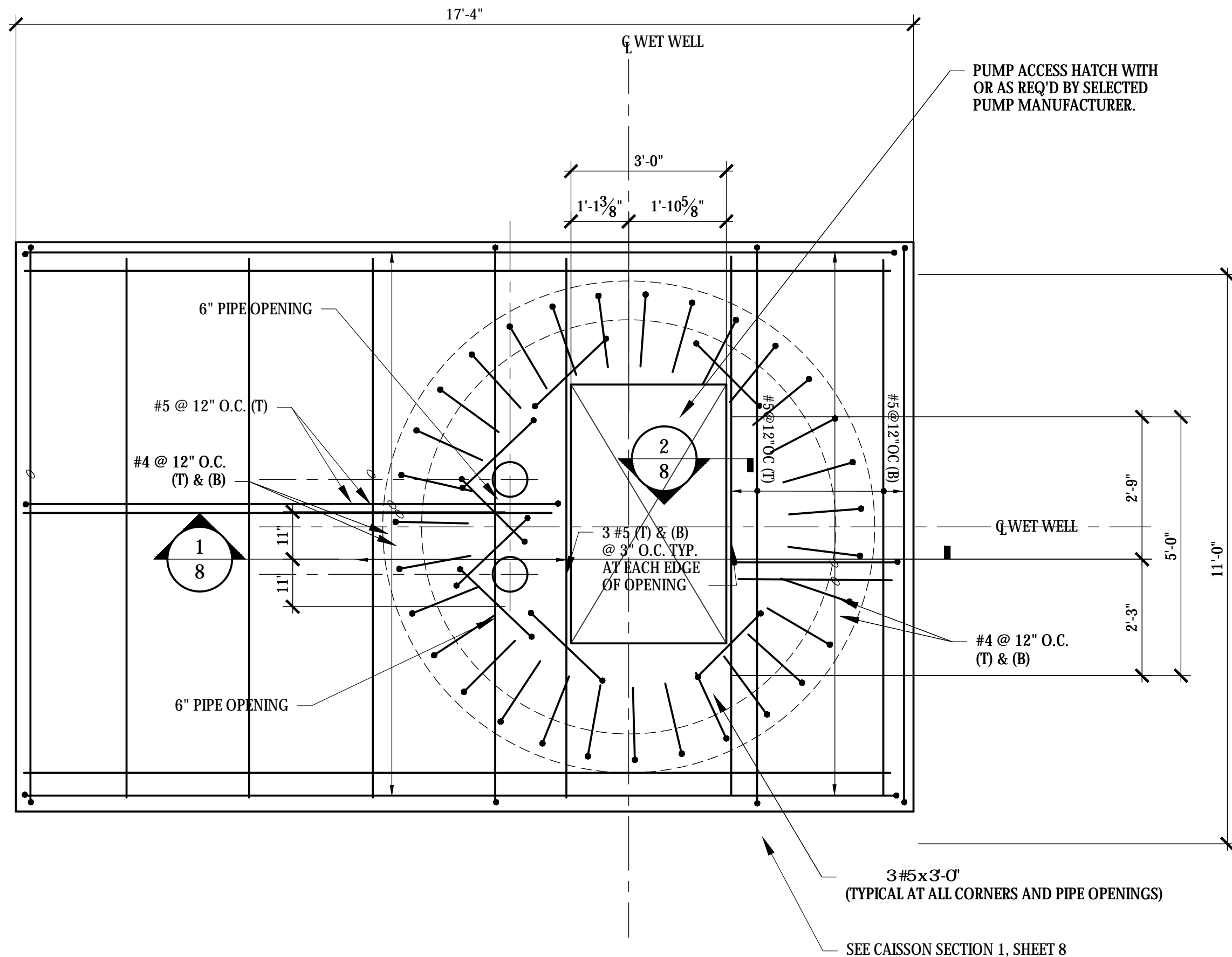
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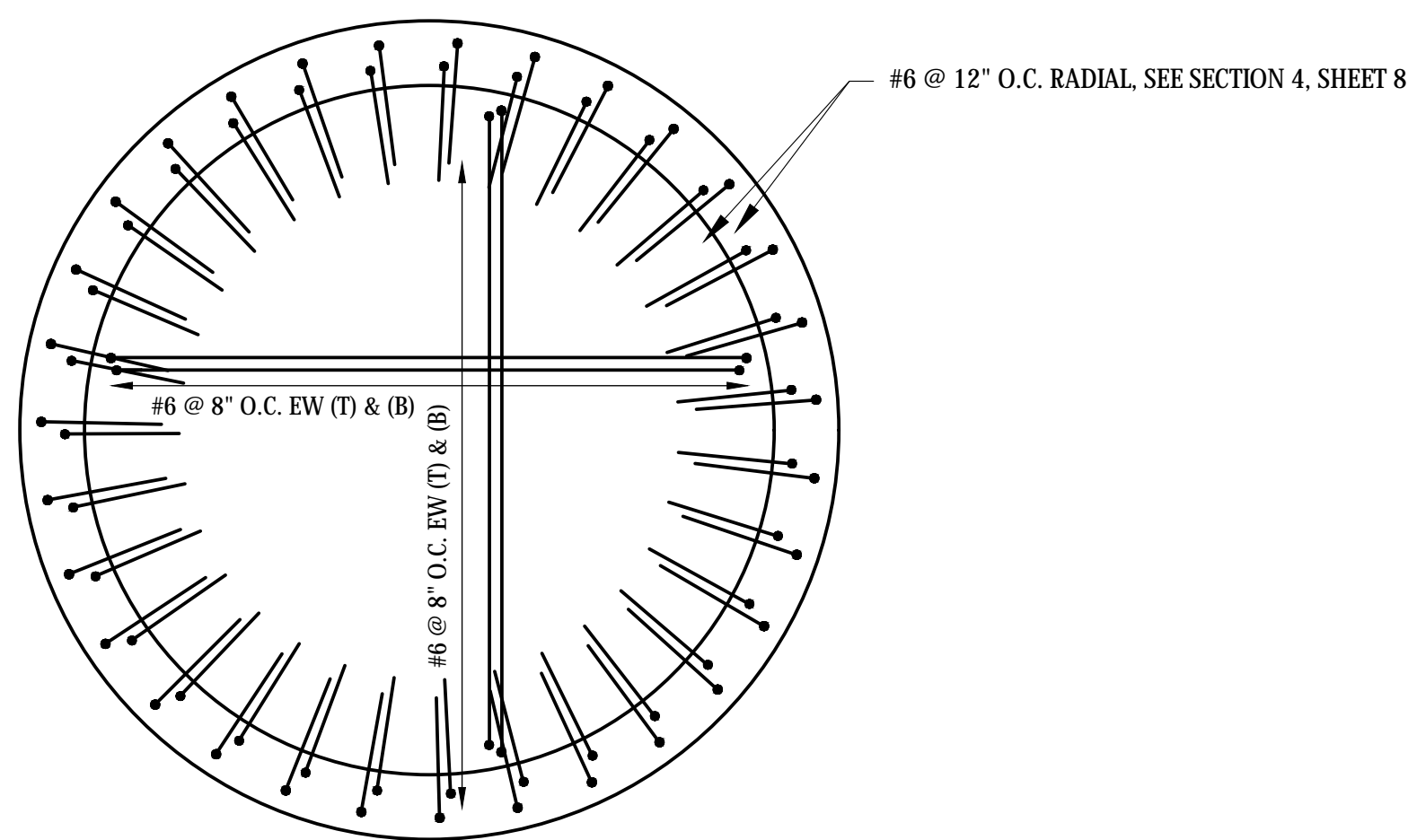
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PROJECT FOR

CLEAR CREEK VILLAGE LIFT STATION REPLACEMENT



1 TOP SLAB REINFORCING PLAN
Scale: 1/2" = 1'-0"



2 BOTTOM SLAB REINFORCING PLAN
Scale: 1/2" = 1'-0"

GENERAL NOTES FOR STRUCTURES

CONCRETE

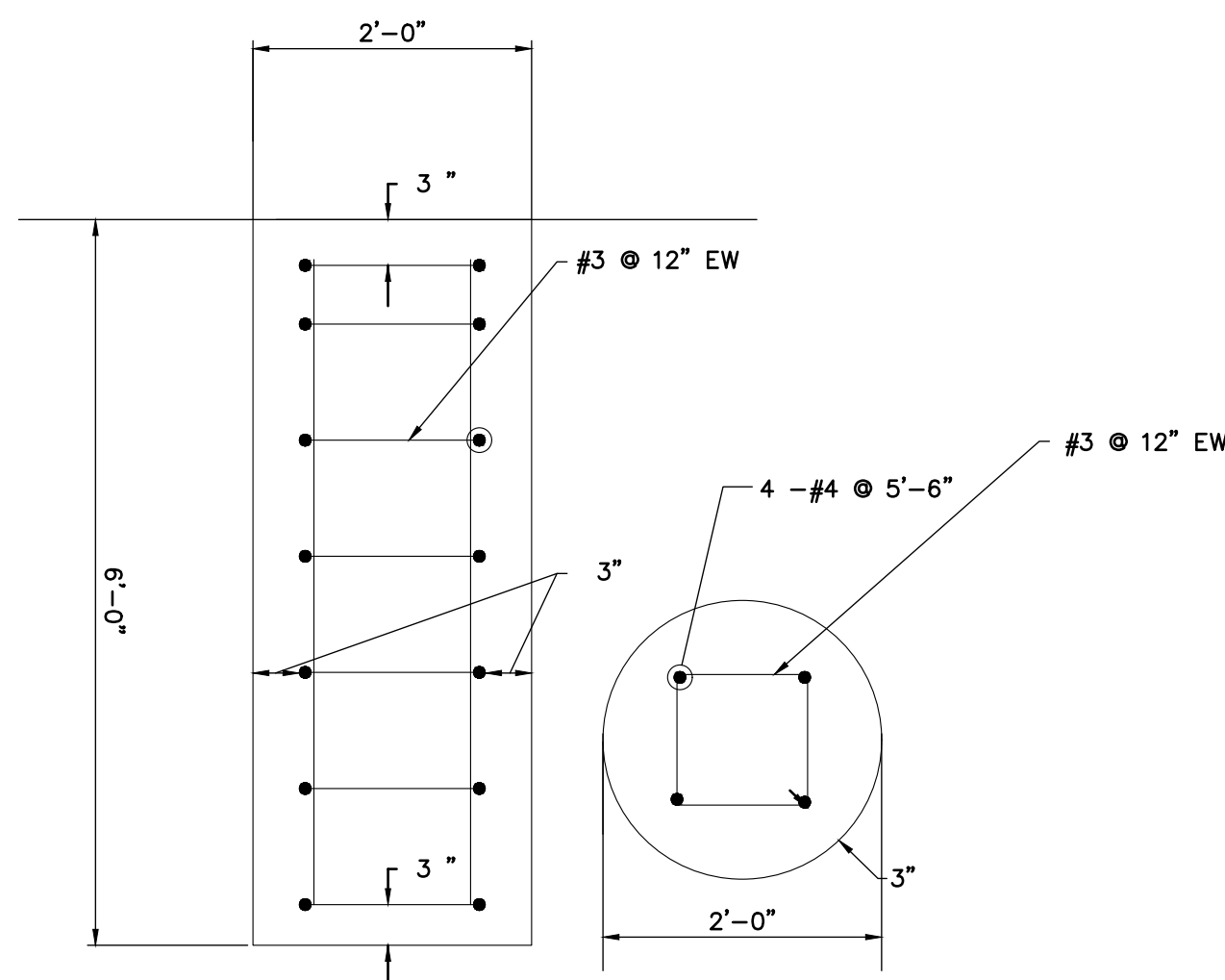
- DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI-350)
- ALL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60. ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
- ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.
- HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7 ld, UNLESS OTHERWISE NOTED.
- WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL.
- UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

6.1.	STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS	4000 PSI
6.2.	SLABS ON GRADE	4000 PSI
6.3.	LEAN CONCRETE CLASS B	1500 PSI
6.4.	GROUT FILL CLASS H	3000 PSI
- UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

7.1.	SLABS	
7.1.1.	TOP AND BOTTOM OF FORMED SLABS	2 1/2"
7.1.2.	TOP OF WALK AND DRIVEWAY SLABS	2"
7.1.3.	SURFACES IN CONTACT WITH LIQUID	2"
7.1.4.	BOTTOM OF SLABS ON FILL OR SOIL	3"
7.2.	WALLS:	
7.2.1.	LESS THAN 12" THICK	1 1/2"
7.2.2.	12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH	2"
7.2.3.	12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH	2 1/2"
- HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.
- ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.
- REFER TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION

STRUCTURAL STEEL

- STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36. ALL STEEL SHALL BE HOT DIP GALVANIZED
- ANCHOR BOLTS:
 - ANCHOR BOLTS AND MISC EMBEDDED STEEL-----ASTM A36.
 - ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE-----316 SS.



ANTENNA FOUNDATION DETAIL
NOT TO SCALE

MARK	DATE	DESCRIPTION

PROJECT NUMBER	10030969
CHECKED BY	E. Him
DRAWN BY	L. Tefft



SHEET NAME

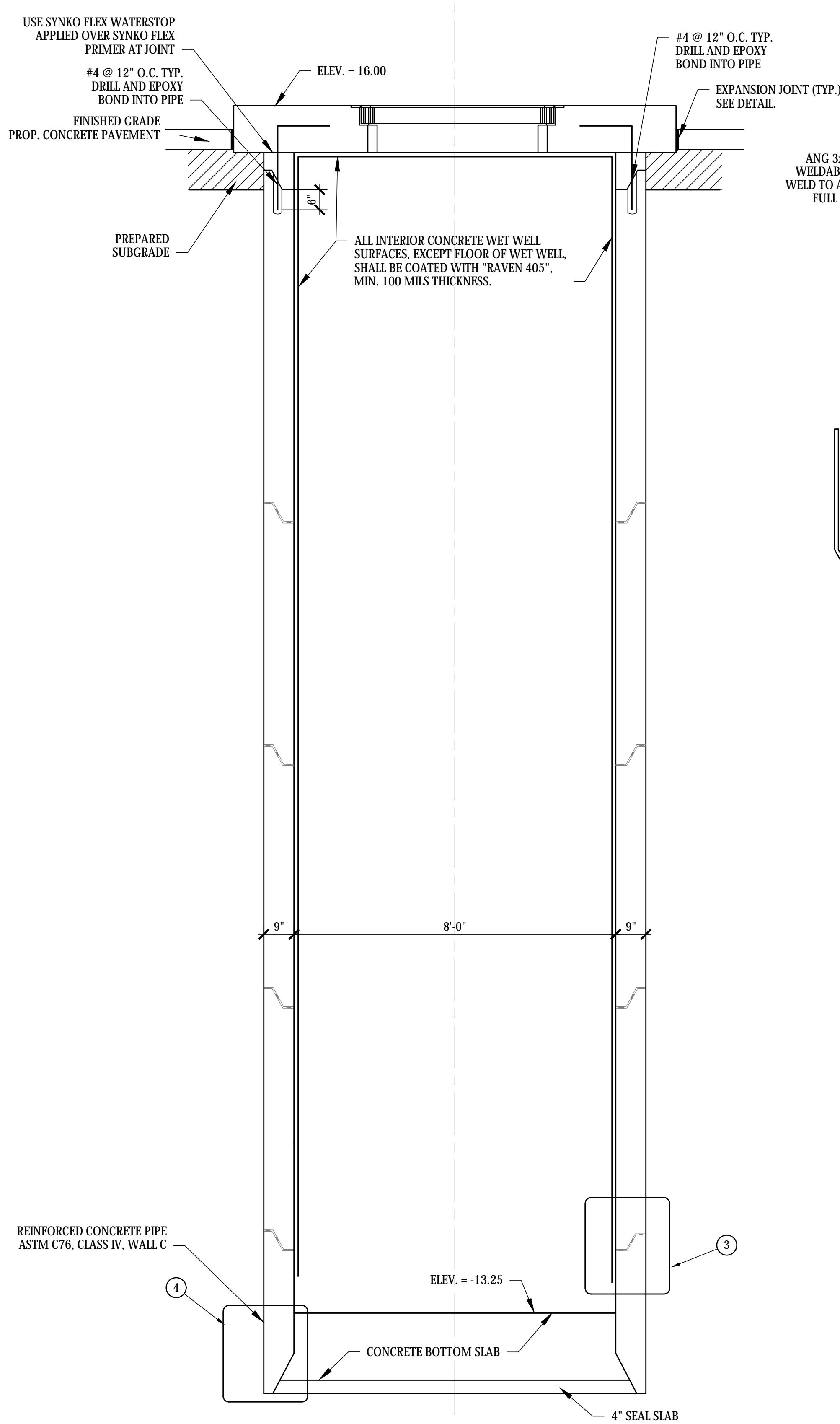
Structural
Details I

SCALE | As Shown

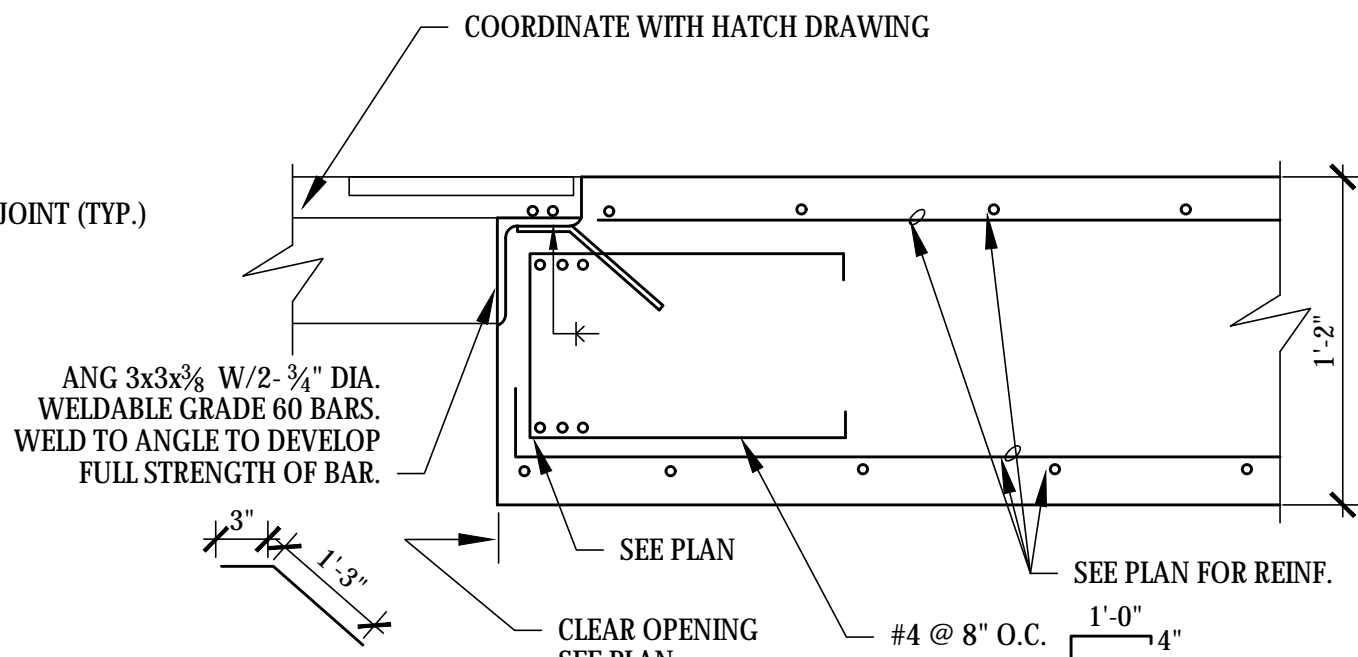
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SHEET 7 OF 20

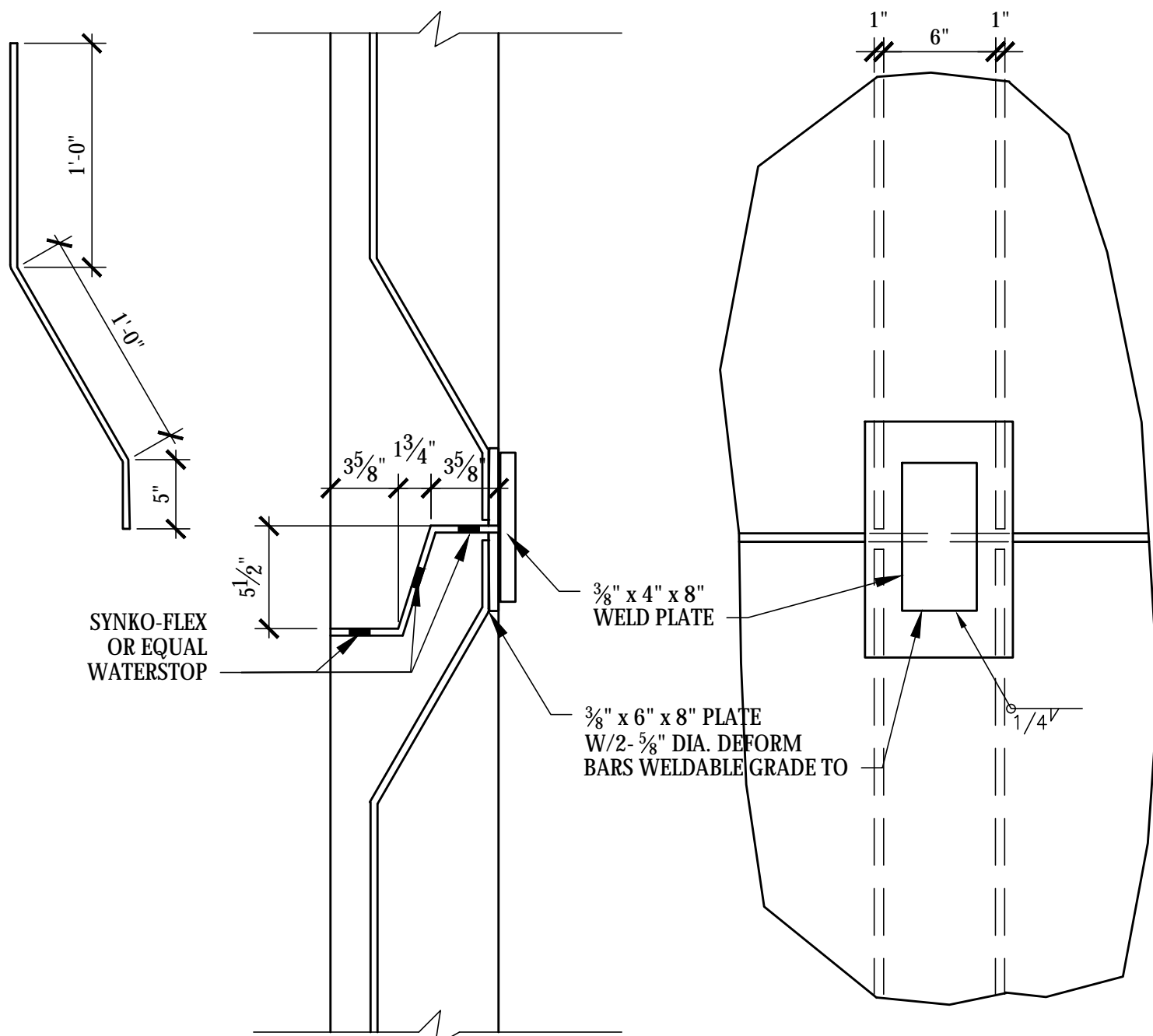
FILE NAME |



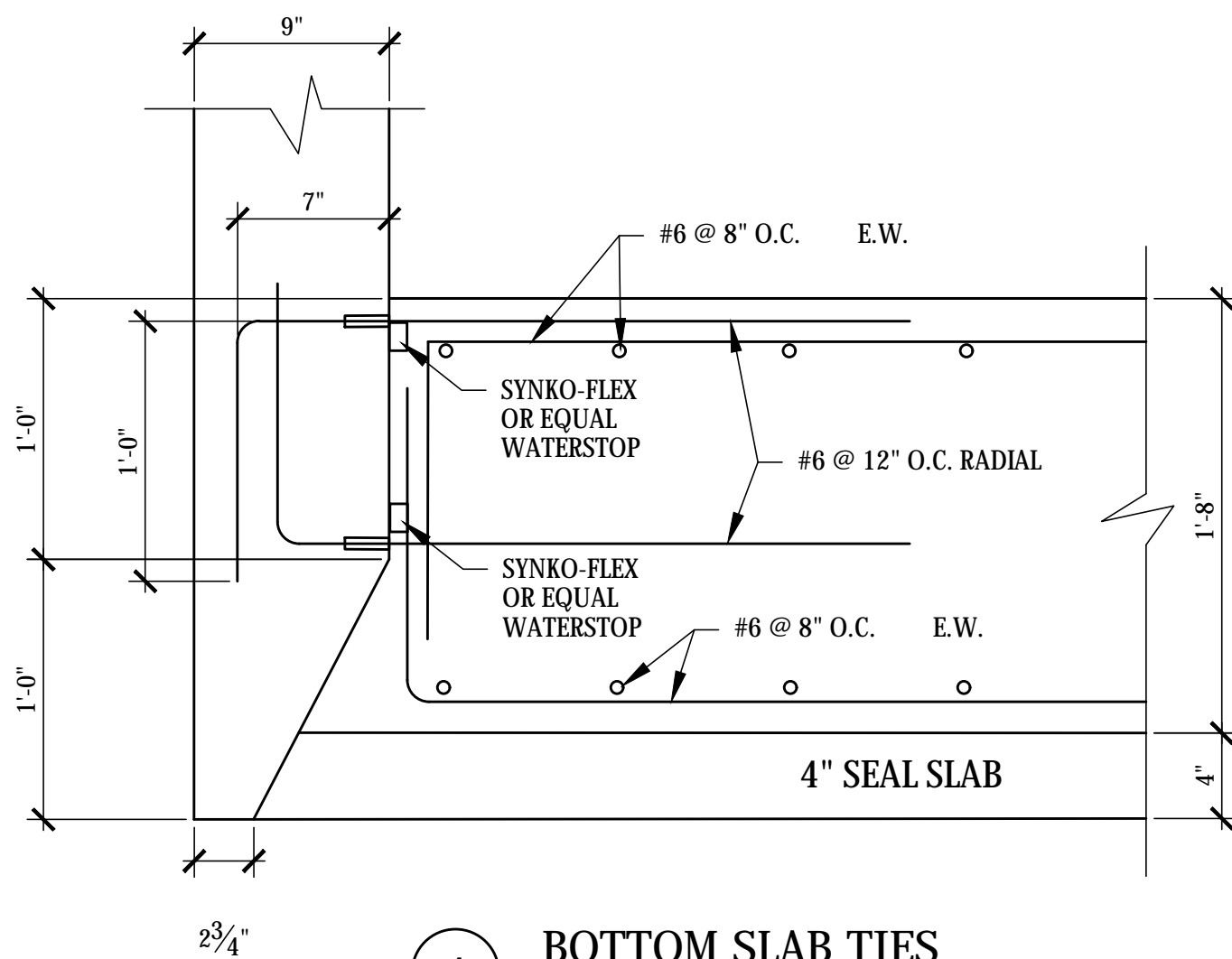
1 CAISSON SECTION
Scale: 1/2" = 1'-0"



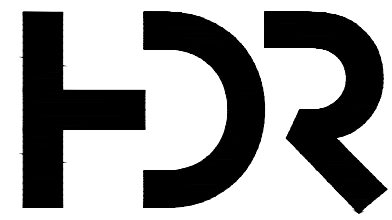
2 TOP AT OPENING SECTION
Scale: 1 1/2" = 1'-0"



3 CAST JOINT RESTRAINT
Scale: 1 1/2" = 1'-0"



4 BOTTOM SLAB TIES
Scale: 1 1/2" = 1'-0"



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PROJECT FOR

CLEAR CREEK VILLAGE
LIFT STATION
REPLACEMENT



MARK	DATE	DESCRIPTION
PROJECT NUMBER	10030969	
CHECKED BY	E. Him	
DRAWN BY	L. Tefft	



SHEET NAME

Structural
Details II

SCALE As Shown

SHEET NUMBER

SHEET 8 OF 20

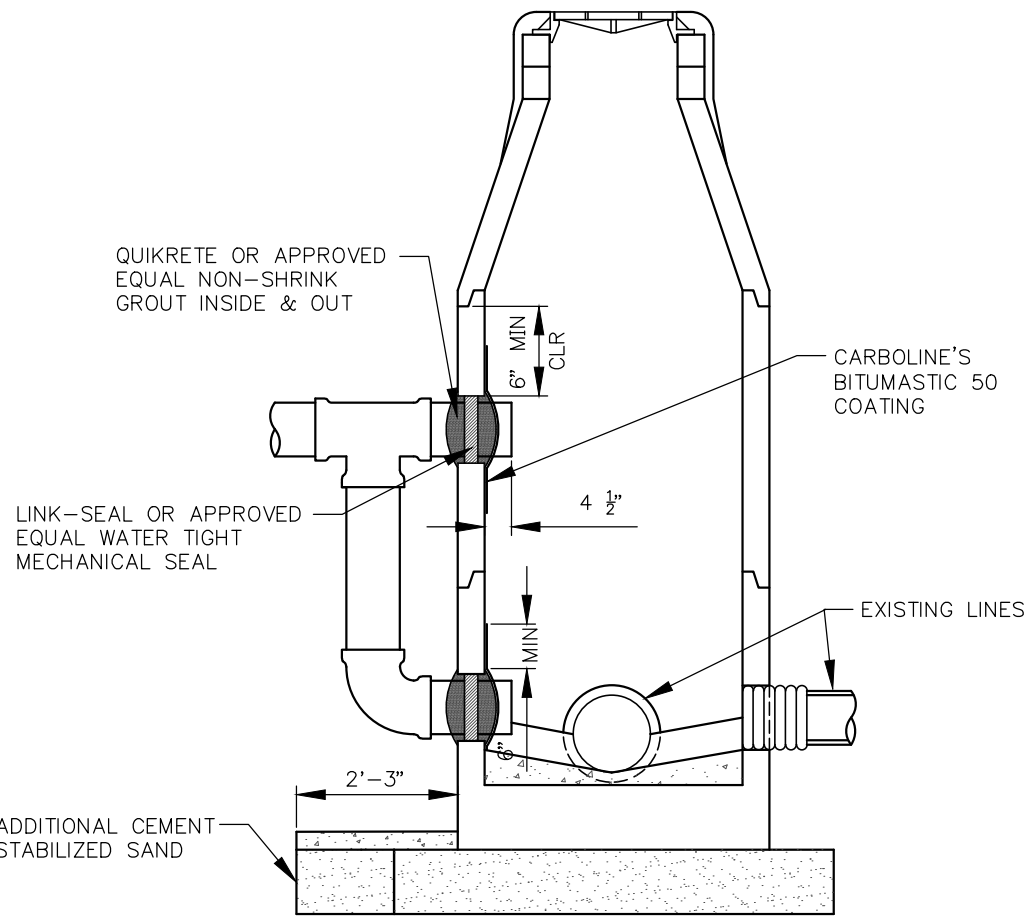
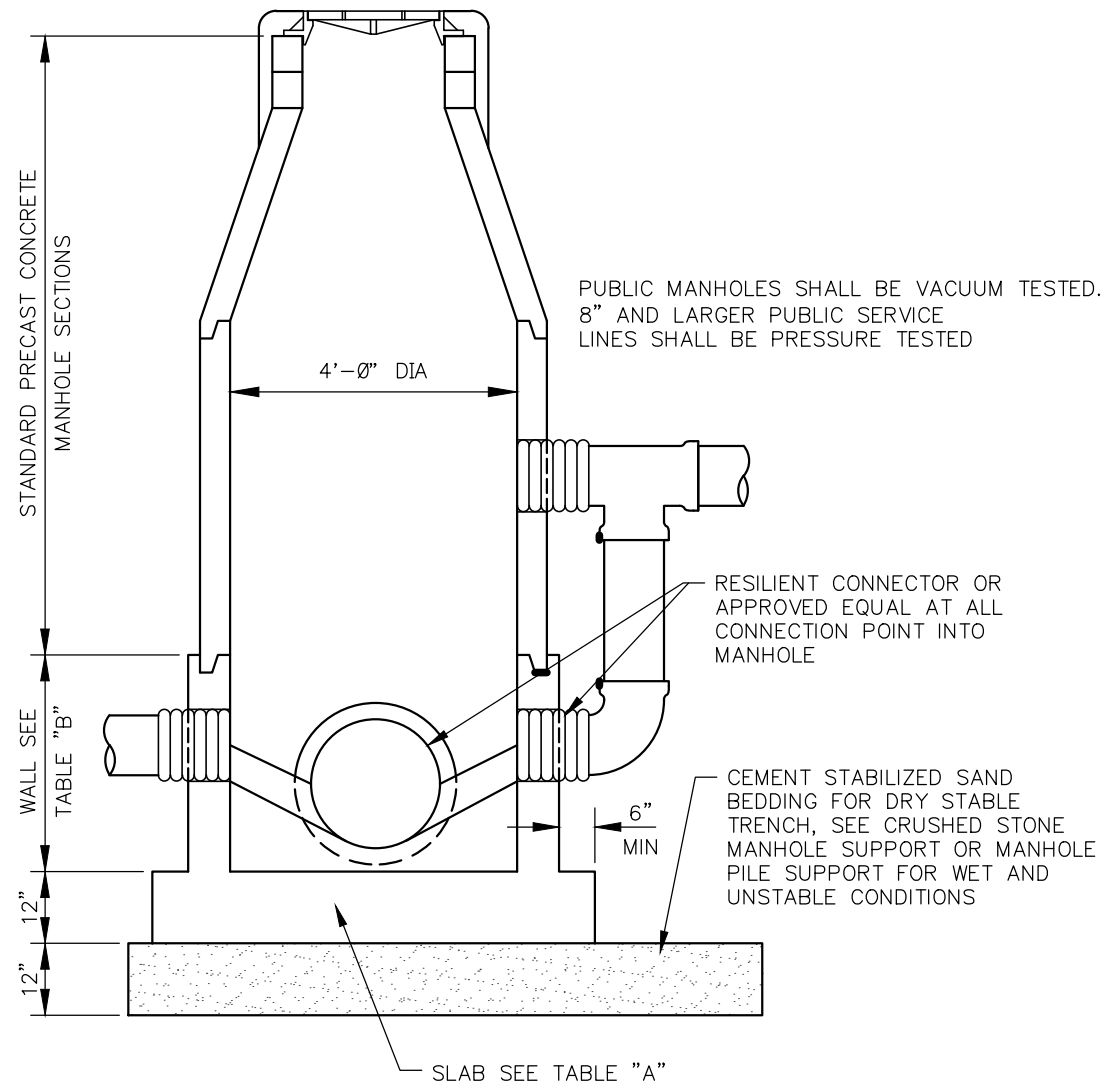
FILE NAME

TABLE "A"			
BASE SLAB REINFORCING AND THICKNESS			
MANHOLE BASE DIAMETER FEET	DEPTH TO INVERT (FT)	BASE THICKNESS	REINFORCING BARS EACH WAY TOP AND BOTTOM
8	≤20	1'-0"	#6 @ 10"
	≤25	1'-2"	#6 @ 8"
	≤30	1'-4"	#6 @ 7"
	≤40	1'-6"	#6 @ 6"
	≤50	1'-8"	#6 @ 6"
6	≤15	1'-0"	#5 @ 8"
	≤20	1'-0"	#5 @ 8"
	≤25	1'-2"	#5 @ 7"
	≤30	1'-2"	#5 @ 6"
	≤40	1'-2"	#6 @ 8"

TABLE "B"					
WALL REINFORCING AND THICKNESS					
MANHOLE BASE DIAMETER FEET	DEPTH TO INVERT (FT)	WALL HEIGHT	WALL THICKNESS	REINFORCING AT EACH FACE VERTICAL	REINFORCING AT EACH FACE HORIZONTAL
8	≤20	6'-0"	10"	#6 @ 12"	#6 @ 12"
	≤25	6'-6"	10"	#6 @ 10"	#6 @ 12"
	≤30	7'-0"	10"	#6 @ 8"	#6 @ 12"
	≤40	8'-0"	1'-0"	#5 @ 8"	#6 @ 12"
	≤50	9'-0"	1'-2"	#6 @ 6"	#6 @ 12"
6	≤15	5'-0"	8"	#5 @ 12"	#5 @ 12"
	≤20	5'-6"	8"	#5 @ 8"	#5 @ 12"
	≤25	6'-0"	9"	#5 @ 8"	#5 @ 12"
	≤30	6'-0"	9"	#5 @ 8"	#5 @ 12"
	≤40	7'-0"	10"	#5 @ 8"	#5 @ 8"

SANITARY SEWER PRECAST MANHOLE
WITH CAST-IN-PLACE BASE

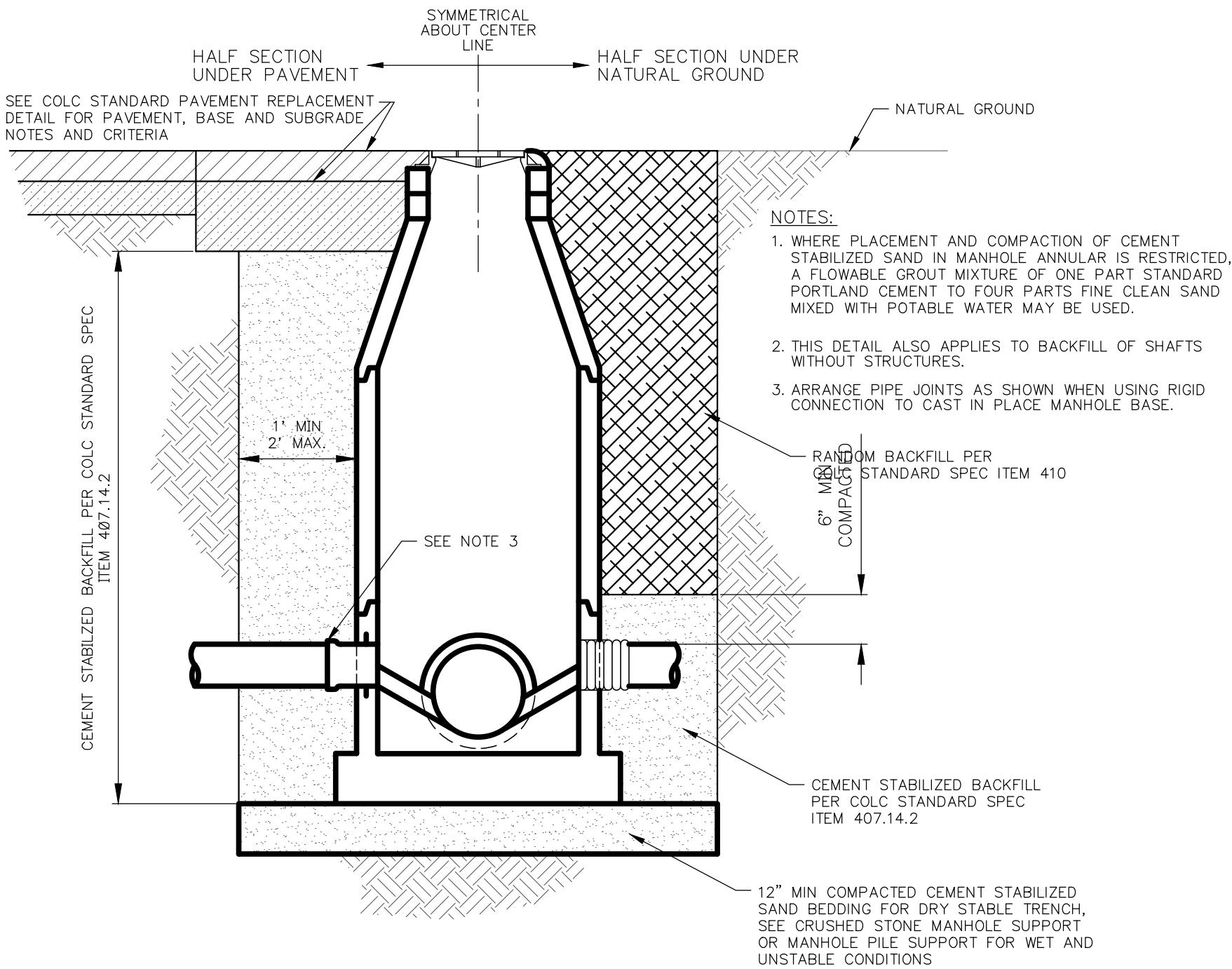
NTS 4-2012



- NOTES:
1. NO TAPS WILL BE ALLOWED ON CONE SECTION OF MANHOLE.
 2. A MIN OF 6" CLEARANCE SHALL BE KEPT FROM ANY MANHOLE JOINT LINE.
 3. TAPS SHALL ENTER PERPENDICUTLAR TO MANHOLE.
 4. WATER TIGHT SEALING MATERIAL SHALL BE APPROVED BEFORE INSTALLING AND GROUTING OVER.
 5. TAPS 6" AND GREATER INTO MANHOLES AND INTENDED FOR SERVICE TO PRIVATE PROPERTY SHALL BE INSTALLED TO COLC STANDARD AND HAVE A CLEANOUT OR MANHOLE INSTALLED AT THE PROPERTY AND/OR EASEMENT LINE.

MANHOLE CORE CUT W/DROP STRUCTURE

NTS 4-2012

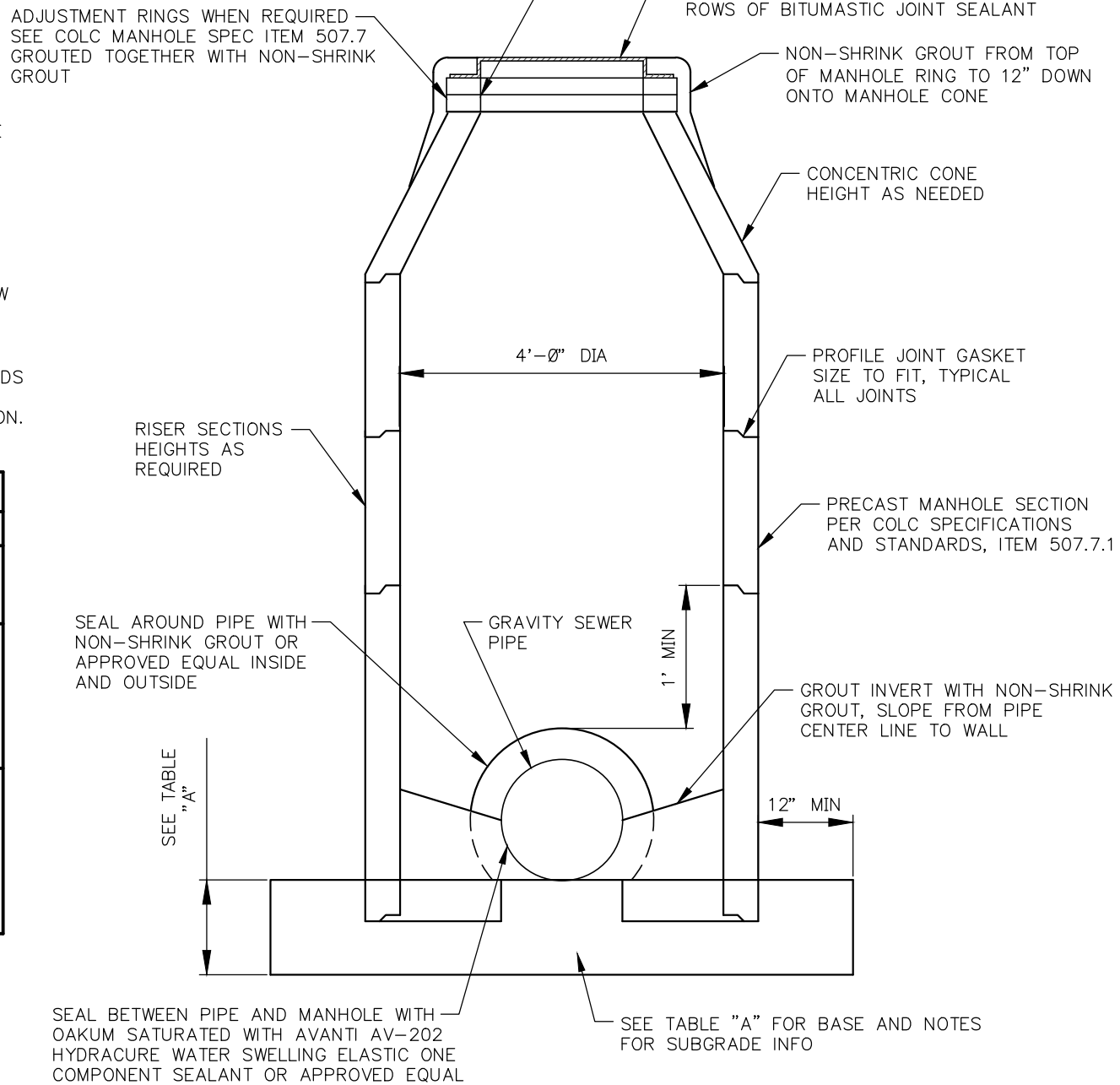


MANHOLE SHAFT BACKFILL

NTS 4-2012

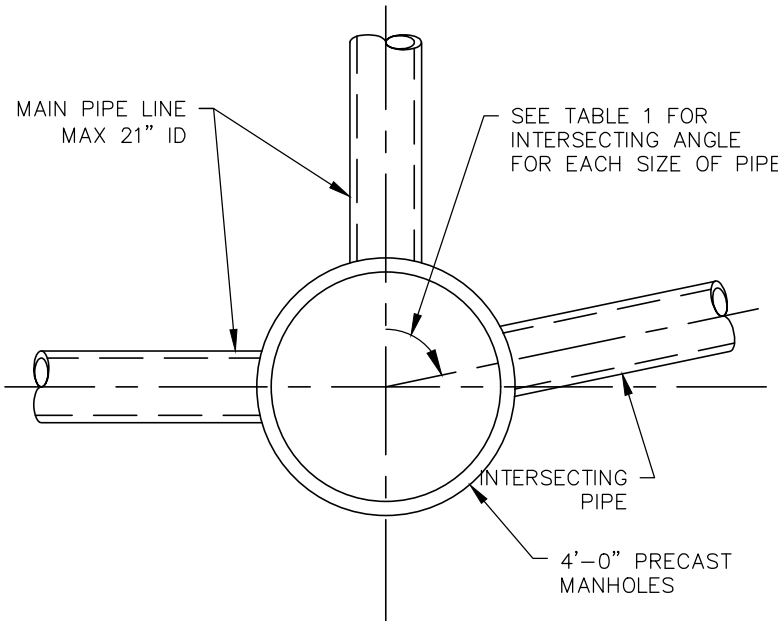
- NOTES:
1. BOTTOM MANHOLE SECTION TO BE SET 6" INTO CONCRETE BASE WHILE WET. BASE TO BE PER COLC SPEC ITEM 407.15.
 2. MANHOLE BASE TO BE SET ON 12" MIN COMPACTED CEMENT STABILIZED SAND IN NORMAL CONDITIONS. SEE CRUSHED STONE MANHOLE SUPPORT OR MANHOLE PILE SUPPORT FOR WET AND UNSTABLE CONDITIONS.
 3. MANHOLES SET WITHIN 3' OF ROADWAY TO BE BACKFILLED WITH CEMENT STABILIZED SAND PER COLC SPEC ITEM 407.14.2. ALL OTHER LOCATION SEE MANHOLE SHAFT BACKFILL DETAIL.
 4. BACKFILL FOR MANHOLES SET NEAR OR IN HIGHWAYS TO FOLLOW TxDOT SPECIFICATIONS.
 5. MANHOLES CONSTRUCTED ON CITY MAINS FOR THE PURPOSE OF PROVIDING PRIVATE SERVICE SHALL BE BUILT TO COLC STANDARDS AND BE INSPECTED BY CITY WATER UTILITY DEPT. CALL 281-554-1390 24 HRS PRIOR TO CONSTRUCTION AND INSPECTION.

TABLE "A"			
BASE SLAB REINFORCING AND THICKNESS			
MANHOLE BASE DIAMETER FEET	DEPTH TO INVERT (FT)	BASE THICKNESS	REINFORCING BARS EACH WAY TOP AND BOTTOM
8	≤20	1'-0"	#6 @ 10"
	≤25	1'-2"	#6 @ 8"
	≤30	1'-4"	#6 @ 7"
	≤40	1'-6"	#6 @ 6"
	≤50	1'-8"	#6 @ 6"
6	≤15	1'-0"	#5 @ 8"
	≤20	1'-0"	#5 @ 8"
	≤25	1'-2"	#5 @ 7"
	≤30	1'-2"	#5 @ 6"
	≤40	1'-2"	#6 @ 8"

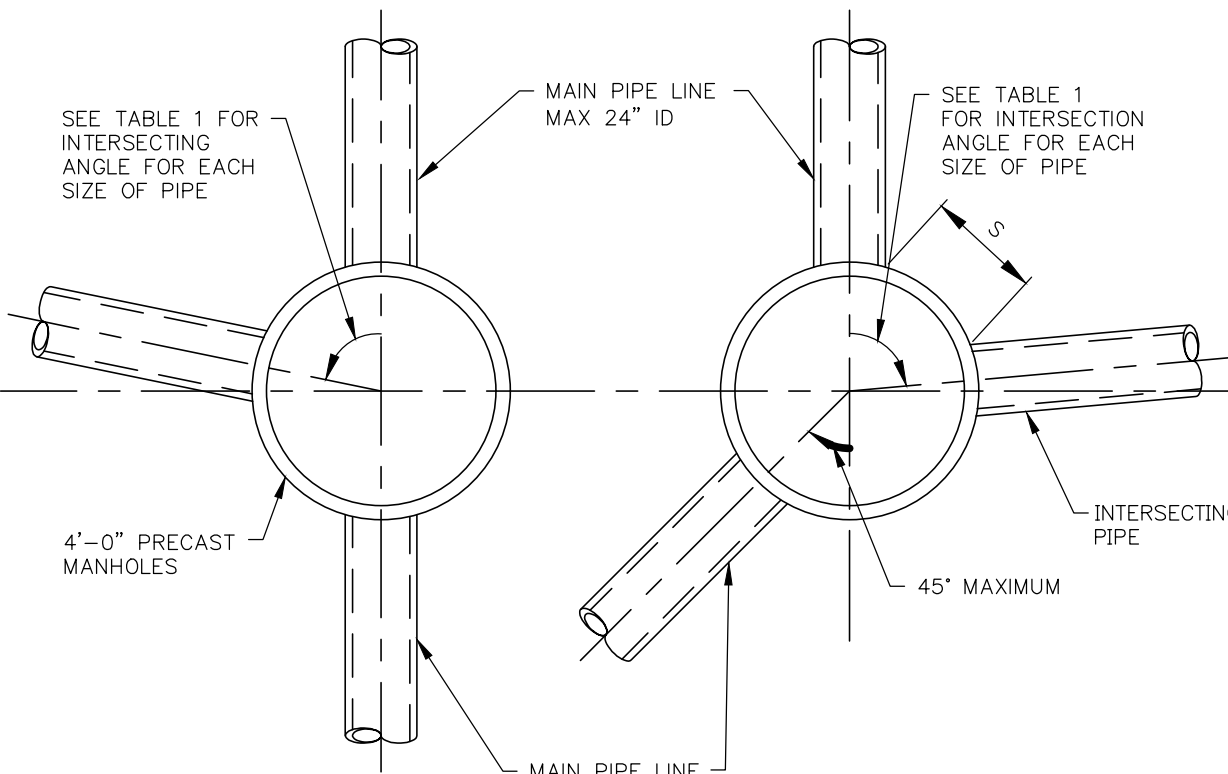


SANITARY SEWER PRECAST MANHOLE
ON EXISTING LINE WITH POURED BASE

NTS 4-2012



MAX 21" ID MAIN PIPE ALLOWED FOR 45° TO 90° DEFLECTION



MAX 24" ID MAIN PIPE ALLOWED FOR STRAIGHT THROUGH TO 45° DEFLECTION

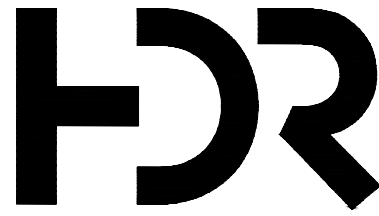
4 FT MANHOLE NOTE

NTS 4-2012

TABLE 1								
MIN ANGLE AND INTERSECTING PIPE SIZES FOR A 4'-0" DIA MANHOLE								
INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES INCHES							
6	6"	8"	10"	12"	15"	18"	21"	24"
8	55	58	60	65	70	75	80	85
10		60	63	68	73	77	82	87
12			66	71	75	80	85	90
15				75	80	85	90	-
18					85	90	-	-
21						-	-	-
24							-	-

NOTES TO SPECIFIER:

1. "-" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.
2. TABLE 1 IS BASED ON A MIN SEPARATION DISTANCE "S" OF 15.5" OR INTERSECT PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.
3. MANHOLE WALL THICKNESS SHALL BE A MIN. OF 5". MANHOLES OVER 12' IN DEPTH SHALL HAVE A WALL THICKNESS DETERMINED TO MEET LOAD CONDITIONS.



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PROJECT FOR

CLEAR CREEK VILLAGE
LIFT STATION
REPLACEMENT



MARK	DATE	DESCRIPTION
PROJECT NUMBER	10030969	
CHECKED BY	E. Him	
DRAWN BY	L. Tefft	



SHEET NAME

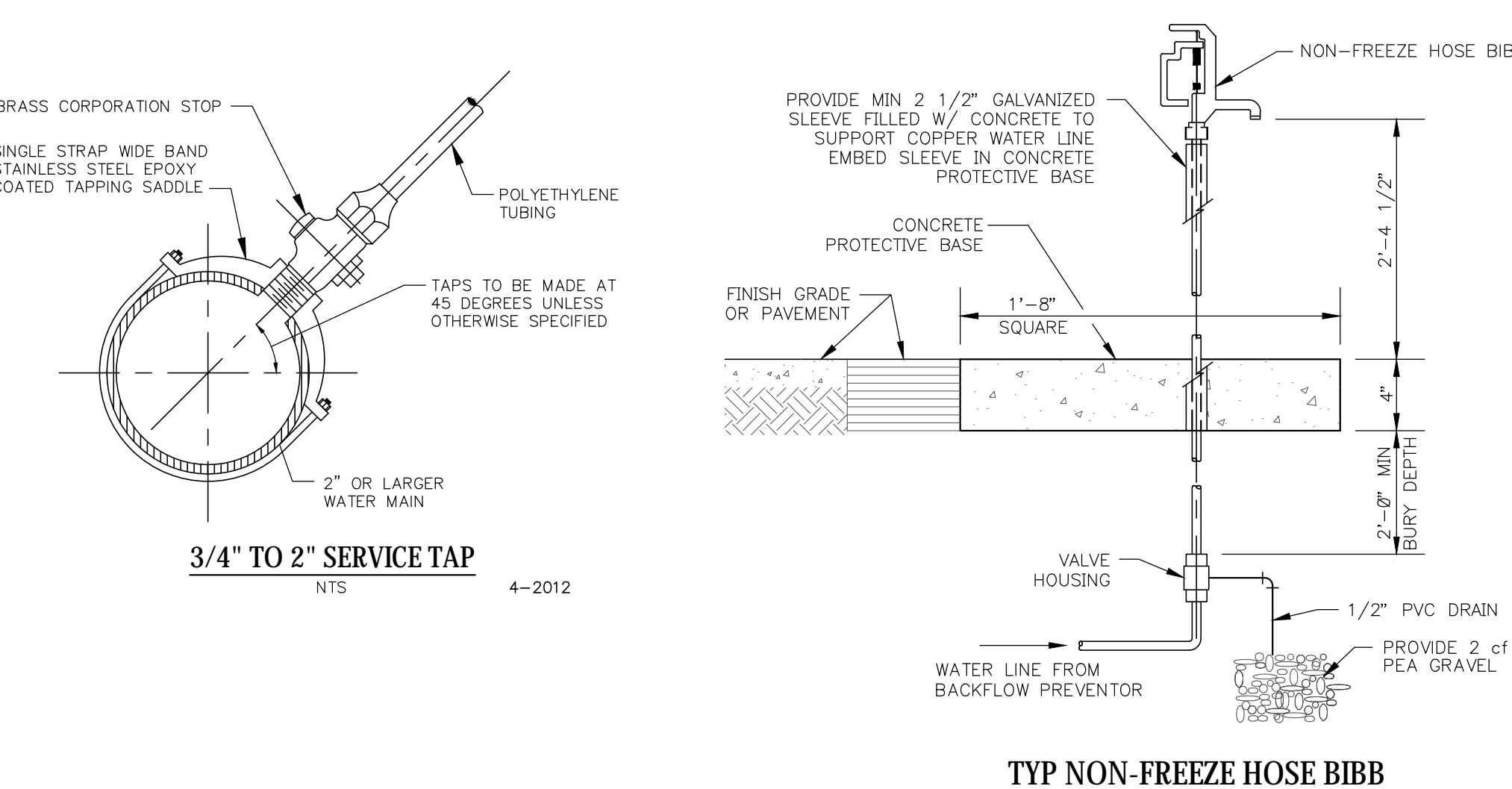
Sanitary Sewer
Details

SCALE NTS

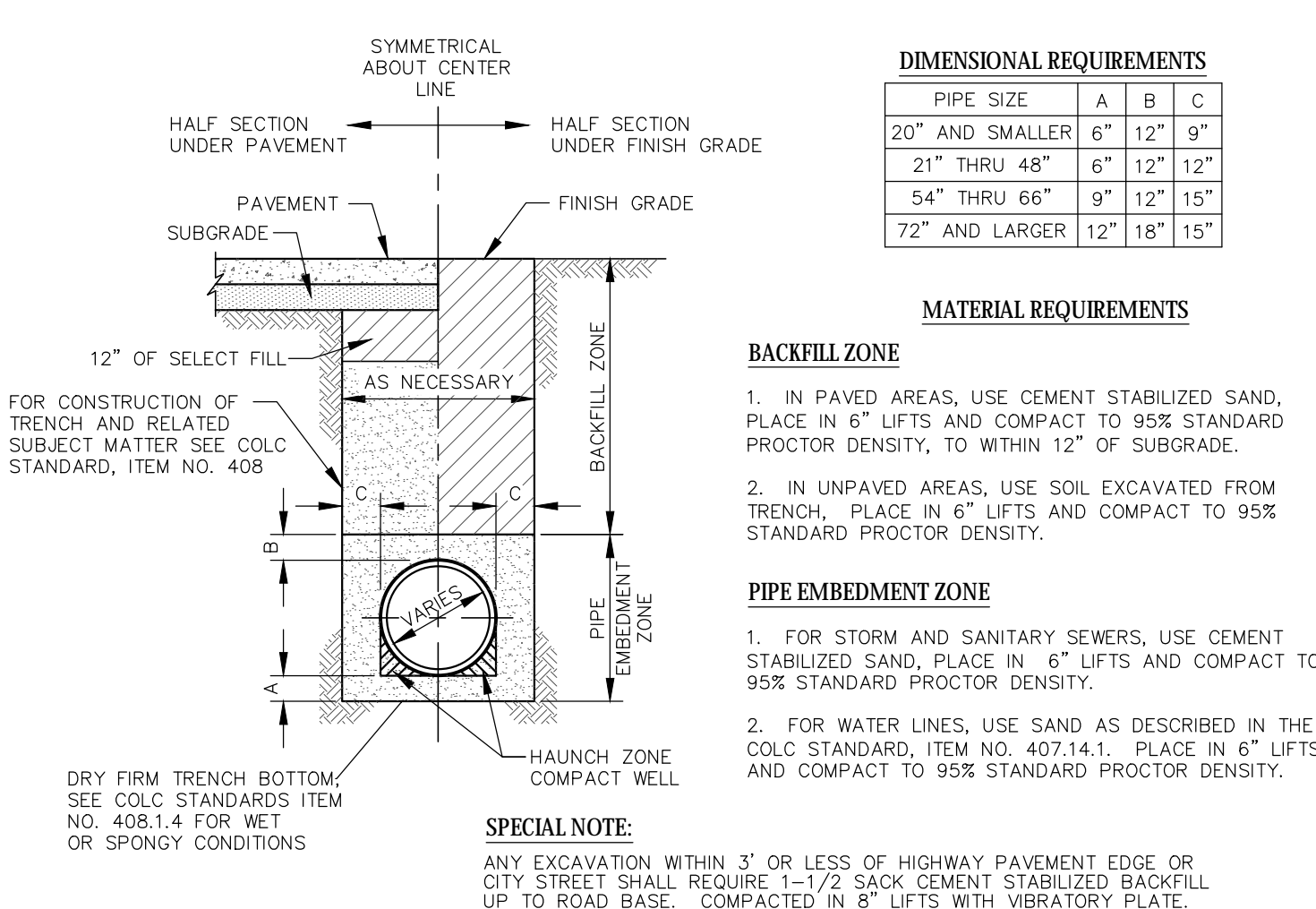
SHEET NUMBER

SHEET 9 OF 20

FILE NAME




90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		PLUG	
PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA
4"	2 S.F.	4"	1 S.F.	4"	1 S.F.	4"	1 S.F.	4"	2 S.F.	4"	2 S.F.
6"	4 S.F.	6"	3 S.F.	6"	1 S.F.	6"	1 S.F.	6"	3 S.F.	6"	3 S.F.
8"	4 S.F.	8"	4 S.F.	8"	2 S.F.	8"	1 S.F.	8"	5 S.F.	8"	5 S.F.
10"	12 S.F.	10"	6 S.F.	10"	3 S.F.	10"	2 S.F.	10"	8 S.F.	10"	8 S.F.
12"	16 S.F.	12"	9 S.F.	12"	5 S.F.	12"	2 S.F.	12"	12 S.F.	12"	12 S.F.
14"	22 S.F.	14"	12 S.F.	14"	6 S.F.	14"	3 S.F.	14"	15 S.F.	14"	15 S.F.
16"	29 S.F.	16"	16 S.F.	16"	8 S.F.	16"	4 S.F.	16"	20 S.F.	16"	20 S.F.
18"	36 S.F.	18"	20 S.F.	18"	10 S.F.	18"	5 S.F.	18"	25 S.F.	18"	25 S.F.
20"	44 S.F.	20"	24 S.F.	20"	12 S.F.	20"	6 S.F.	20"	30 S.F.	20"	32 S.F.
24"	64 S.F.	24"	36 S.F.	24"	18 S.F.	24"	9 S.F.	24"	45 S.F.	24"	45 S.F.
30"	100 S.F.	30"	54 S.F.	30"	28 S.F.	30"	12 S.F.	30"	71 S.F.	30"	71 S.F.
36"	163 S.F.	36"	72 S.F.	36"	36 S.F.	36"	15 S.F.	36"	77 S.F.	36"	77 S.F.



THRUST BLOCKING NOTES:

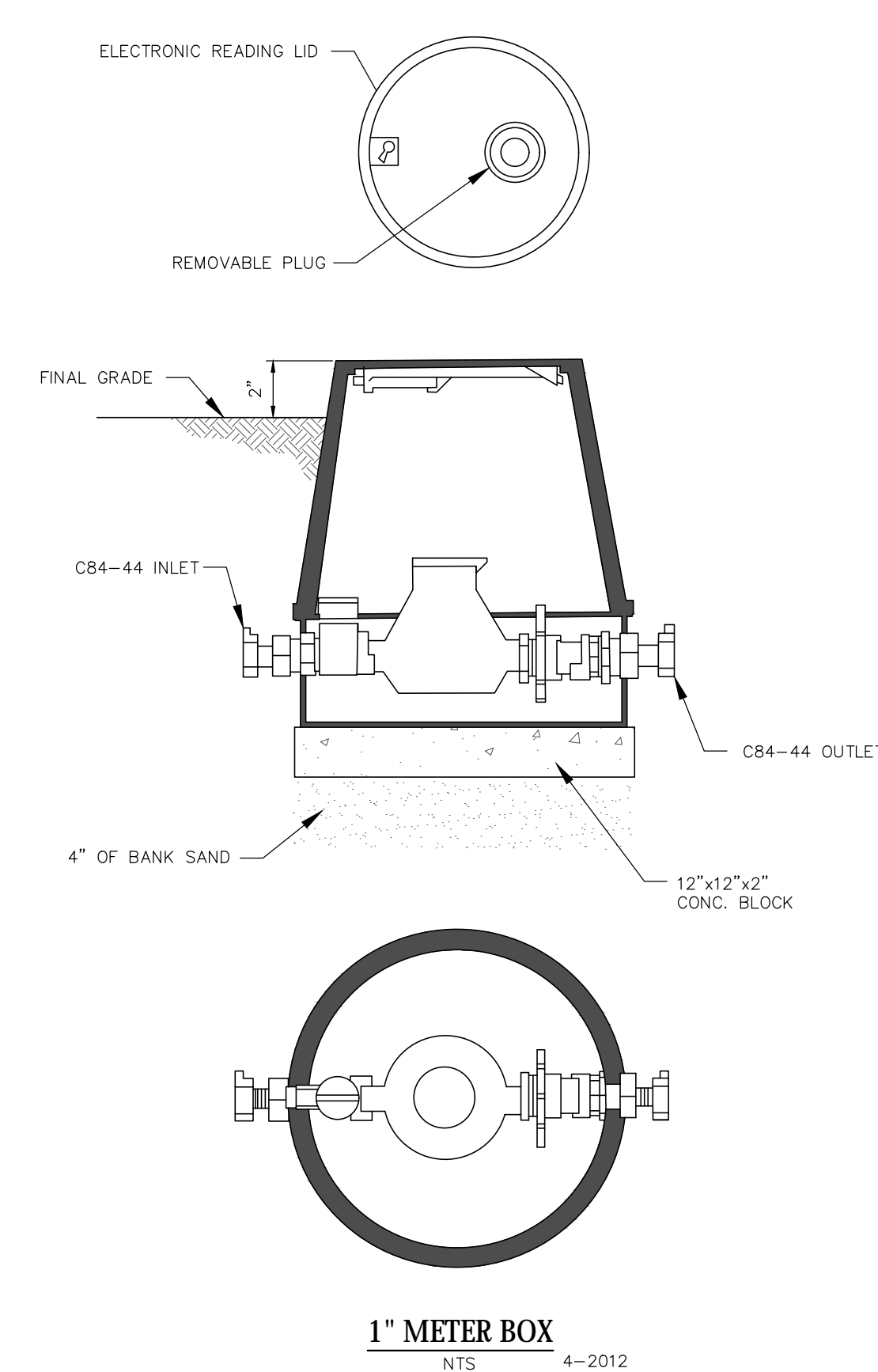
1. SEE COLC SPECIFICATION ITEM 407.15 FOR CONCRETE.
2. PLACE CONCRETE AGAINST UNDISTURBED SOIL AND FITTING ONLY, CLEAR OF THE JOINT.
3. ALL IRON FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE FILM 8 MILS MIN THICKNESS MEETING ANSI 21.5 (AWWA C105) WITH ALL EDGES AND LAPS TAPED SECURELY TO PROVIDE A CONTINUOUS AND WATERTIGHT WRAP.
4. DIMENSIONS ARE BASED ON 150 PSI TEST PRESSURE AND SAFE SOIL BEARING LOAD OF 1100 PSI.
5. ALL FITTINGS TO BE MECHANICAL JOINT WITH MEGA-LUG RESTRAINTS OR APPROVED EQUAL.



PLUG

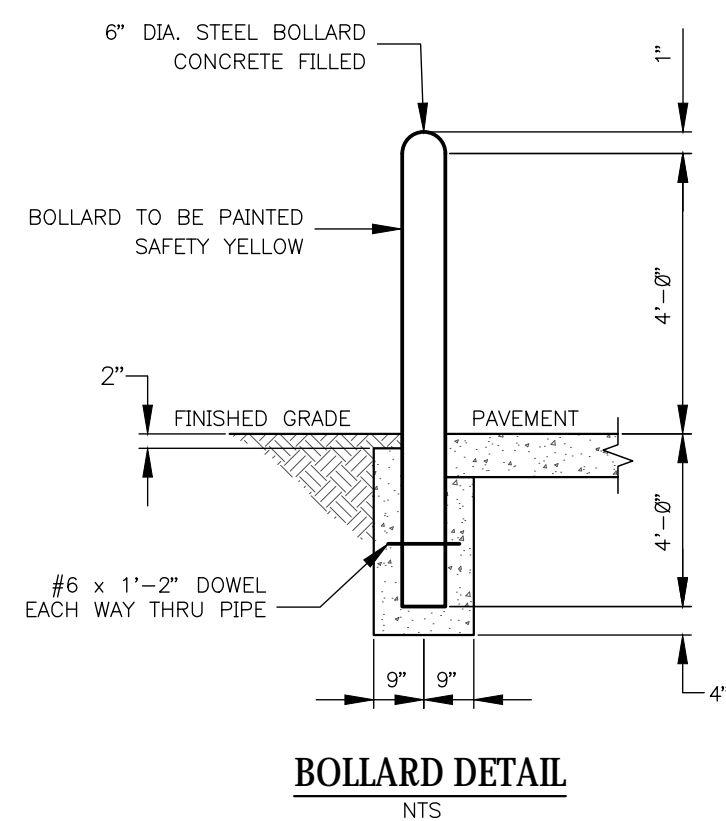
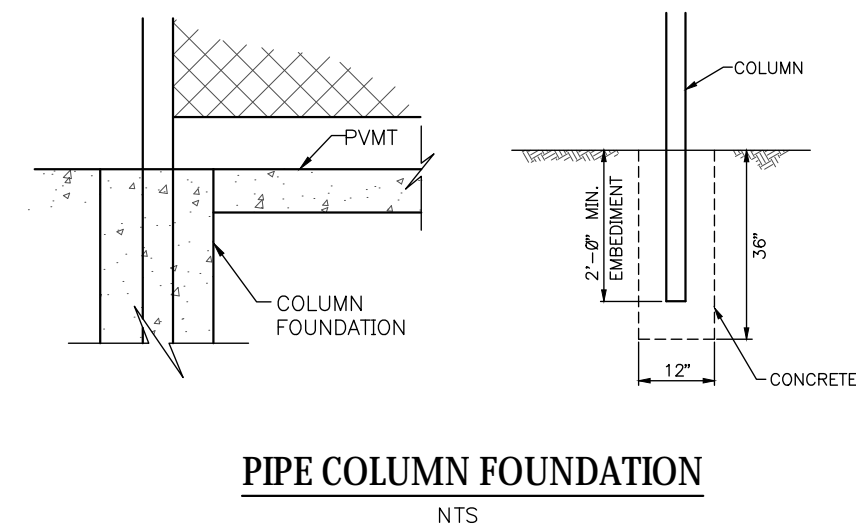
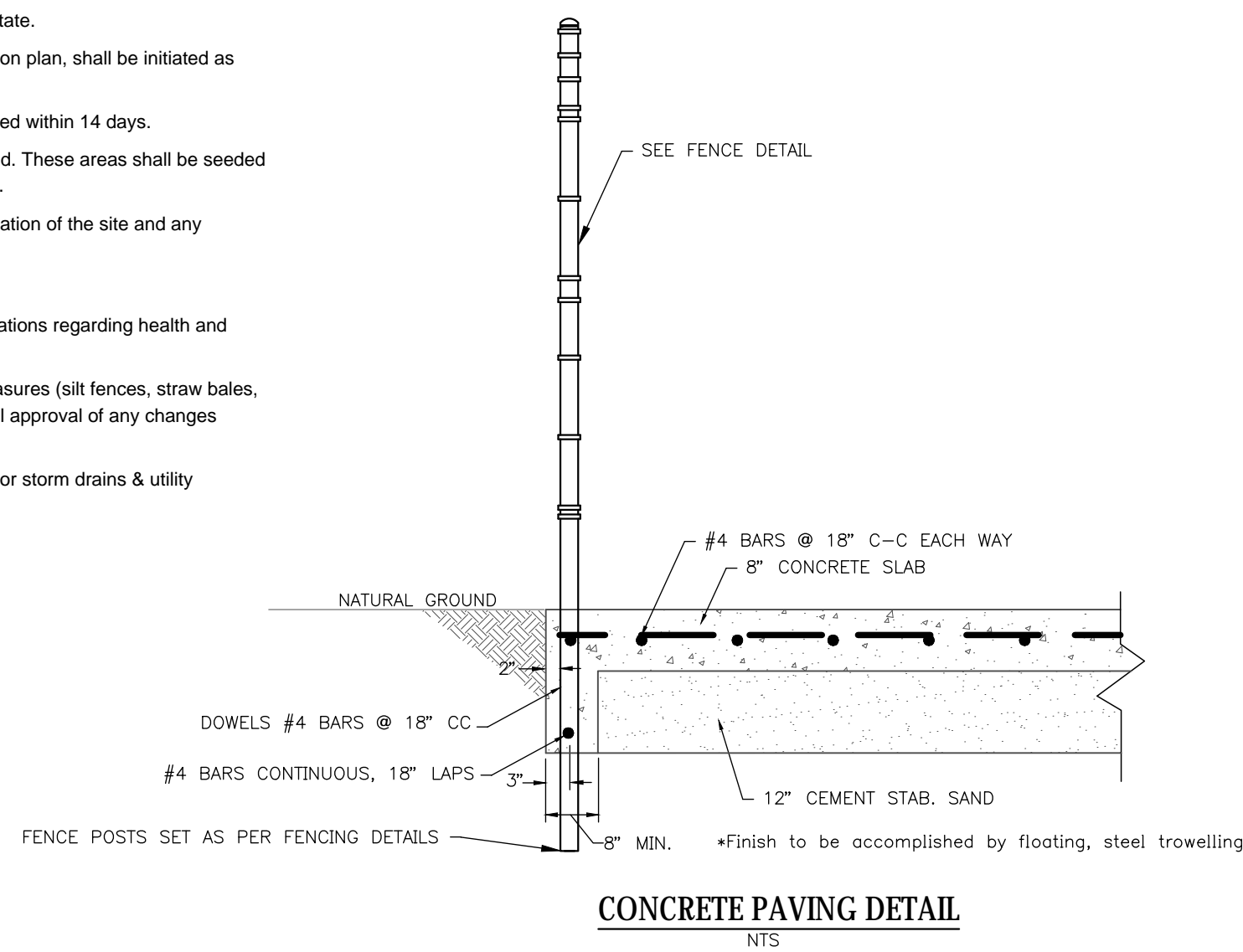
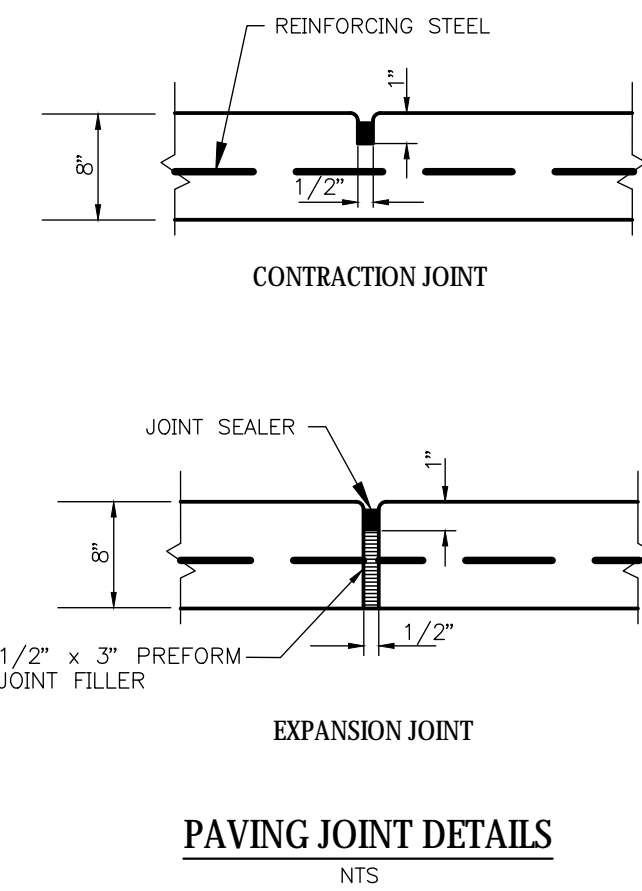
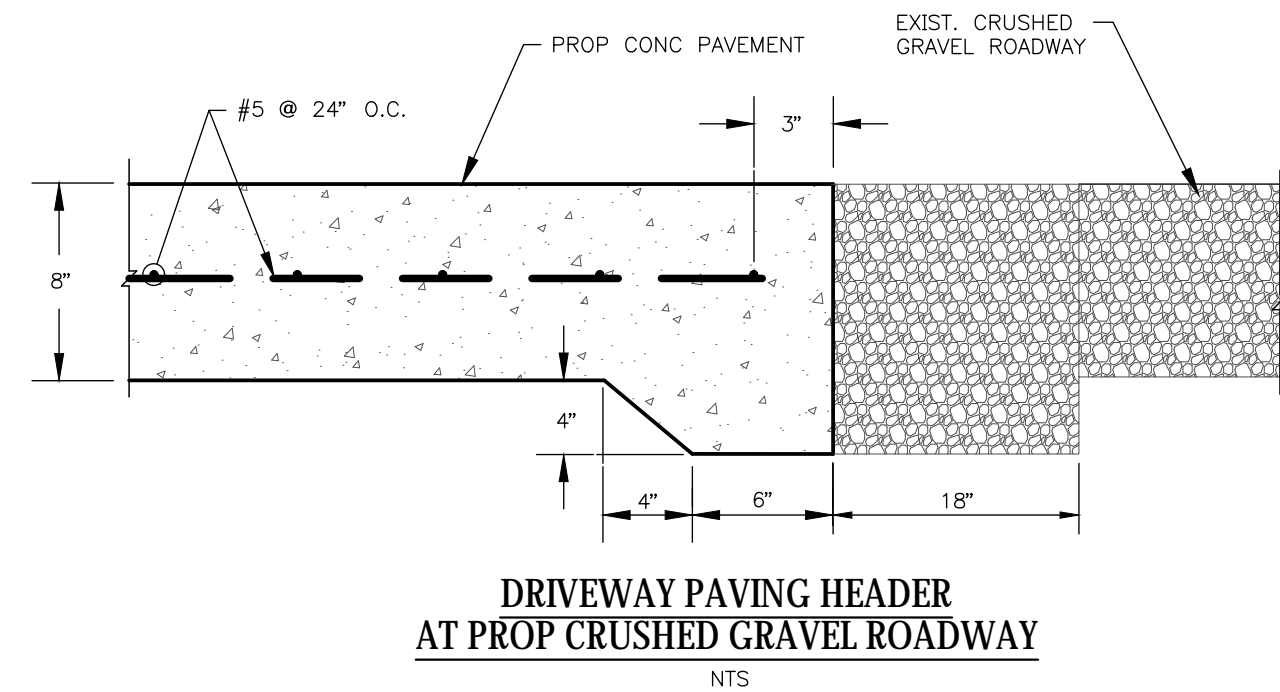
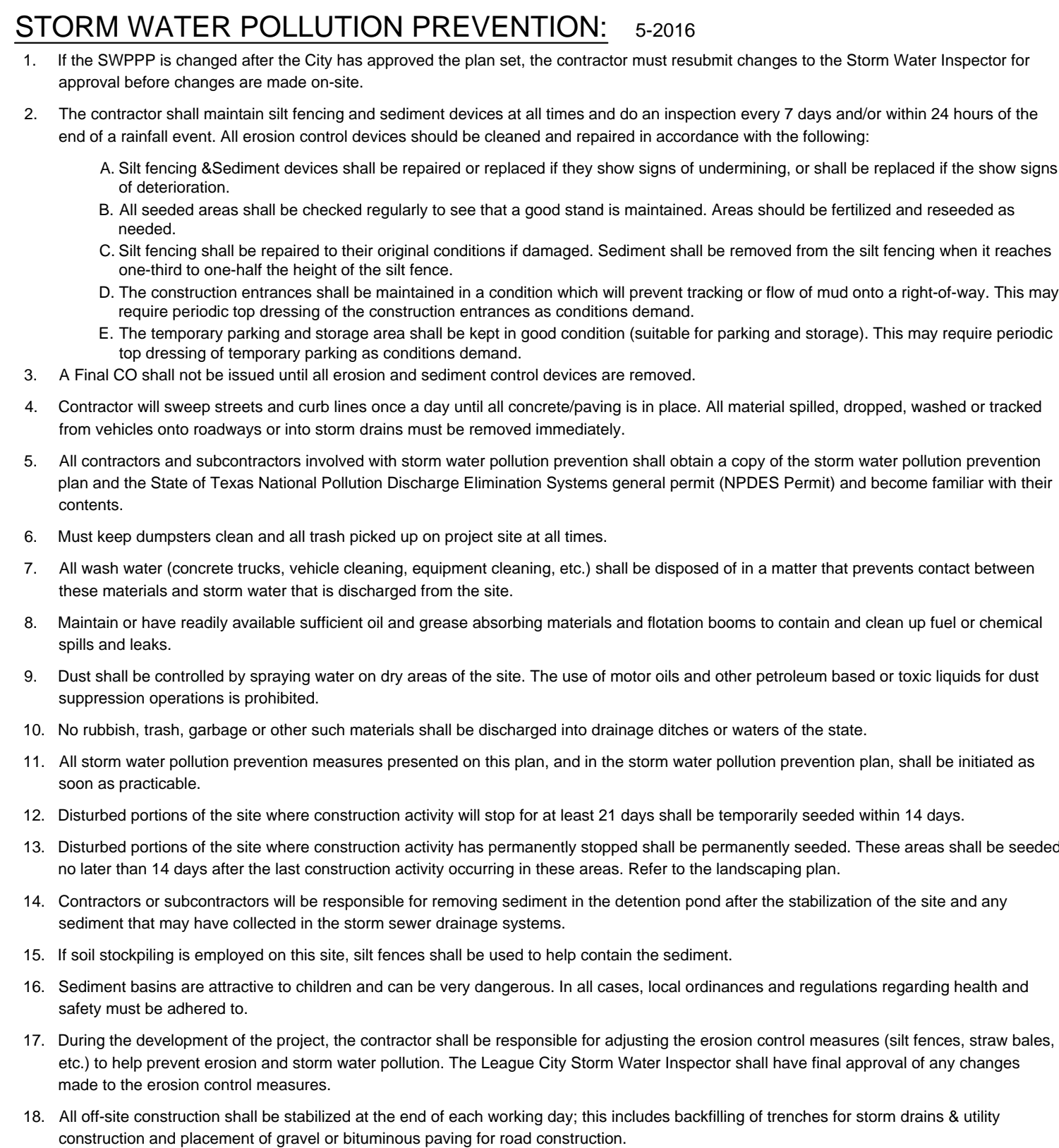
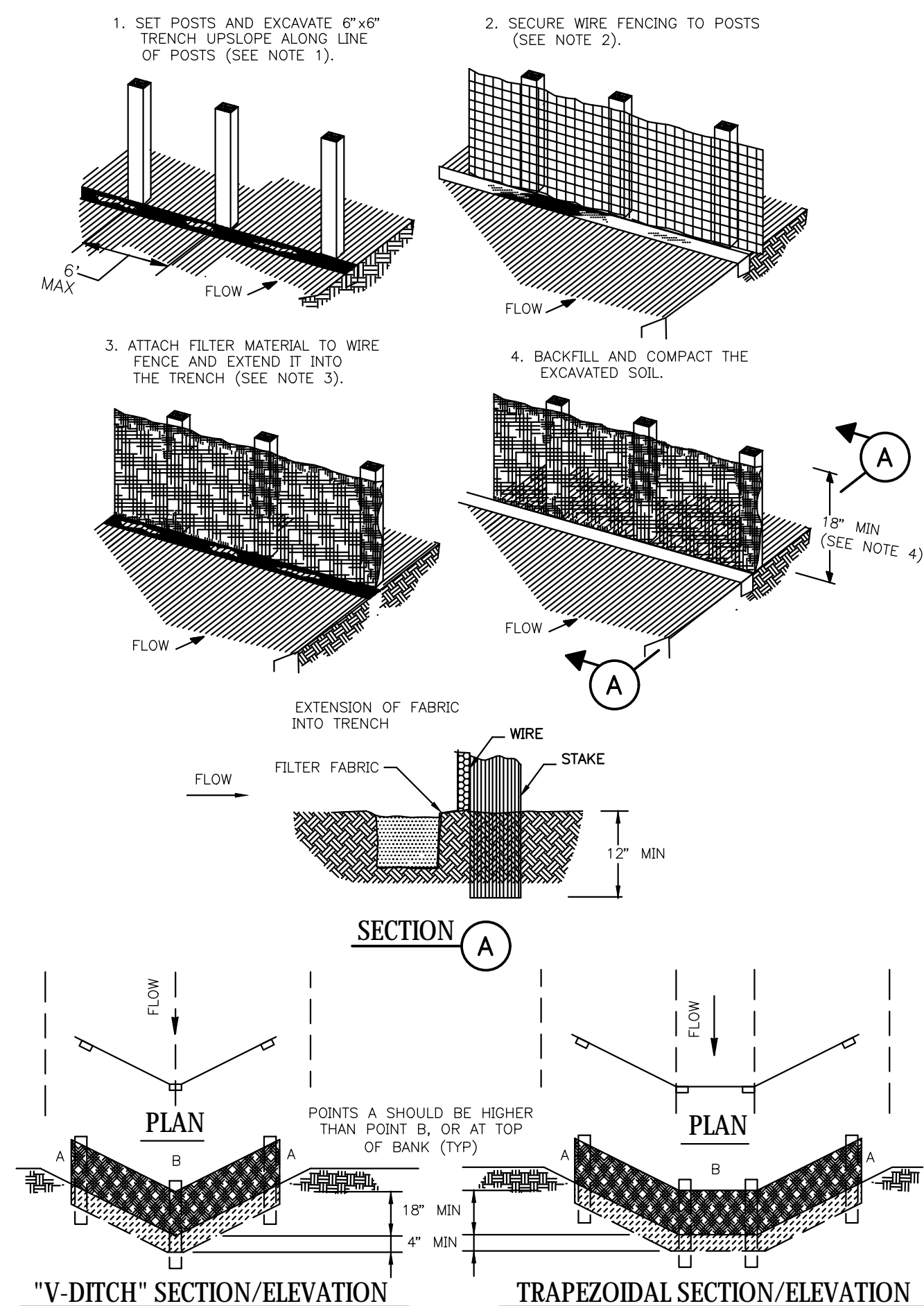
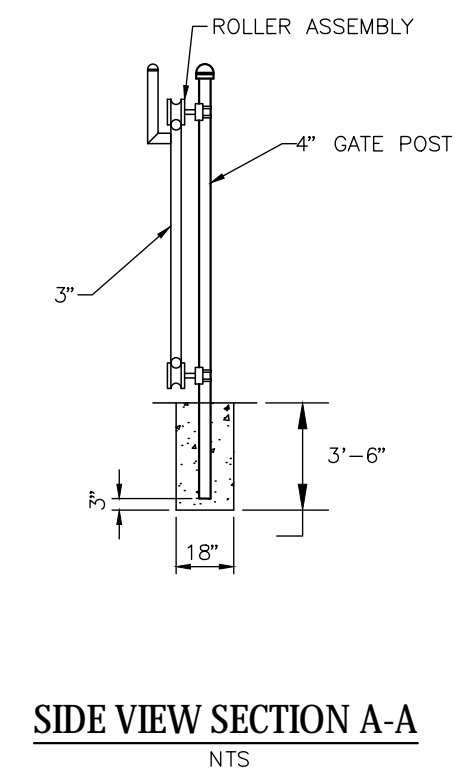
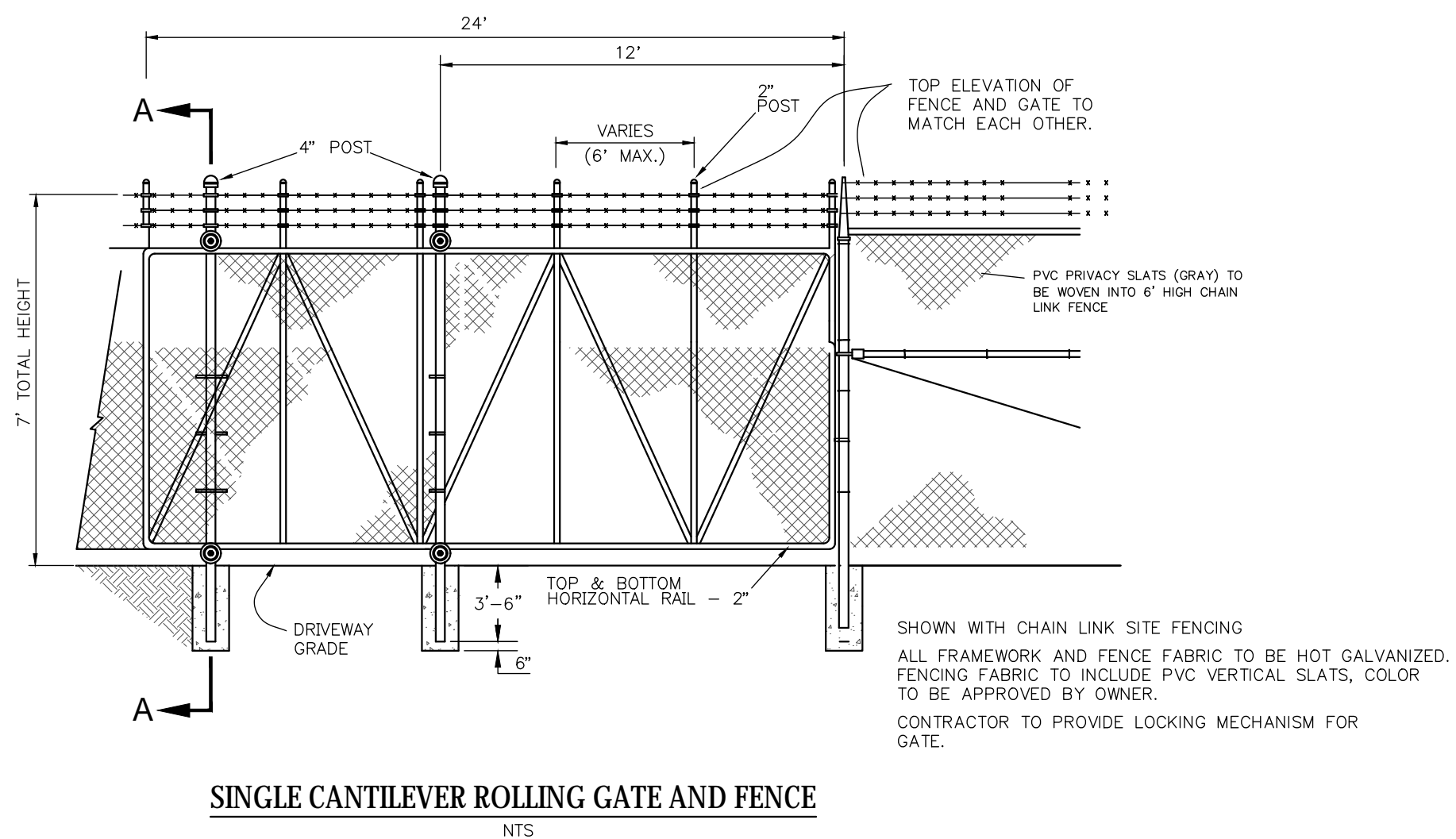
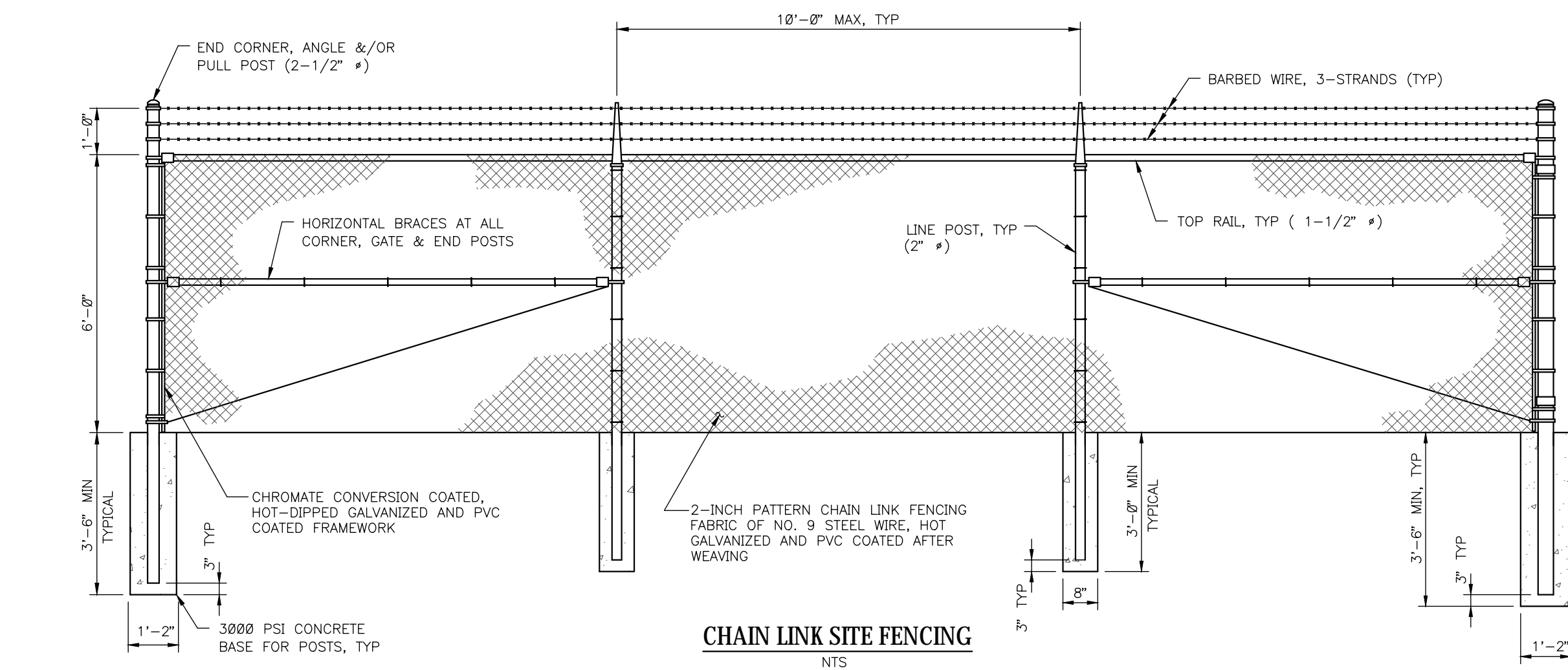
1" METER BOX NOTES:

1. METER BOX DESIGN FOR SERVICE TO HOMES WITH GREATER THAN 2000 SQ. FT.
2. METER BOX TO BE FORD YL111-444-TP YOKE BOX OR APPROVED EQUAL.
3. BRANCH PIECE, VALVES EXPANSION CONNECTIONS, AND CUTLET PIECES TO BE WATER WORKS BRASS.
4. BODY CASTING AND LID TO BE CAST IRON LOCKING.
5. CITY SERVICE LEAD MATERIAL TO BE POLYETHYLENE.
6. CUSTOMER SERVICE LINE TO BE PER BUILDING CODE SPECIFICATION AND HAVE A MIN. ONE FOOT COVER.



MARK	DATE	DESCRIPTION
PROJECT NUMBER		10030969
CHECKED BY		E. Him
DRAWN BY		L. Tefft





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PROJECT FOR

CLEAR CREEK VILLAGE LIFT STATION REPLACEMENT



MARK	DATE	DESCRIPTION
PROJECT NUMBER	10030969	
CHECKED BY	E. Him	
DRAWN BY	L. Tefft	

PROJECT NUMBER	10030969
CHECKED BY	E. Him
DRAWN BY	L. Tefft



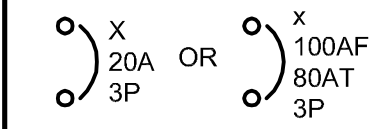
SHEET NAME

Paving, Fencing & SW3P Details

SCALE	NTS
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SHEET NUMBER

FILE NAME



LOW - VOLTAGE CIRCUIT BREAKER (CB). RATINGS AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE IS REQUIRED, X INDICATES TYPE.

TYPES:
MCCB - MOLDED CASE
ICCB - INSULATED CASE
LVP - LOW - VOLTAGE POWER
MCP - MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

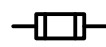
SEPARATELY MOUNTED CIRCUIT BREAKER; SEE ELECTRICAL ONE - LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION



GROUND FAULT PROTECTION



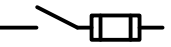
MEDIUM - VOLTAGE CIRCUIT BREAKER



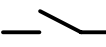
FUSE, SIZE, AND NUMBER OF FUSES AS NOTED



FUSED CUTOUT, CURRENT RATING, FUSE SIZE, AND NUMBER OF POLES AS NOTED



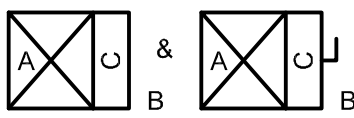
FUSIBLE SWITCH, CURRENT RATING, FUSE SIZE, AND QUANTITY AS NOTED



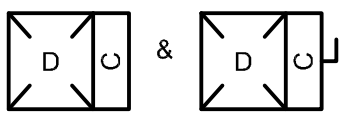
NON-FUSED SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED



DISCONNECT OR DRAWOUT CONNECTION



MAGNETIC MOTOR STARTER AND SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER



MOTOR CONTROLLER AND SEPARATELY MOUNTED MOTOR CONTROLLER WITH SHORT CIRCUIT PROTECTION AND DISCONNECT

MOTOR STARTER AND CONTROLLER SUBSCRIPTS:

A - MAGNETIC STARTER NEMA SIZE

B - STARTER TYPE
NONE - FULL VOLTAGE NON-REVERSING (FVNR)
FVR - FULL VOLTAGE REVERSING
2S - TWO SPEED
RVAT - REDUCED VOLTAGE AUTO TRANSFORMER

C - CONTROL DIAGRAM OR CONTROLS SCHEDULE NUMBER (IF REQUIRED)

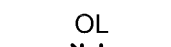
D - CONTROLLER TYPE
VFD - VARIABLE FREQUENCY DRIVE
SS - SOLID STATE
SSRV - SOLID STATE REDUCED VOLTAGE



SEPARATELY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE - LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION



THERMAL OVERLOAD ELEMENT



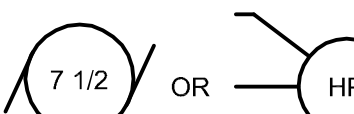
THERMAL OVERLOAD RELAY CONTACT



DISCONNECT OR SAFETY SWITCH, 30A, 3P, NON-FUSED UNLESS OTHERWISE NOTED



DISCONNECT OR SAFETY SWITCH WITH AUXILIARY CONTACTS, 30A, 3P, NON-FUSED UNLESS OTHERWISE NOTED



MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)



MOTOR



GENERATOR



TRANSFER SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED



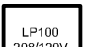
ATS - AUTOMATIC
MTS - MANUAL



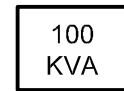
TRANSFORMER

Δ 3-PHASE, 3-WIRE DELTA CONNECTION

Y 3-PHASE, 4-WIRE GROUND WYE CONNECTION



SWITCHBOARD OR PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED



NON-MOTOR LOAD WITH DESIGN KVA, KW, OR AMP



CONTROL POWER TRANSFORMER (CPT)



VOLTAGE TRANSFORMER (VT OR PT)



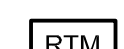
CURRENT TRANSFORMER (CT)



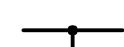
UTILITY WATT-HOUR METER PER UTILITY REQUIREMENTS



DIGITAL METERING PACKAGE



RUN TIME METER



GROUND



LIGHTNING ARRESTER



LOW VOLTAGE SURGE PROTECTIVE DEVICE



ELECTRICAL CONNECTION



NO ELECTRICAL CONNECTION

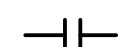


SOLENOID VALVE

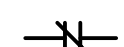


CONTROL/RELAY COIL; X INDICATES TYPE, Y INDICATES LOOP NO. WHEN USED

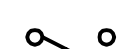
TYPES:
CR - CONTROL RELAY
DP - DEFINITE PURPOSE RELAY
LC - LIGHTING CONTACTOR
M - MOTOR STARTER
PC - PHOTO CELL
TC - TIME CLOCK
TR - TIMING RELAY



NORMALLY OPEN CONTACT (N.O.)



NORMALLY CLOSED CONTACT (N.C.)



NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS ENERGIZED



NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS ENERGIZED



NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS DE-ENERGIZED



NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS DE-ENERGIZED



NORMALLY OPEN TEMPERATURE SWITCH; CLOSE ON RISING TEMPERATURE



NORMALLY CLOSED TEMPERATURE SWITCH; OPEN ON RISING TEMPERATURE



NORMALLY OPEN FLOW SWITCH; CLOSE ON INCREASING FLOW



NORMALLY CLOSED FLOW SWITCH; OPEN ON INCREASING FLOW



NORMALLY OPEN LEVEL SWITCH, CLOSE ON RISING LEVEL



NORMALLY CLOSED LEVEL SWITCH, OPEN ON RISING LEVEL



NORMALLY OPEN PRESSURE SWITCH, CLOSE ON INCREASING PRESSURE



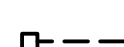
NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE



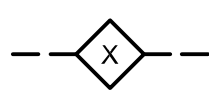
NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT



NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT



FIELD WIRING EXTERNAL TO CONTROL PANEL



INTERLOCK; X INDICATES TYPE

TYPES:

E - ELECTRICAL M - MECHANICAL K - KEY
I - INTERLOCK



3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS; UNLESS OTHERWISE NOTED, 2-POSITION SIMILAR



NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED



NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED



INDICATING LIGHT, X INDICATES LENS COLOR



PUSH TO TEST INDICATING LIGHT, X INDICATES LENS COLOR

LENS COLORS:

R - RED Y - YELLOW W
G - GREEN - WHITE A -
B - BLUE AMBER



TRANSFORMER



SELECTOR SWITCH



PUSHBUTTON



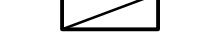
CONTROL STATION



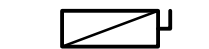
INSTRUMENTATION/CONTROLS CONNECTION



CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT



CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT



JUNCTION OR PULL BOX



EQUIPMENT CONNECTION



PANELBOARD (250V TO 600V)



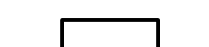
PANELBOARD (LESS THAN 250V)



ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL, OR OTHER EQUIPMENT AS INDICATED



PHOTOCELL



OCCUPANCY SENSOR - CEILING MOUNTED



OCCUPANCY SENSOR - WALL MOUNTED



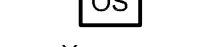
CEILING/PENDANT MOUNTED LUMINAIRE - COMPACT FLUORESCENT OR LED



WALL MOUNTED LUMINAIRE - COMPACT FLUORESCENT OR LED



CEILING/PENDANT MOUNTED LUMINAIRE - FLUORESCENT OR LED



WALL/SURFACE MOUNTED LUMINAIRE - FLUORESCENT OR LED



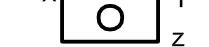
CEILING/PENDANT MOUNTED LUMINAIRE - COMPACT FLUORESCENT OR LED (NORMAL/EMERGENCY)



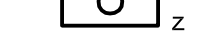
WALL MOUNTED LUMINAIRE - COMPACT FLUORESCENT OR LED (NORMAL/EMERGENCY)



CEILING/PENDANT MOUNTED LUMINAIRE - FLUORESCENT OR LED (NORMAL/EMERGENCY)



EMERGENCY LIGHT FIXTURE, 2 ATTACHED HEADS AS SHOWN



EMERGENCY LIGHT, REMOTE MOUNTED HEAD



DOUBLE-FACED CEILING OR WALL MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS



SINGLE-FACED CEILING OR WALL MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS



AREA OR ROADWAY LIGHT - POLE MOUNTED



LIGHTING FIXTURE SUBSCRIPTS:

X - INDICATES FIXTURE TYPE PER LIGHTING FIXTURE SCHEDULE
Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD
Z - INDICATES CONTROLLING SWITCH (IF REQUIRED)



TOGGLE SWITCH

SUBSCRIPTS:

X - INDICATES TYPE
NONE - SINGLE POLE
3 - THREE-WAY
4 - FOUR-WAY
M - TOGGLE SWITCH, HORSEPOWER RATED
K - KEY SWITCH
TE - MANUAL MOTOR STARTER WITH THERMAL ELEMENT
P - PILOT LIGHT
L - LIGHTED HANDLE
Y - INDICATES CONTROLLING SWITCH (IF REQUIRED)
WP - WEATHER PROOF
D - DIMMER



SPECIAL-PURPOSE RECEPTACLE AS DEFINED ON PLANS



PLUG-IN RECEPTACLE STRIP, QUANTITY AND SPACING OF RECEPTACLES AS NOTED OR SPECIFIED



TELECOMMUNICATIONS SERVICE OUTLET (VOICE/DATA)



TELECOMMUNICATIONS SERVICE OUTLET (DATA ONLY)



TELECOMMUNICATIONS SERVICE OUTLET (VOICE ONLY - WALL MOUNTED AT 48" A.F.F.)



QUAD-DUPLEX RECEPTACLE, TWO NEMA 5-20R UNDER COMMON COVER PLATE



DUPLEX RECEPTACLE, NEMA 5-20R



SIMPLEX RECEPTACLE, NEMA 5-20R

SUBSCRIPTS:

X - INDICATES TYPE
GFCI - GROUND FAULT CIRCUIT INTERRUPTER
Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD
WP - WEATHER PROOF



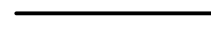
SPECIAL DEVICE AND/OR CONNECTION AS NOTED



CONDUIT TURNING UP



CONDUIT TURNING DOWN



HOME RUN TO PANEL, 2 #12, 1 #12G IN 3/4" UNLESS OTHERWISE NOTED



CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON-ARCHITECTURALLY FINISHED AREAS; CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.



CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON-ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.



CIRCUIT HASH MARKS (WHEN INDICATED); LONG, SHORT, SINGLE DOT, AND DOUBLE DOT REPRESENT PHASE, NEUTRAL, EQUIPMENT GROUND, AND ISOLATED EQUIPMENT GROUND, RESPECTIVELY. #12 IN 3/4" CONDUIT UNLESS OTHERWISE INDICATED.



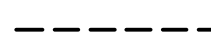
CIRCUIT CONTINUATION



CONDUIT STUBBED OUT AND CAPPED



CONDUIT TAG OR CIRCUIT NUMBER - WIRE AND CONDUIT SIZE AS SPECIFIED IN CIRCUIT SCHEDULE ON THE SHEETS



GROUNDING CONDUCTOR



UNDERGROUND CONCRETE ENCASED DUCT BANK



OVERHEAD SECONDARY CIRCUIT AND CONDUCTORS



DIRECT BURIED CONDUIT



GROUND ROD



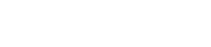
GROUND TEST WELL



FIRE ALARM CONTROL PANEL

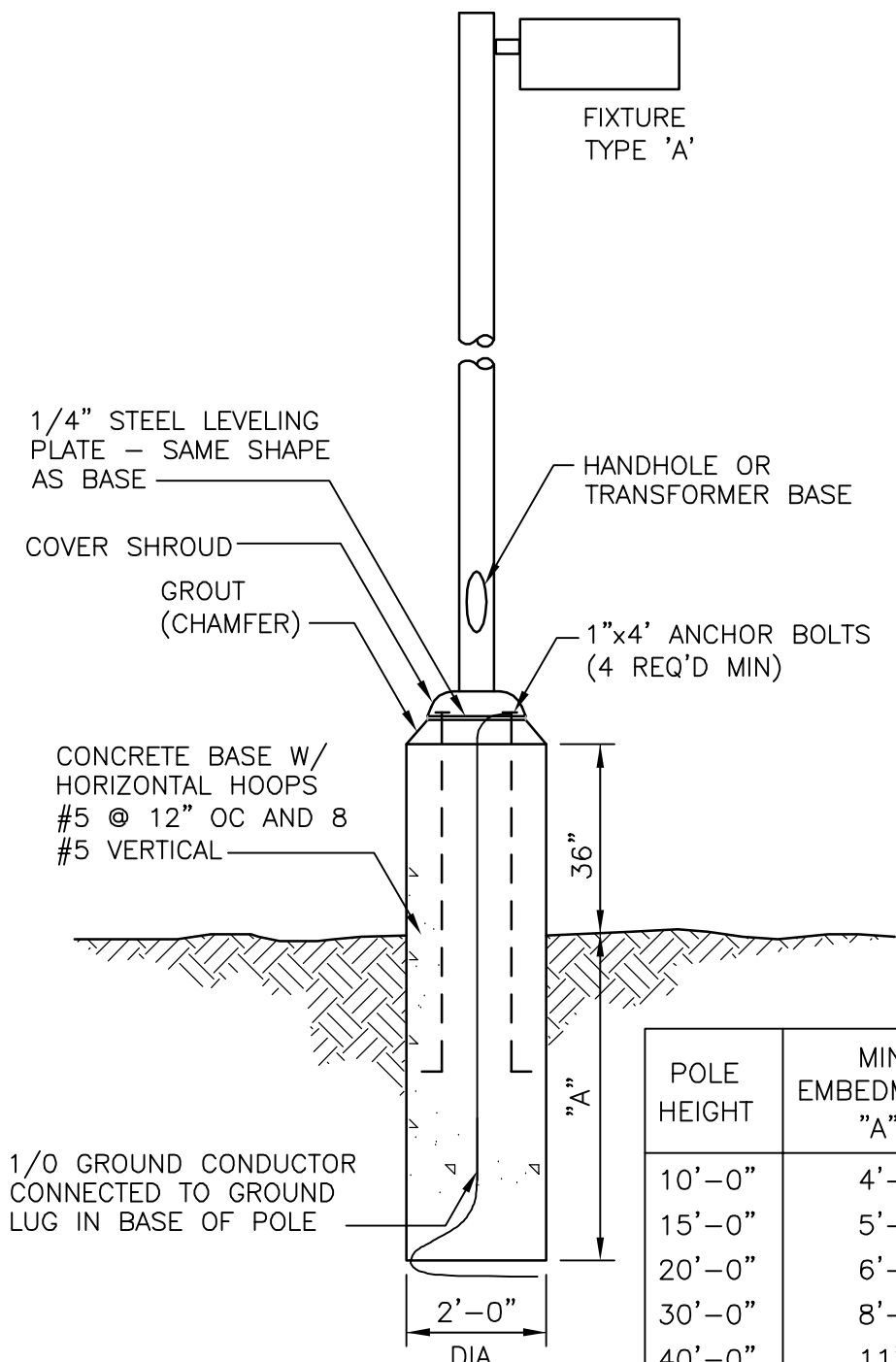
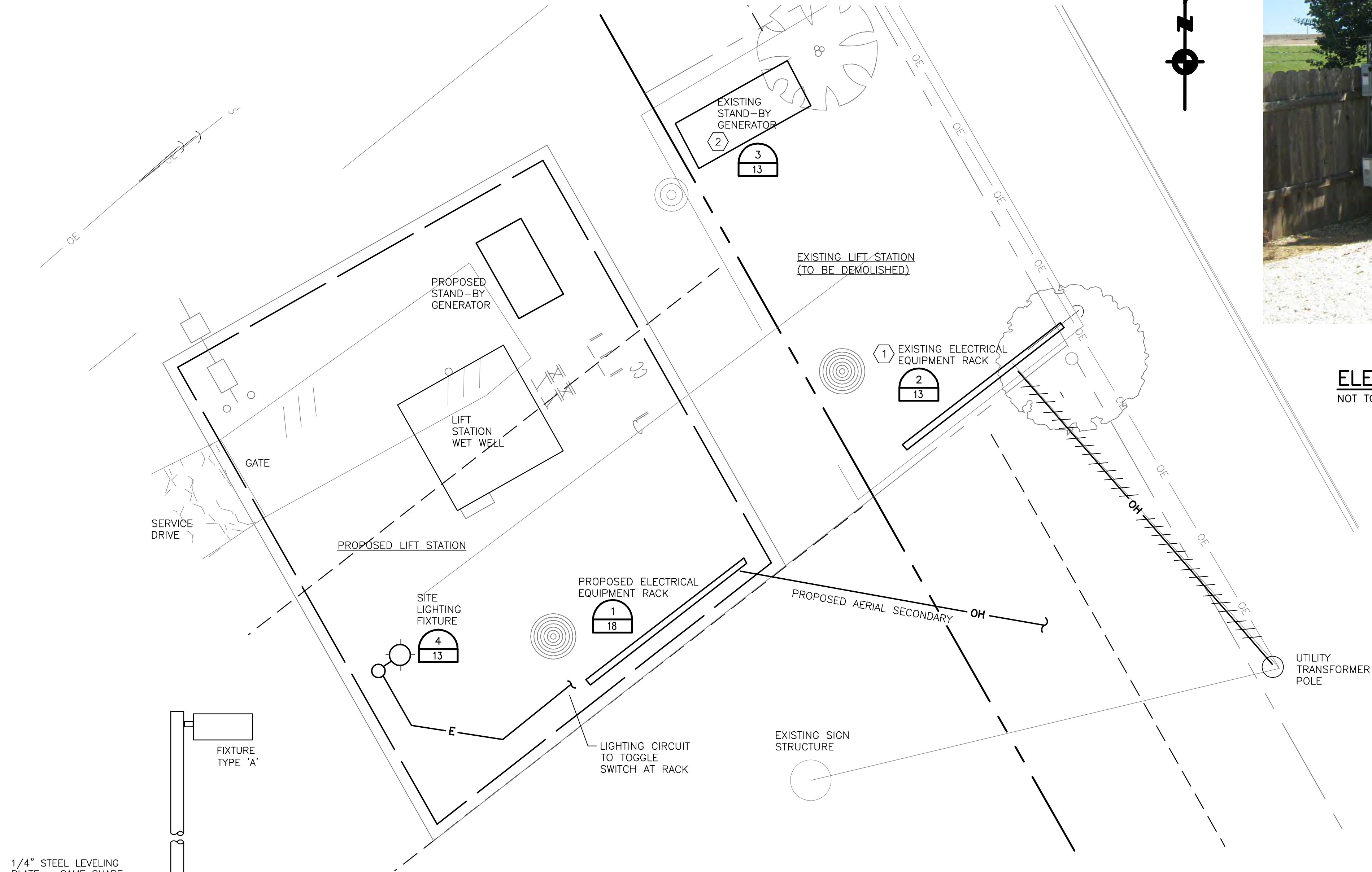


HAND HOLE



MANHOLE

1. THIS IS A STANDARD ELECTRICAL SYMBOLOGY SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.



POLE HEIGHT	MIN EMBEDMENT "A"
10'-0"	4'-6"
15'-0"	5'-6"
20'-0"	6'-6"
30'-0"	8'-6"
40'-0"	11'-0"

FIXTURE TYPE 'A':
LUMARK WARRIOR SERIES FLOODLIGHT (OR
APPROVED EQUAL) METAL HALIDE, 175W, 120V,
SLIPFITTER MOUNT, WITH PHOTOCELL CONTROL
#MHWR-65S-250-120 & ACC 0A1014 VG/WR
VANDAL SHIELD. AIM AT LIFT STATION.

LIGHTING POLE BASE DETAIL
SCALE: NTS

SITE PLAN -ELECTRICAL
SCALE: 1"= 10'-0"

GENERAL NOTES:

- EXISTING LIFT STATION SHALL REMAIN IN OPERATION UNTIL PROPOSED LIFT STATION IS READY FOR OPERATION.

CIVIL BACKGROUND SHOWN LIGHTLY TO HIGHLIGHT ELECTRICAL WORK REQUIRED. REFER TO CIVIL/PROCESS SITE PLANS FOR ADDITIONAL INFORMATION.

KEYED NOTES:

- REMOVE ELECTRICAL EQUIPMENT RACK COMPONENTS, INCLUDING RACK AND ASSOCIATED CONDUITS AND CONDUCTORS. REMOVE WET WELL ELECTRICAL COMPONENTS INCLUDING ELECTRICAL PUMP AND MISC ELECTRICAL CONDUITS AND CONDUCTORS AS WELL AS CONTROLS CONDUITS AND CONDUCTORS IN THEIR ENTIRETY. RETURN ELECTRICAL ATS, PUMP CONTROL PANEL, RTU, ETC. TO OWNER AS DIRECTED BY OWNER.
- REMOVE GENERATOR AND ASSOCIATED CONDUITS AND CONDUCTORS. RETURN GENERATOR TO OWNER.



ELECTRICAL EQUIPMENT RACK - DEMOLITION
NOT TO SCALE



STAND-BY GENERATOR - DEMOLITION
NOT TO SCALE



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www.hdrinc.com

PROJECT FOR

CLEAR CREEK VILLAGE
LIFT STATION
REPLACEMENT



MARK	DATE	DESCRIPTION
PROJECT NUMBER	10030969	
CHECKED BY	E. Him	
DRAWN BY	L. Tefft	



SHEET NAME

Site Plan - Electrical
And Demolition

SCALE As Indicated

SHEET NUMBER

SHEET 13 OF 20

FILE NAME



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SHEET NAME

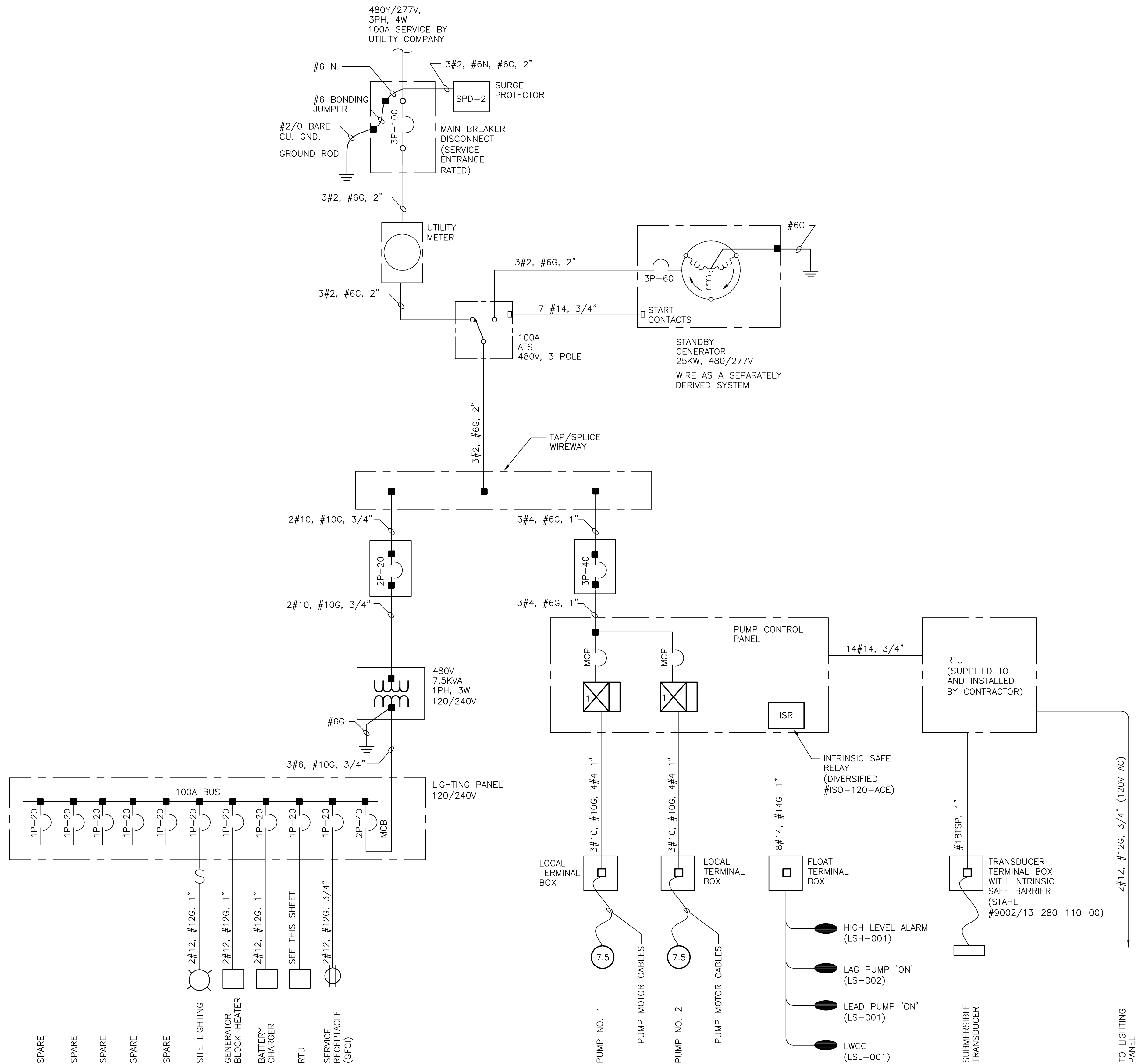
One-Line Diagram Electrical

SCALE NTS

SHEET NUMBER

SHEET 14 OF 20

FILE NAME



LOAD CALCULATION

LOAD ID	HP/KVA	FULL LOAD AMPS
PUMP NO. 1	7.5	11
PUMP NO. 2	7.5	11
TRANSFORMER	7.5	16
SUBTOTAL LOAD	22.5	38
25% LARGEST LOAD		4
TOTAL AMPS		42



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CHECKED BY		E. Him
DRAWN BY		L. Tefft



SHEET NAME

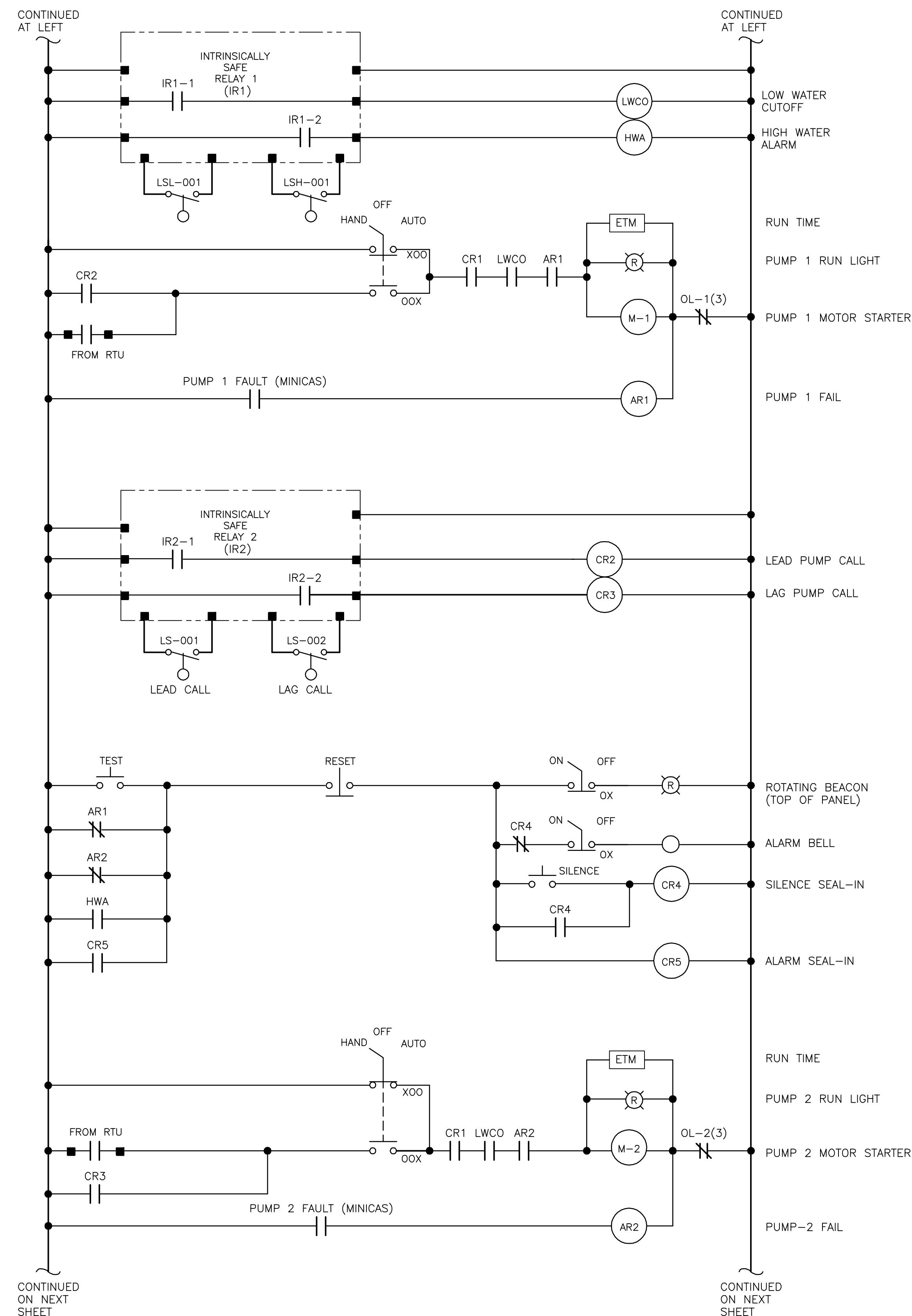
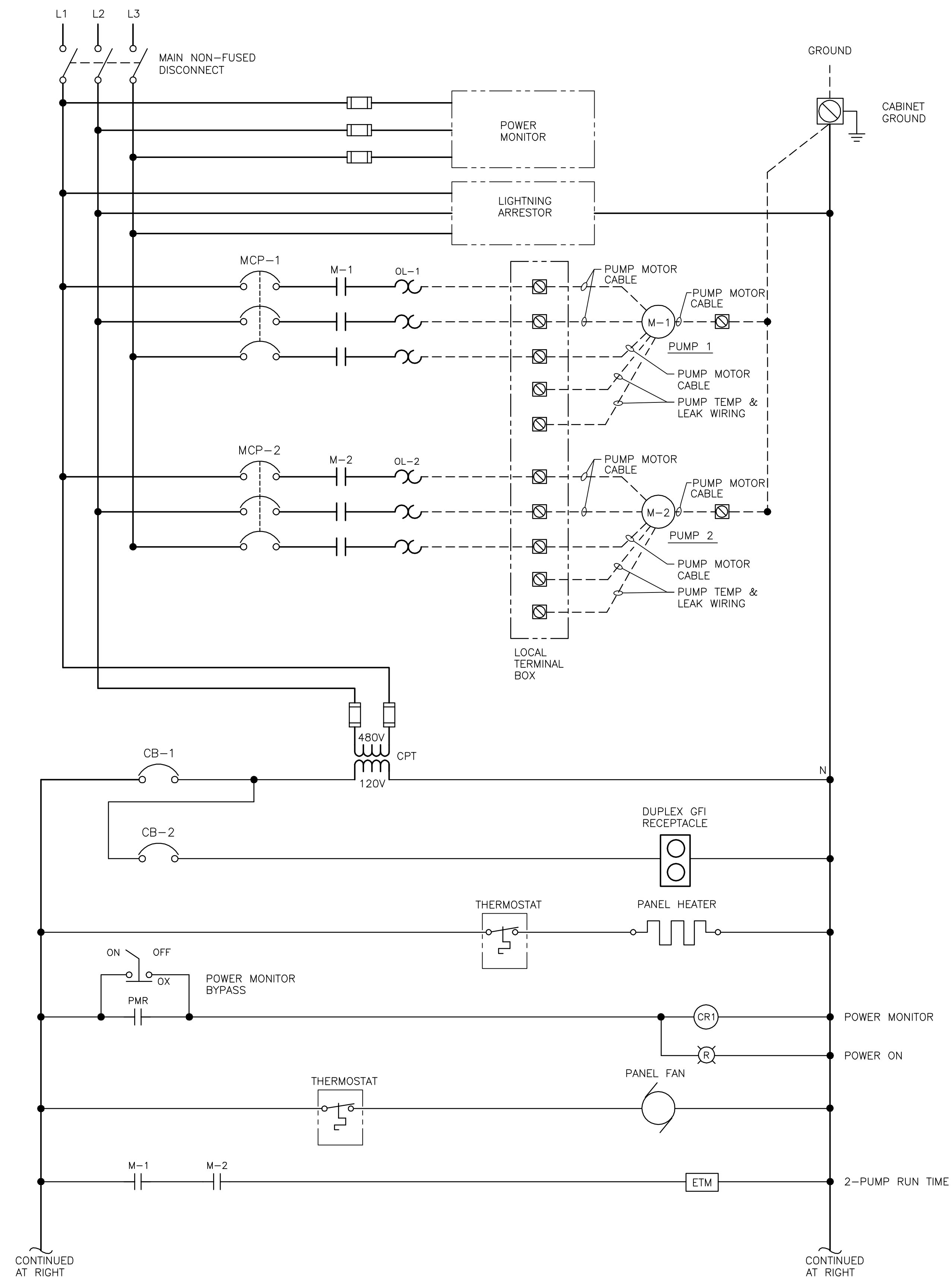
Control Schematics Sheet 1 of 2

SCALE NTS

SHEET NUMBER

SHEET 15 OF 20

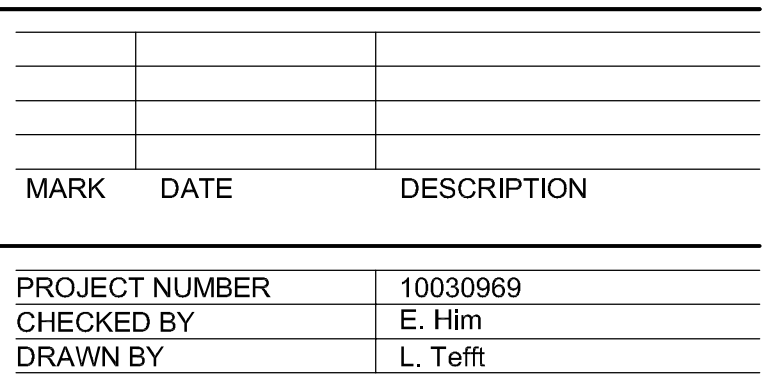
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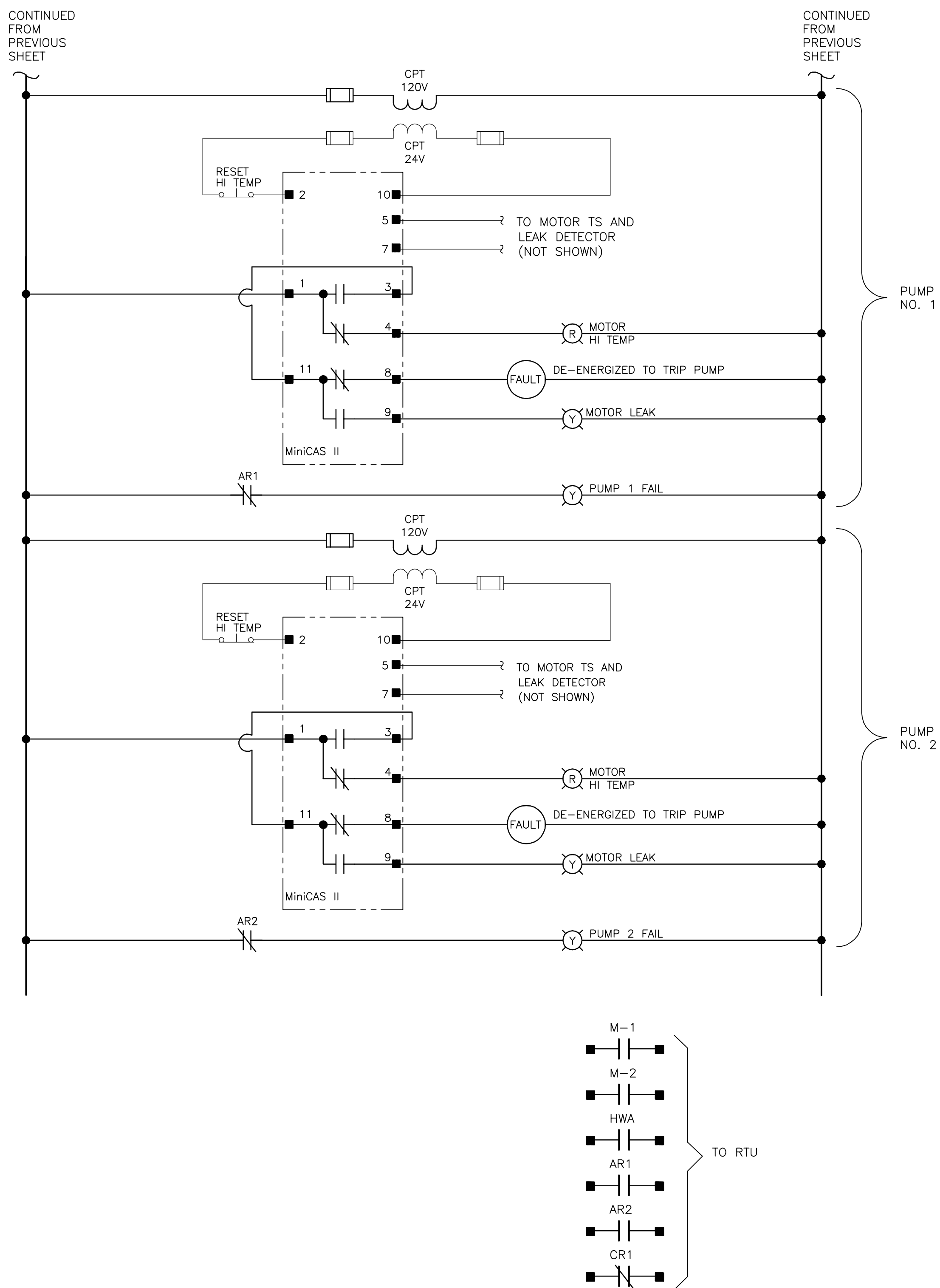


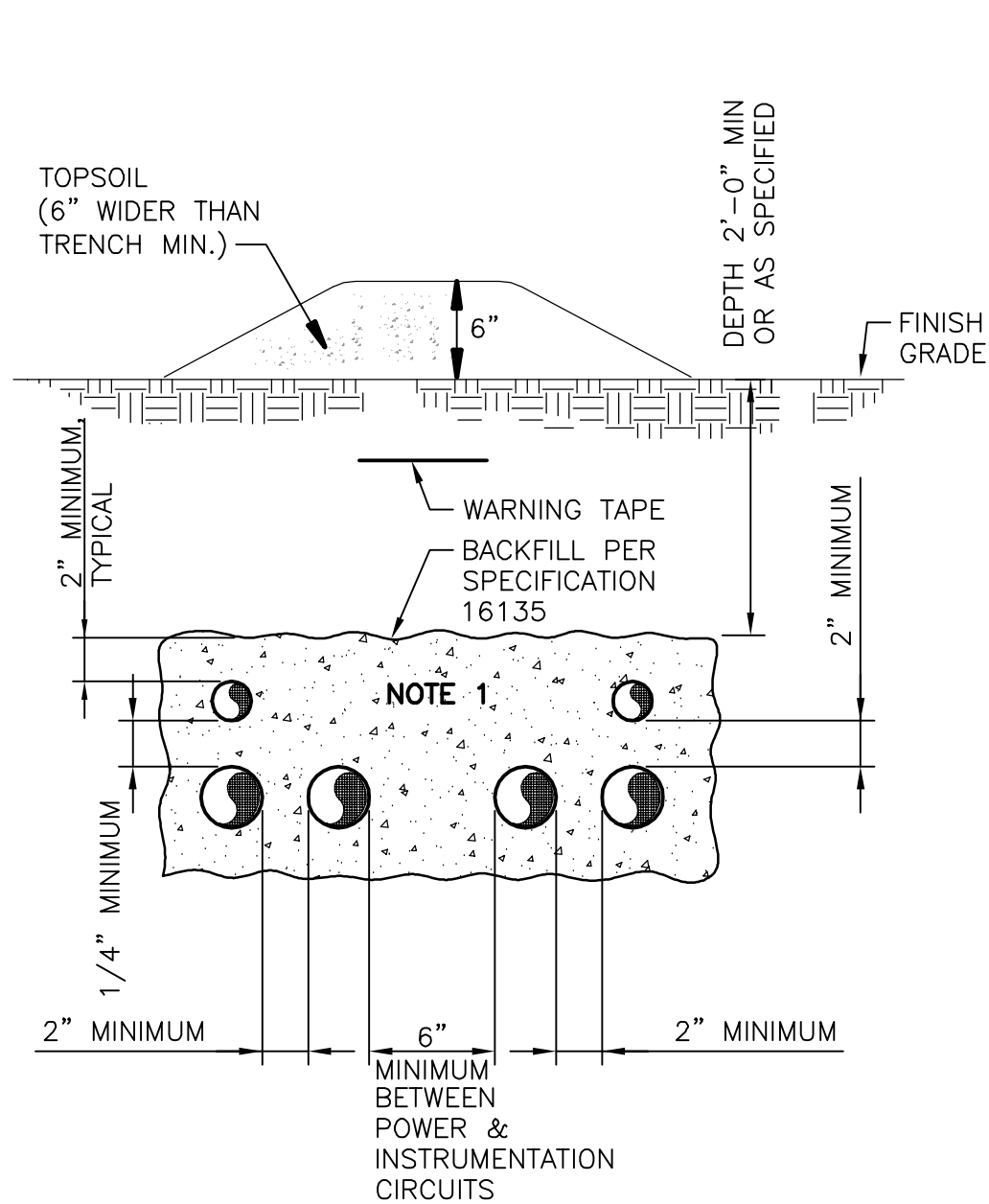
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CLEAR CREEK VILLAGE LIFT STATION REPLACEMENT



FILE NAME

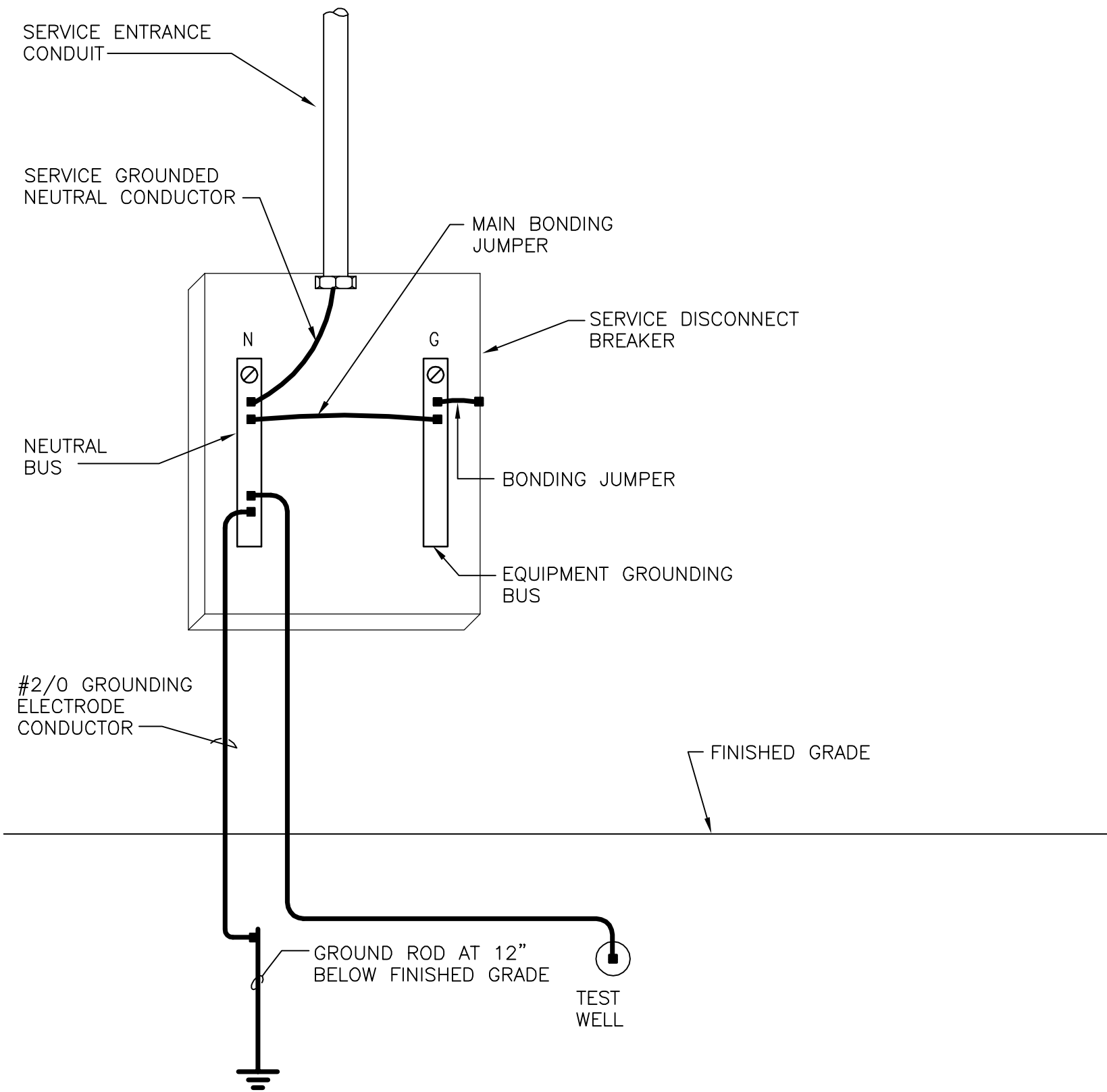




- NOTES:
1. NUMBER OF CONDUITS AS REQUIRED FOR THE APPLICATION.
 2. CONTRACTOR SHALL RESTORE GRASS AREA (EXISTING SURFACES) TO MATCH EXISTING SURROUNDED AREAS.

TYP. DUCT BANK SECTION

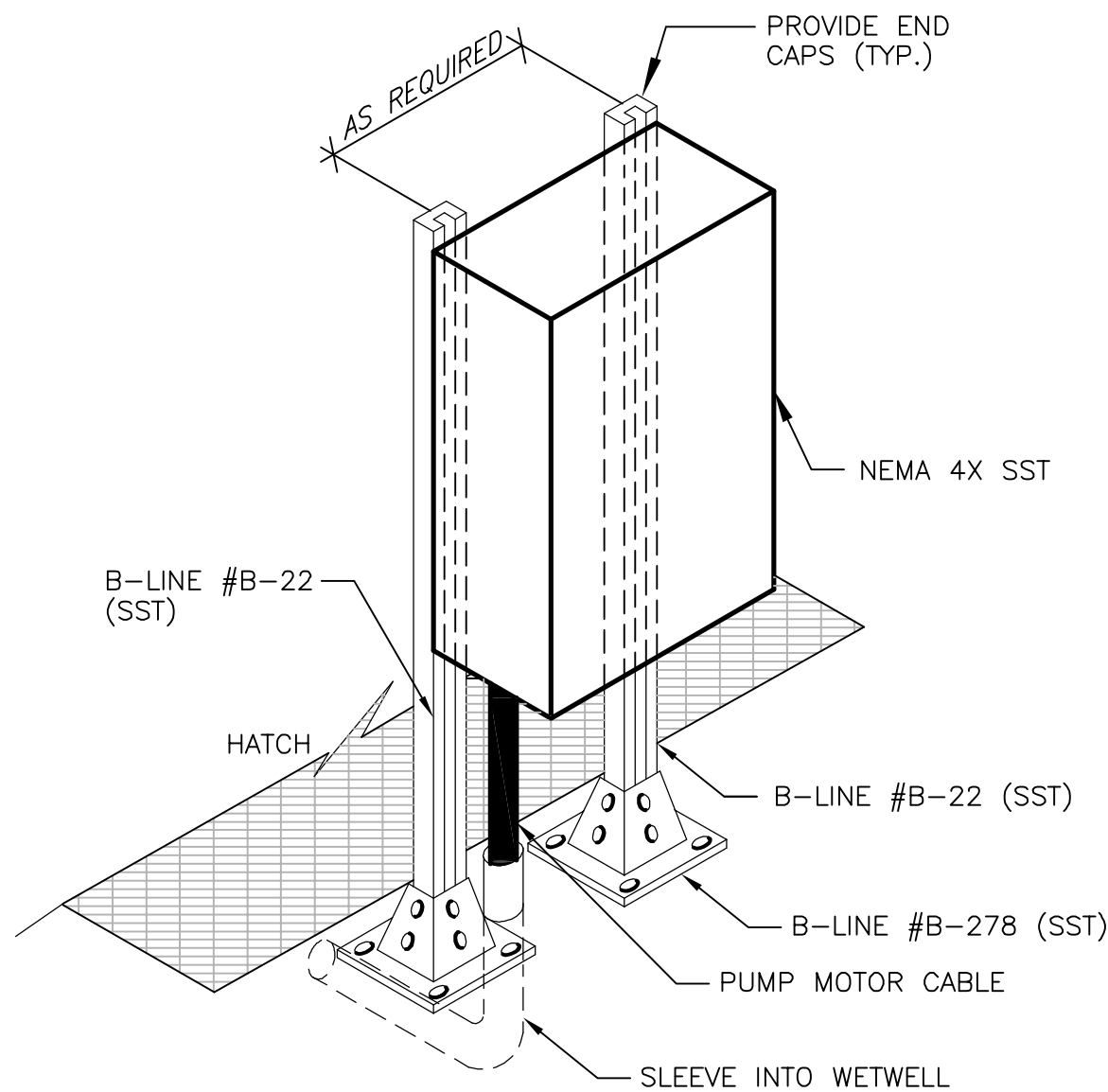
NOT TO SCALE



NOTE:
ALL GROUNDING ELECTRODES PRESENT AT SITE SHALL BE BONDED TOGETHER TO FORM GROUNDING ELECTRODE SYSTEM AS DEFINED BY ARTICLE 250 OF NEC.

SERVICE GROUNDING DETAIL

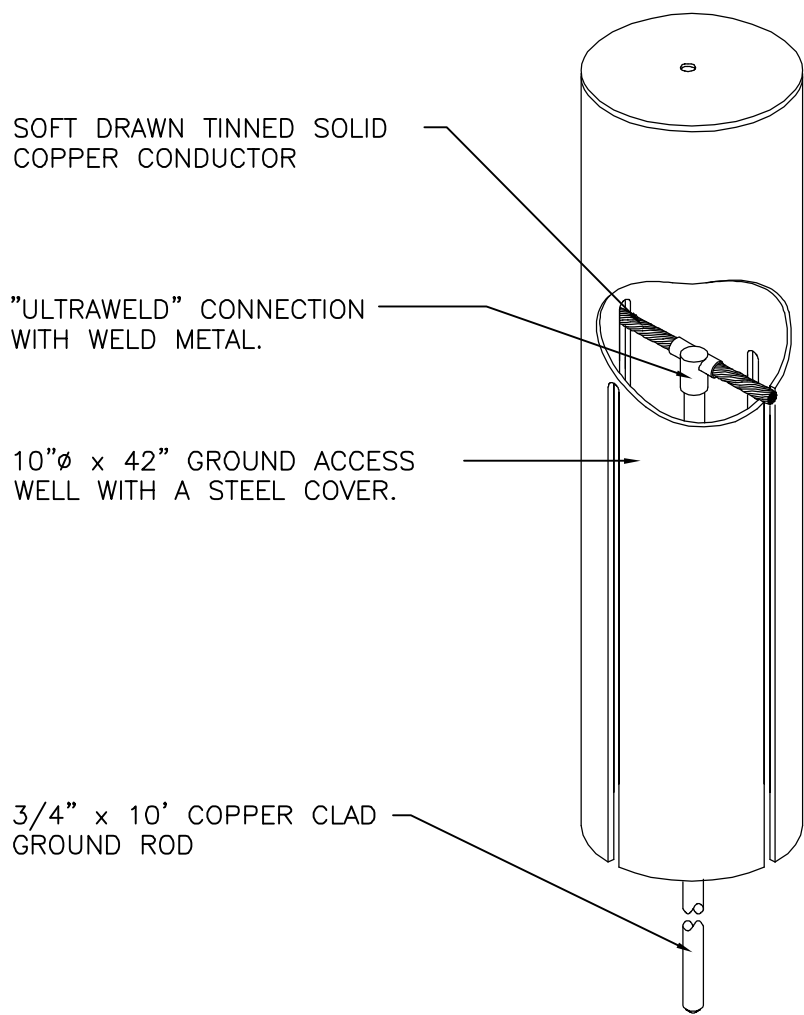
NOT TO SCALE



NOTE: LINE SIDE CONDUIT NOT SHOWN.
INSTALL SEAL FITTINGS ON ALL LINE-SIDE CONDUITS.

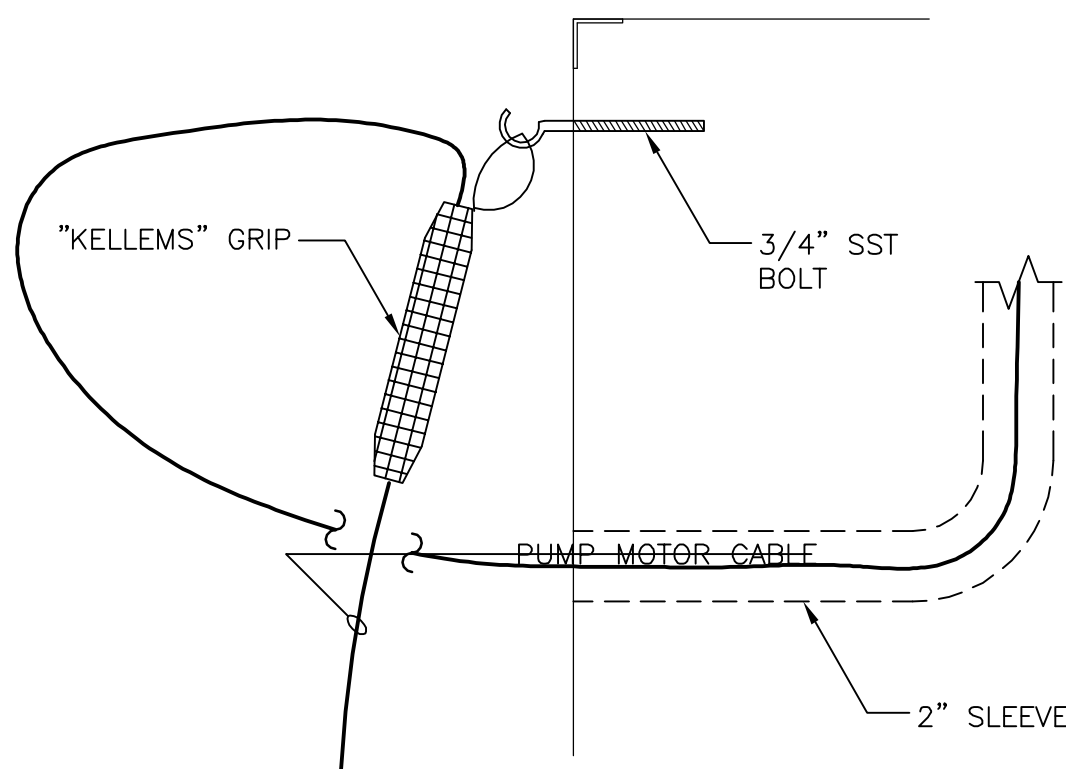
TERMINAL BOX MOUNTING DETAIL

NOT TO SCALE



GND TEST WELL DETAIL

NOT TO SCALE

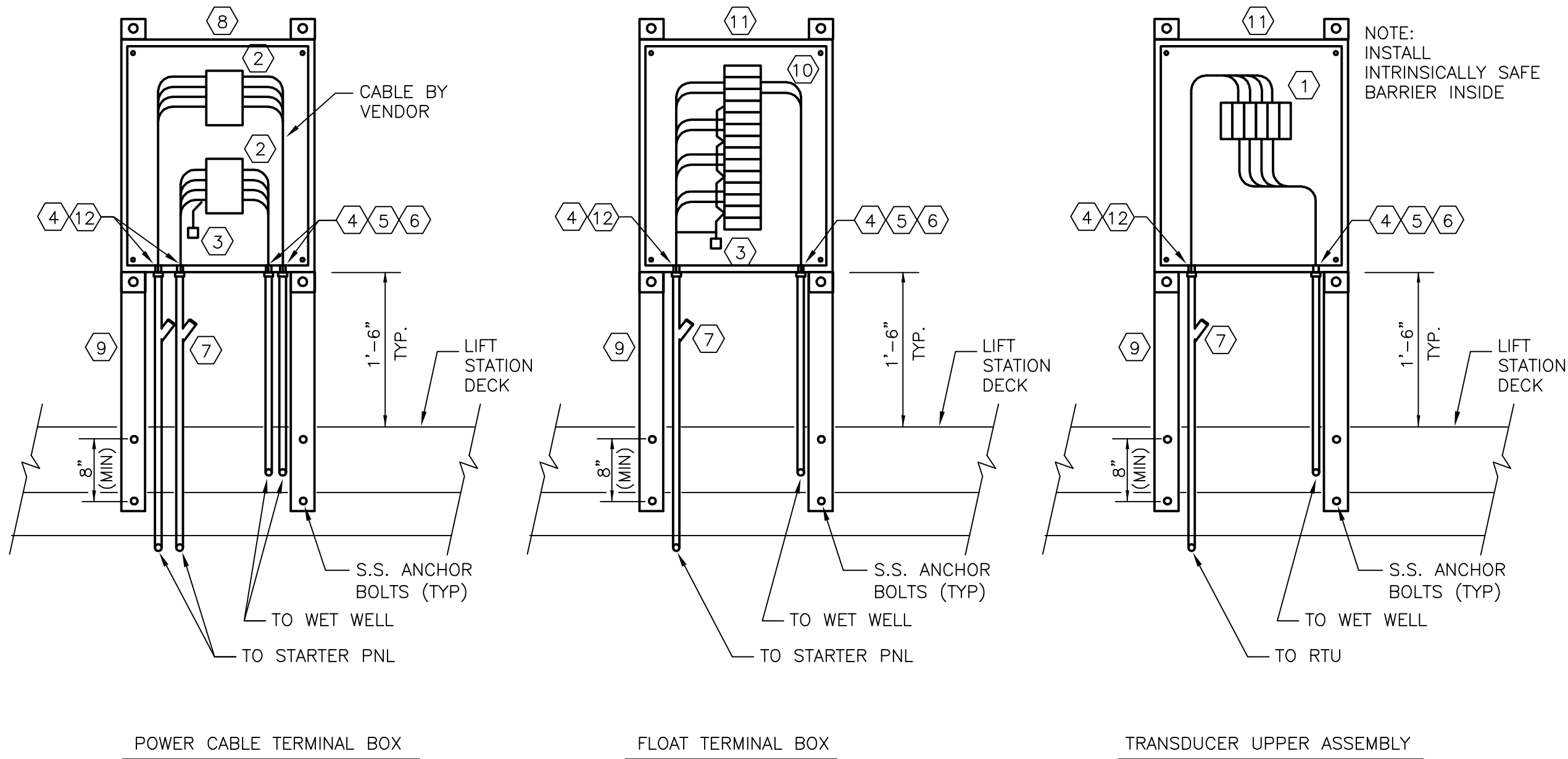


CABLE GRIP DETAIL

NOT TO SCALE

KEYED NOTES:

- ① 4-POINT, 30A, 300V TERM. BLOCK.
- ② 4-POINT, 50A, 600V TERM. BLOCK.
- ③ GROUND LUG.
- ④ MYERS HUB.
- ⑤ OZ GEDNEY CSBE TYPE CONDUIT SEALING BUSHING.
- ⑥ RIGID-TO-PVC ADAPTER.
- ⑦ C.H. EYS SEAL W/CHICO.
- ⑧ HOFFMAN #A-1412CHNFSS W/#A-14P12 PANEL (14\"/>



TERMINAL BOX DETAIL

NOT TO SCALE



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SHEET NAME

Electrical Details
Sheet 1 of 2

SCALE

NTS

SHEET NUMBER

SHEET 17 OF 20

FILE NAME

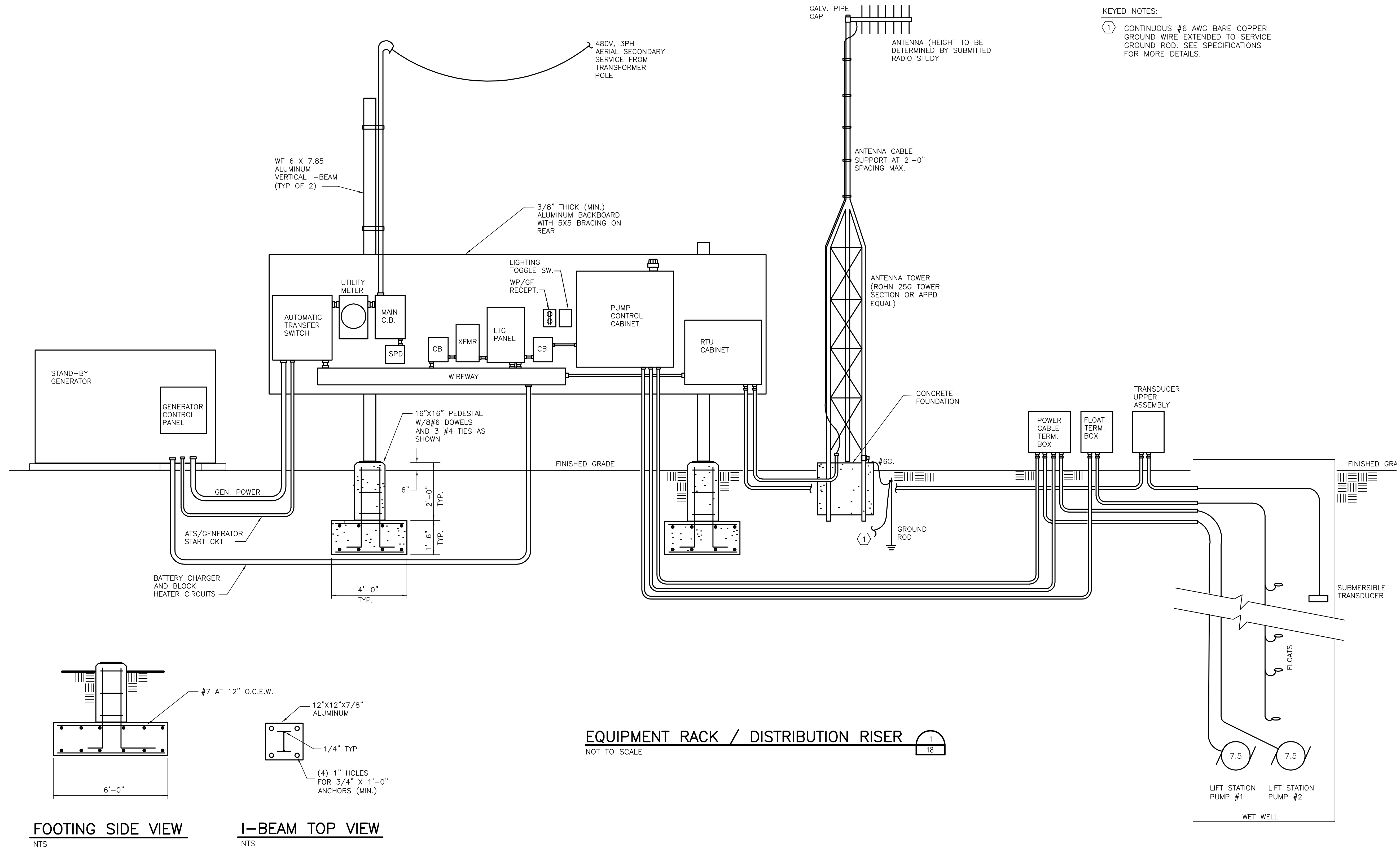


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KEYED NOTES:

- ① CONTINUOUS #6 AWG BARE COPPER GROUND WIRE EXTENDED TO SERVICE GROUND ROD. SEE SPECIFICATIONS FOR MORE DETAILS.

MARK	DATE	DESCRIPTION
PROJECT NUMBER	10030969	
CHECKED BY	E. Him	
DRAWN BY	L. Tefft	



SHEET NAME

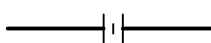


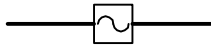


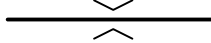
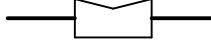
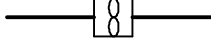
















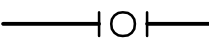
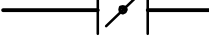
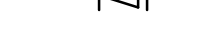
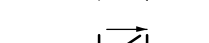
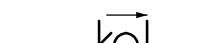

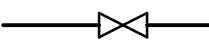
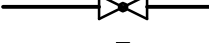



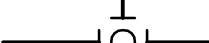
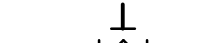
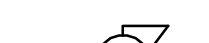
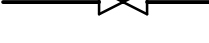


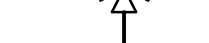


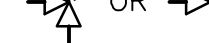




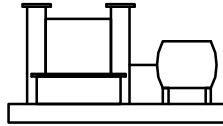
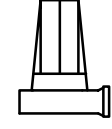
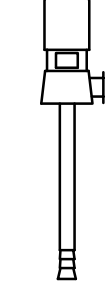

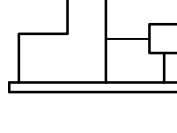
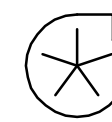
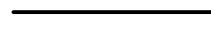
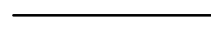
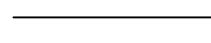
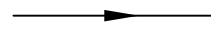
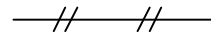
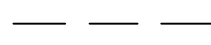
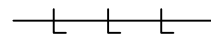
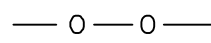

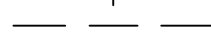
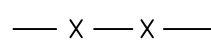






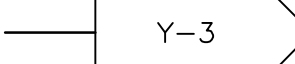
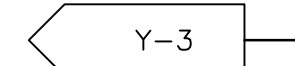
Electrical Details Sheet 2 of 2


SCALE NTS

SHEET NUMBER

SHEET 18 OF 20

FILE NAME

PRIMARY ELEMENT SYMBOLOGY		INSTRUMENT SYMBOLOGY		INSTRUMENT IDENTIFICATION LETTERS						CONTROL SWITCH NOTATION ABBREVIATIONS		MISC. SYMBOLOGY																																																																																																																																																																									
<div><div>ORIFICE PLATE</div><div>PITOT TUBE OR ANNUBAR</div><div>ROTOMETER</div><div>SONIC OR ULTRASONIC FLOWMETER</div><div>MAGNETIC FLOWMETER</div><div>MASS DISPERSION FLOWMETER</div><div>FLUME</div><div>WEIR</div><div>PROPELLER OR TURBINE METER</div><div>VENTURI TUBE</div><div>FLOAT SWITCH</div><div>TEMPERATURE ELEMENT WITH THERMOWELL</div><div>SIGHT FLOW GLASS</div></div>		<div><div>LOCALLY MOUNTED FIELD INSTRUMENTATION</div><div>MOUNTED ON PANEL FRONT</div><div>MOUNTED INSIDE PANEL</div><div>XXX FRONT PANEL MOUNTED ON AUXILIARY PANEL (SUBSCRIPT INDICATES PANEL)</div><div>MOUNTED INSIDE AUXILIARY PANEL</div><div>PILOT LIGHT</div><div>INSTRUMENT FUNCTIONS SHARING COMMON HOUSING</div><div>COMPLEX INTERLOCK AS DEFINED IN CONTROL DIAGRAM OR IN SPECIFICATIONS</div><div>SHARED DISPLAY, SHARED CONTROL, FIELD MOUNTED</div><div>SHARED DISPLAY, SHARED CONTROL, PRIMARY LOCATION - NORMALLY ACCESSIBLE TO OPERATOR</div><div>PROGRAMMABLE LOGIC CONTROLLER SYSTEM FUNCTION BLOCK</div><div>CS CONTROL STRATEGY FOR PLC PROGRAMMING DEFINED IN THE SPECIFICATIONS</div></div>		<table><tr><th></th><th colspan="2">FIRST LETTER</th><th colspan="3">SUCCEEDING LETTERS</th></tr><tr><th></th><th>MEASURED OR INITIATING VARIABLE</th><th>MODIFIER</th><th>READOUT OR PASSIVE FUNCTION</th><th>OUTPUT FUNCTION</th><th>MODIFIER</th></tr><tr><td>A</td><td>ANALYSIS</td><td></td><td>ALARM</td><td></td><td></td></tr><tr><td>B</td><td>BURNER, COMBUSTION</td><td></td><td>USER'S CHOICE</td><td>USER'S CHOICE</td><td>USER'S CHOICE</td></tr><tr><td>C</td><td>USERS CHOICE</td><td></td><td></td><td>CONTROL</td><td>CLOSED</td></tr><tr><td>D</td><td>USERS CHOICE</td><td>DIFFERENTIAL</td><td></td><td></td><td></td></tr><tr><td>E</td><td>VOLTAGE</td><td></td><td>SENSOR (PRIMARY ELEMENT)</td><td></td><td></td></tr><tr><td>F</td><td>FLOW RATE</td><td>RATIO (FRACTION)</td><td></td><td></td><td></td></tr><tr><td>G</td><td>USER'S CHOICE</td><td></td><td>GLASS, VIEWING DEVICE</td><td></td><td></td></tr><tr><td>H</td><td>HAND</td><td></td><td></td><td></td><td>HIGH</td></tr><tr><td>I</td><td>CURRENT (ELECTRICAL)</td><td></td><td>INDICATE</td><td></td><td></td></tr><tr><td>J</td><td>POWER</td><td>SCAN</td><td></td><td></td><td></td></tr><tr><td>K</td><td>TIME, TIME SCHEDULE</td><td>TIME; RATE OF CHANGE</td><td></td><td>CONTROL STATION</td><td></td></tr><tr><td>L</td><td>LEVEL</td><td></td><td>LIGHT</td><td></td><td>LOW</td></tr><tr><td>M</td><td>USER'S CHOICE</td><td>MOMENTARY</td><td></td><td></td><td>MIDDLE, INTERMEDIATE</td></tr><tr><td>N</td><td>USER'S CHOICE</td><td></td><td>USER'S CHOICE</td><td>USER'S CHOICE</td><td>USER'S CHOICE</td></tr><tr><td>O</td><td>USER'S CHOICE</td><td></td><td>ORIFICE, RESTRICTION</td><td></td><td></td></tr><tr><td>P</td><td>PRESSURE, VACUUM</td><td></td><td>POINT (TEST) CONNECTION</td><td></td><td></td></tr><tr><td>Q</td><td>QUANTITY</td><td>INTEGRATE, TOTALIZE</td><td></td><td></td><td></td></tr><tr><td>R</td><td>RADIATION</td><td></td><td>RECORD</td><td></td><td></td></tr><tr><td>S</td><td>SPEED, FREQUENCY</td><td>SAFETY</td><td></td><td>SWITCH</td><td></td></tr><tr><td>T</td><td>TEMPERATURE</td><td></td><td></td><td>TRANSMIT</td><td></td></tr><tr><td>U</td><td>MULTIVARIABLE</td><td></td><td>MULTIFUNCTION</td><td>MULTIFUNCTION</td><td>MULTIFUNCTION</td></tr><tr><td>V</td><td>VIBRATION, MECH. ANALYSIS</td><td></td><td></td><td>VALVE, DAMPER, LOUVER</td><td></td></tr><tr><td>W</td><td>WEIGHT, FORCE</td><td></td><td>WELL</td><td></td><td></td></tr><tr><td>X</td><td>UNCLASSIFIED</td><td>X AXIS</td><td>UNCLASSIFIED</td><td>UNCLASSIFIED</td><td>UNCLASSIFIED</td></tr><tr><td>Y</td><td>EVENT, STATE OR PRESENCE</td><td>Y AXIS</td><td></td><td>RELAY, COMPUTE, CONVERT</td><td></td></tr><tr><td>Z</td><td>POSITION, DIMENSION</td><td>Z AXIS</td><td></td><td>DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT</td><td></td></tr></table>							FIRST LETTER		SUCCEEDING LETTERS				MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER	A	ANALYSIS		ALARM			B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE	C	USERS CHOICE			CONTROL	CLOSED	D	USERS CHOICE	DIFFERENTIAL				E	VOLTAGE		SENSOR (PRIMARY ELEMENT)			F	FLOW RATE	RATIO (FRACTION)				G	USER'S CHOICE		GLASS, VIEWING DEVICE			H	HAND				HIGH	I	CURRENT (ELECTRICAL)		INDICATE			J	POWER	SCAN				K	TIME, TIME SCHEDULE	TIME; RATE OF CHANGE		CONTROL STATION		L	LEVEL		LIGHT		LOW	M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE	N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE	O	USER'S CHOICE		ORIFICE, RESTRICTION			P	PRESSURE, VACUUM		POINT (TEST) CONNECTION			Q	QUANTITY	INTEGRATE, TOTALIZE				R	RADIATION		RECORD			S	SPEED, FREQUENCY	SAFETY		SWITCH		T	TEMPERATURE			TRANSMIT		U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION	V	VIBRATION, MECH. 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		<div><div>OPERATOR ABBREVIATIONS: M = MOTOR P = PNEUMATIC S = SOLENOID</div><div>FLOAT OPERATOR</div><div>SPRING-OPPOSED SINGLE-ACTING PNEUMATIC CYLINDER</div><div>DOUBLE-ACTING PNEUMATIC CYLINDER</div><div>PNEUMATIC DIAPHRAGM</div><div>PNEUMATIC DIAPHRAGM WITH POSITIONER</div></div>		MISCELLANEOUS INSTRUMENTATION ABBREVIATIONS																																																																																																																																																																																	
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Texas P.E. Firm
Registration No. F-754

HDR Engineering, Inc.

4928 Loop Central Drive, Suite 800
Houston, Texas 77081
P 713.622.9264 F 713.622.9265
www.hdrinc.com

PROJECT FOR


CLEAR CREEK VILLAGE
LIFT STATION
REPLACEMENT



MARK	DATE	DESCRIPTION

PROJECT NUMBER
CHECKED BY
DRAWN BY

10030969
E. Him
L. Tefft



4-14-17

SHEET NAME

Instrumentation
Legend

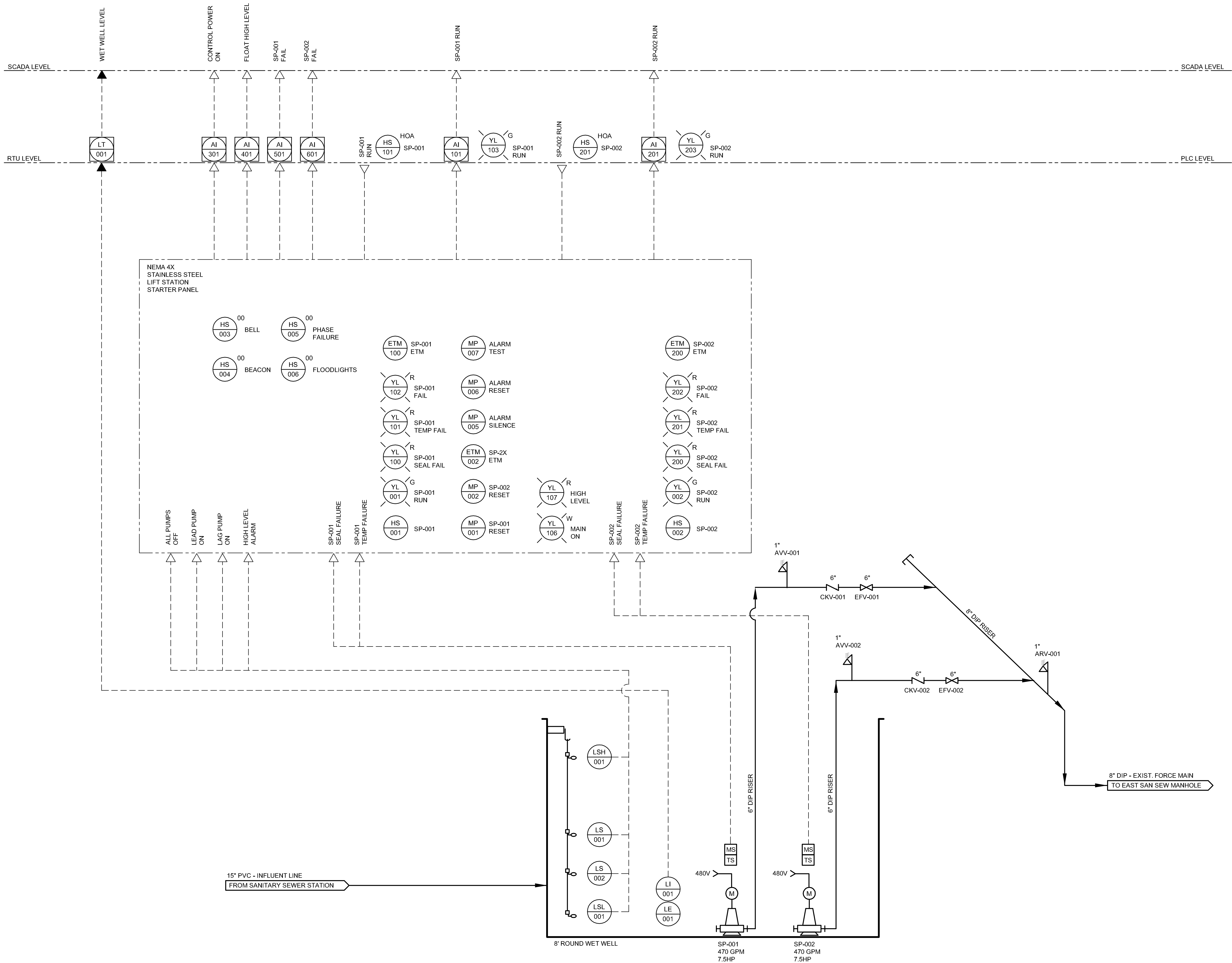
SCALE

NTS

SHEET NUMBER

SHEET 19 OF 20

FILE NAME



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CLEAR CREEK VILLAGE LIFT STATION REPLACEMENT



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SHEET NAME

Process and Instrumentation Diagram

SCALE NTS

SHEET NUMBER

SHEET 20 OF 20

FILE NAME

U14908 Cost Summary

CATEGORY	NOTES	SUBTOTAL
Water and Wastewater Utility Construction Cost Estimate	Included in highway construction contract-to be paid by TxDOT directly to highway contractor	\$ 1,140,785.00
Lift Station Construction Cost Estimate*	Lift Station construction contract to be bid out by and paid by League City. Costs to be paid by TxDOT to League City. Lump Sum	\$ 799,849.00
Water and Wastewater Engineering Design Cost Estimate	Paid by TxDOT to HDR Engineering by Contract No. 36-6IDP5195-WA4	\$ 25,563.21
Lift Station Engineering Design Cost Estimate	Paid by TxDOT to HDR Engineering by Contract No. 36-6IDP5195-WA4-SWA1	\$ 80,173.56
Reimbursable Costs Estimate	Based on League City hourly rates- to be paid by TxDOT to League City	\$ 15,852.53
Reimbursable Title Research for League City Water Line Easements	League City may retain the use of a Title research firm to conduct easement research along TxDOT ROW. Research expenses to be paid by TxDOT to League City	-
	SUB-TOTAL	\$ 2,062,223.30
Betterment Ratio (0.03169) Difference	See Att. G for Details - (\$2,062,223.30 x 0.03169)	\$ (65,350.00)
	TOTAL	\$ 1,996,873.30

Total Amount Reimbursable to League City (Lift Station Construction + Reimbursable Costs - Betterment)	\$ 750,351.53
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*Note from Attachment B: The Lift Station Construction Contract costs (to be paid to League City) will use the lump sum method of accounting. All other project costs will use the actual cost method of accounting.

WITH BETTERMENT
City of League City IH 45 Utility Adjustment Items

ITEM NO.	TxDOT BID CODE		DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	7017	6005	SANITARY SEWER (8IN) (PVC) (C900)	LF	203	\$ 85.00	\$17,255.00
2	7017	6051	MANHOLE (SAN SEWER) (4' DIA)	EA	2	\$ 4,500.00	\$9,000.00
3	7017	6074	ABANDON SANITARY SEWER (2IN)	EA	1	\$ 1,500.00	\$1,500.00
4	7017	6077	ABANDON SANITARY SEWER (8IN)	EA	1	\$ 2,500.00	\$2,500.00
5	7017	6091	FM CONNECTION (FORCE MAIN)	EA	2	\$ 1,500.00	\$3,000.00
6	7017	6096	SAN SWR (FM) PVC (RESTRAINED JT) 2IN	LF	232	\$ 45.00	\$10,440.00
7	7017	6097	JCK BOR OR TUN CASING (STL) (SAN SWR) (8 IN)	LF	67	\$ 200.00	\$13,400.00
8	7017	6098	CONNECTION TO EXIST MANHOLE (SANITARY SEWER)	EA	1	\$ 1,000.00	\$1,000.00
9	7017	6099	CONNECT EXIST SAN SWR TO MANHOLE	EA	2	\$ 1,000.00	\$2,000.00
10	7049	6020	WTR MAIN PIPE (PVC)(RESTRAINED JT) 8IN	LF	628	\$ 55.00	\$34,540.00
11	7049	6021	WTR MAIN PIPE (PVC)(RESTRAINED JT) 12IN	LF	1307	\$ 140.00	\$182,980.00
12	7049	6068	JCK TUN BOR OR AUG CSG (STL) (16IN)	LF	377	\$ 450.00	\$169,650.00
13	7049	6069	JCK TUN BOR OR AUG CSG (STL) (18IN)	LF	356	\$ 500.00	\$178,000.00
14	7049	6076	SERVICE LINE (SHORT SIDE) (1-1/2" TO 2")	EA	10	\$ 1,500.00	\$15,000.00
15	7049	6083	TAPPING SLEEVE AND VALVE (8IN X 8IN)	EA	1	\$ 7,500.00	\$7,500.00
16	7049	6104	FIRE HYDRANT ASSEMBLY	EA	4	\$ 4,300.00	\$17,200.00
17	7049	6124	CUT AND PLUG WATER MAIN (2IN)	EA	1	\$ 2,500.00	\$2,500.00
18	7049	6126	CUT AND PLUG WATER MAIN (6IN)	EA	2	\$ 3,000.00	\$6,000.00
19	7049	6127	CUT AND PLUG WATER MAIN (8IN)	EA	5	\$ 3,500.00	\$17,500.00
20	7049	6128	CUT AND PLUG WATER MAIN (10IN)	EA	4	\$ 4,000.00	\$16,000.00
21	7049	6137	WET CONNECTION (2IN)	EA	2	\$ 800.00	\$1,600.00
22	7049	6139	WET CONNECTION (6IN)	EA	2	\$ 1,600.00	\$3,200.00
23	7049	6140	WET CONNECTION (8IN)	EA	8	\$ 2,000.00	\$16,000.00
24	7049	6141	WET CONNECTION (10IN)	EA	4	\$ 2,500.00	\$10,000.00
25	7049	6157	WTR MAIN PIPE (PVC)(RESTRAINED JT) 2IN	LF	103	\$ 35.00	\$3,605.00
26	7049	6158	WTR MAIN PIPE (PVC)(RESTRAINED JT) 6IN	LF	747	\$ 50.00	\$37,350.00
27	7049	6159	WTR MAIN PIPE (PVC)(RESTRAINED JT) 10IN	LF	1303	\$ 130.00	\$169,390.00
28	7049	6160	JCK TUN BOR OR AUG CSG (STL) (20IN)	LF	367	\$ 525.00	\$192,675.00
						TOTAL:	\$1,140,785.00

**CITY OF LEAGUE CITY
CLEAR CREEK VILLAGE LIFT STATION REPLACEMENT**

OPINION OF PROBABLE CONSTRUCTION COST

A. BASE BID ITEMS					
BID ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	COST
1	Construction on the new Clear Creek Village Lift Station which include, but is not limited to an 8-ft diameter concrete submersible lift station wet well complete with two (2) 470 gpm, 7.5 HP submersible pumps and accessories, riser piping, valves, coatings, force main header, connection to existing 8-inch DIP force main, installation of 15-inch PVC influent sanitary sewer line and connection to existing sanitary sewer manhole, diversion/bypass pumping, site concrete pavement, fence, 25 KW diesel emergency generator, antenna, electrical duct bank, conduit, wiring, starters, breakers, control panels, and all other associated electrical work; and all else specified and shown on the Construction Documents, complete in place, for a fully functional lift station	1	L.S.	\$650,000.00	\$650,000.00
2	Procurement and start-up services of DFS pump control equipment, communication equipment, recommended spare parts, SCADA system modifications, and SCADA programming, complete as specified in the Drawings, Technical Specifications and Attachments A and B	1	L.S.	\$17,599.00	\$17,599.00
3	Demolition and abandonment of existing Clear Creek Village Lift Station, including salvaging existing equipment as specified and shown on the Contract Documents, complete in place	1	L.S.	\$20,000.00	\$20,000.00
TOTAL BASE BID ITEMS (A):					\$687,599.00

B. SUPPLEMENTAL BID ITEMS					
BID ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	COST
4	Remove existing manhole and replace with 4-ft diameter precast concrete manhole, all depths, complete in place	1	EA.	\$5,000.00	\$5,000.00
5	Wet condition bedding for manhole, all sizes, complete in place	1	EA.	\$1,500.00	\$1,500.00
6	Well pointing system for manhole, all depths, complete in place	2	EA.	\$1,500.00	\$3,000.00
7	Wet condition bedding for main, all sizes, complete in place	30	L.F.	\$25.00	\$750.00
8	Well pointing system for main, all depths, complete in place	30	L.F.	\$30.00	\$900.00
9	Installation and removal of piezometer, complete in place	1	EA.	\$100.00	\$100.00
10	Extra cement stabilized sand, complete in place	200	C.Y.	\$20.00	\$4,000.00
TOTAL SUPPLEMENTAL BID ITEMS (B):					\$15,250.00

C. CASH ALLOWANCE ITEMS					
BID ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	COST
CA-1	Electrical Service	1	C.A.	\$20,000.00	\$20,000.00
CA-2	Telephone Service	1	C.A.	\$2,000.00	\$2,000.00
CA-3	Permits	1	C.A.	\$5,000.00	\$5,000.00
CA-4	Materials Testing Services	1	C.A.	\$20,000.00	\$20,000.00
CA-5	Allowance for miscellaneous items as directed by the City and Engineer	1	C.A.	\$50,000.00	\$50,000.00
TOTAL CASH ALLOWANCE ITEMS (C):					\$97,000.00

TOTAL BID (A + B + C)					\$799,849.00
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TASK DESCRIPTION	PRINCIPAL	SENIOR PROJECT MANAGER	SENIOR ENGINEER	PROJECT ENGINEER	DESIGN ENGINEER	EIT	SENIOR UTILITY COORDINA TOR	UTILITY COORDINA TOR	SENIOR ENGINEER TECH	ADMIN. CLERICAL	TOTAL LABOR HRS. & COSTS
Function Code 163: Utility Design - League City Waterline Relocation											
PROJECT KICKOFF MEETINGS WITH STATE, HDR, CITY		1	6		4						11
DEVELOP AND MAINTAIN PROJECT SCHEDULE			2							4	6
COORDINATION MEETING WITH CITY			4		4				4		12
PROJECT DESIGN (~3,430 LF WATER LINES) (TITLE, 13 PLAN & PROFILES)		4	8		40				40		92
PROGRESS REVIEW MEETING W/STATE			2		4					2	8
CITY STANDARDS/SPECIFICATIONS		2	2		4				4	4	16
QUANTITY TAKE-OFFS		2	2		4				2	2	12
ESTIMATE		4	2		4				2	2	14
STATE/CITY OF REVIEW, COMMENTS, APPROVALS		2	4		4				4		14
GENERAL NOTES			2		2				2	2	8
UTILITY AGREEMENT PACKAGE			2		2						4
HOURS SUB-TOTALS	0	15	36	0	72	0	0	0	58	16	197
CONTRACT RATE PER HOUR	\$ 223.43	\$ 196.73	\$ 174.24	\$ 140.52	\$ 122.25	\$ 95.55	\$ 140.52	\$ 118.04	\$ 103.98	\$ 61.83	
FC 163 (Waterline Design) DIRECT LABOR FEE	\$ -	\$ 2,950.95	\$ 6,272.64	\$ -	\$ 8,802.00	\$ -	\$ -	\$ -	\$ 6,030.84	\$ 989.28	\$ 25,045.71
% DISTRIBUTION OF STAFFING	0.0%	7.6%	18.3%	0.0%	36.5%	0.0%	0.0%	0.0%	29.4%	8.1%	
LEAGUE CITY OTHER DIRECT EXPENSES											
	# OF UNITS	COST/UNIT	UNIT								
MILEAGE	500	\$0.54	miles								\$ 270.00
Photocopies B/W (8.5" x 11")	25	\$0.10	each								\$ 2.50
Photocopies B/W (11" x 17")	300	\$0.20	each								\$ 60.00
Photocopies Color (8.5" x 11")	100	\$0.65	each								\$ 65.00
Photocopies Color (11" x 17")	100	\$1.20	each								\$ 120.00
LEAGUE CITY OTHER DIRECT EXPENSES SUB-TOTAL											\$ 517.50
LEAGUE CITY DESIGN SUB-TOTAL											\$25,563.21

TASK DESCRIPTION	PRINCIPAL	SENIOR PROJECT MANAGER	SENIOR ENGINEER	PROJECT ENGINEER	DESIGN ENGINEER	EIT	UTILITY COORDINATOR	SENIOR ENGINEER TECH	SR. UTILITIES FIELD INSPECTOR	SENIOR SURVEYOR (RPLS)	ADMIN. CLERICAL	TOTAL LABOR HRS. & COSTS
Function Code 160(163): Utility Design - League City Clear Creek Lift Station Relocation												
PROJECT KICKOFF MEETINGS WITH STATE, HDR, CITY					2							2
DEVELOP AND MAINTAIN PROJECT SCHEDULE			2								8	10
COORDINATION MEETING WITH CITY			2		4			4				10
PROJECT DESIGN (Relo of lift station)		8	20		60	96		128			4	316
PROGRESS REVIEW MEETING W/STATE			2		6						4	12
CITY STANDARDS/SPECIFICATIONS		2	2		8	8		8			10	38
QUANTITY TAKE-OFFS		2	2		6	2		6			5	23
ESTIMATE		4	2		6	2		6			2	22
STATE/CITY REVIEW, COMMENTS, APPROVALS		2	2		6			8				18
GENERAL NOTES			2	8	2	2		2			2	18
PROJECT BIDDING			6		12			2			15	35
CONSTRUCTION ADMINISTRATIVE TASKS			20		40		2	4			18	84
UTILITY AGREEMENT PACKAGE			4				8	4		4		20
HOURS SUB-TOTALS	0	18	66	8	152	110	10	172	0	4	68	608
CONTRACT RATE PER HOUR	\$ 223.43	\$ 196.73	\$ 174.24	\$ 140.52	\$ 122.25	\$ 95.55	\$ 118.04	\$ 103.98	\$ 97.65	\$ 163.00	\$ 61.83	
FC 160(163) Lift Station Design DIRECT LABOR FEE	\$ -	\$ 3,541.14	\$ 11,499.84	\$ 1,124.16	\$ 18,582.00	\$ 10,510.50	\$ 1,180.40	\$ 17,884.56	\$ -	\$ 652.00	\$ 4,204.44	\$ 69,179.04
% DISTRIBUTION OF STAFFING	0.0%	25.0%	91.7%	11.1%	211.1%	152.8%	13.9%	238.9%	0.0%	5.6%	94.4%	
Function Code 130(130): Utility Adj Monitoring/Veri - League City Lift Station												
Pre-Construction Meeting		8										8
Verification												0
Verify Utility Adjustments are installed according to plans, specs & Prop Layout									16			16
Verify lift station is in compliance w/ TMUTCD/SW3P/Backfill Specs/restor of ROW									8			8
Status Reports		4					8					12
Notification		4										4
As-Built Drawings		8	8	8								24
												0
HOURS SUB-TOTALS	0	24	8	8	0	0	8	0	24	0	0	72
CONTRACT RATE PER HOUR	\$ 223.43	\$ 196.73	\$ 174.24	\$ 140.52	\$ 122.25	\$ 95.55	\$ 118.04	\$ 103.98	\$ 97.65	\$ 163.00	\$ 61.83	
FC 130(130) Lift Station Design DIRECT LABOR FEE	\$ -	\$ 4,721.52	\$ 1,393.92	\$ 1,124.16	\$ -	\$ -	\$ 944.32	\$ -	\$ 2,343.60	\$ -	\$ -	\$ 10,527.52
% DISTRIBUTION OF STAFFING	0.0%	33.3%	11.1%	11.1%	0.0%	0.0%	11.1%	0.0%	33.3%	0.0%	0.0%	
LEAGUE CITY OTHER DIRECT EXPENSES												
	# OF UNITS	COST/UNIT	UNIT									
MILEAGE	750	\$0.54	miles									\$ 405.00
Photocopies B/W (8.5" x 11")	50	\$0.10	each									\$ 5.00
Photocopies B/W (11" x 17")	100	\$0.20	each									\$ 20.00
Photocopies Color (8.5" x 11")	20	\$0.65	each									\$ 13.00
Photocopies Color (11" x 17")	20	\$1.20	each									\$ 24.00
LEAGUE CITY LIFT STATION OTHER DIRECT EXPENSES SUB-TOTAL												\$ 467.00
LEAGUE CITY DESIGN TOTAL HOURS	0	42	74	16	152	110	18	172	24	4	68	680
LEAGUE CITY DESIGN SUB-TOTAL												\$80,173.56

Control CSJ 0500-04-117
 ROW CSJ 0500-04-120
 U14908

REIMBURSABLES COST ESTIMATE
 League City

ENGINEER'S FEE SCHEDULE: City of League City
 PROJECT NAME/CSJ: 0500-004-117
 Limits: Harris County Line to 0.452 Mi. South of FM 518

TASK DESCRIPTION	John L	Jack	Chris S	Gabe	John B	Alan N	TOTAL
	PROJECT	SENIOR	UTILITY	PW DIR	Deputy City	Engr.	LABOR HRS.
	MANAGER	ENGINEER	Supervisor		Manager	Tech	& COSTS
PROJECT ADMINISTRATION	40	40	15	20	10	4	129
PROJECT KICKOFF MEETINGS WITH TXDOT, HDR, COLC	6		6	6			18
PLAN REVIEW SUBMITTAL AND COMMENTS FROM HDR	10		10	4	2	15	41
STANDARDS/SPECIFICATIONS	4		4	2		8	18
CONSRTRUCTION OBSERVATION	8		20	2		40	70
							276
HOURS SUB-TOTALS	68	40	55	34	12	67	276
CONTRACT RATE PER HOUR	\$68.58	\$68.31	\$40.00	\$87.50	\$109.38	\$29.39	
DIRECT LABOR COSTS	\$4,663.44	\$2,732.40	\$2,200.00	\$2,975.00	\$1,312.56	\$1,969.13	\$15,852.53
% DISTRIBUTION OF STAFFING	24.8%	14.5%	19.9%	12.3%	4.3%	24.3%	

Attachment “B”

Utility’s Accounting Method

For this project, the Utility selects the following method for developing utility relocation costs;

- **Actual Cost Method of Accounting:** Utility Accumulates costs under work order accounting procedures prescribed by the Federal or State regulatory body; and the utility proposes to request reimbursement for actual direct and related indirect costs.

The design, management, reimbursables, and Water and Wastewater costs will use the actual cost method of accounting (see Attachment A estimate details).

- **Lump Sum Method of Accounting:** Utility proposes to request reimbursement based upon an agreed lump sum amount supported by a detailed cost analysis.

The Lift Station Construction Contract costs (to be paid to League City) will use the lump sum method of accounting. All other project costs will use the actual cost method of accounting (see Attachment A estimate details).

Attachment “C”

Utility’s Schedule of Work and Estimated Date of Completion

All League City Water and Wastewater utility relocation work is joint bid and will be performed upon a schedule with completion dates to be defined at the discretion of the highway contractor selected by the Texas Department of Transportation.

The Lift Station construction contract will be bid out and awarded by League City with the following schedule of completion.

Estimated Lift Station Construction Start Date: 8/1/17*

*Start date is dependent upon land acquisition for the lift station site and the contract bidding & awarding schedule

Estimated Lift Station Construction Duration: 10 months

Estimated Lift Station Construction Completion Date: 6/1/18

Attachment “D”

Statement Covering Contract Work

The Water and Wastewater contract work is joint bid will be performed by the highway contractor selected by TxDOT.

The Lift Station contract work will be bid out by League City and performed by the winning contractor. See attached Form ROW-U-48 and Attachment I.

STATEMENT COVERING UTILITY CONSTRUCTION CONTRACT WORK
(AS APPEARING IN ESTIMATE)

U-Number: U14908

ROW CSJ Number: 0500-04-120 District: Houston
County: Galveston Highway No.: IH 45
Federal Project No.: N/A

I, _____, a duly authorized and qualified representative of
_____, hereinafter referred to as **Owner**, am fully cognizant of the
facts and make the following statements in respect to work which will or may be done on a contract basis as appears in the
estimate to which this statement is attached.

It is more economical and/or expedient for **Owner** to contract this adjustment, or **Owner** is not adequately staffed or equipped
to perform the necessary work on this project with its own forces to the extent as indicate on the estimate.

Procedure to be Used in Contracting Work

- ☐ A. Solicitation for bids is to be accomplished through open advertising and contract is to be awarded to the lowest
qualified bidder who submits a proposal in conformity with the requirements and specifications for the work to be
performed.
- ☒ B. Solicitation for bids is to be accomplished by circulating to a list of pre-qualified contractors or known qualified
contractors and such contract is to be awarded to the lowest qualified bidder who submits a proposal in conformity
with the requirements and specifications for the work to be performed. Such presently known contractors are listed
below:
- 1.
 - 2.
 - 3.
 - 4.
 - 5.
- ☐ C. The work is to be performed under an existing continuing contract under which certain work is regularly performed
for **Owner** and under which the lowest available costs are developed. (If only part of the contract work is to be done
under an existing contract, give detailed information by attachment hereto.)
- ☐ D. The utility proposes to contract outside the foregoing requirements and therefore evidence in support of its proposal
is attached to the estimate in order to obtain the concurrence of the State, and the Federal Highway Administration
Division Engineer where applicable, prior to taking action thereon (approval of the agreement shall be considered as
approval of such proposal).
- ☒ E. The utility plans and specifications, with the consent of the State, will be included in the construction contract
awarded by the State.

Signature _____

Date _____

Title _____

Attachment “E”

Utility Joint Use Acknowledgement

League City is not retaining property interests inside TxDOT ROW. TxDOT form ROW-U-JUAA is not required. League City will relinquish any existing property interests through a Quitclaim Deed.

The TxDOT highway contractor shall apply for and obtain a TxDOT Utility Installation Request (UIR) permit for work on the League City Facilities prior to requesting payment for any construction associated with this project.

League City shall apply for and obtain a TxDOT Utility Installation Request (UIR) permit for work on the Lift Station prior to requesting payment for any construction associated with this project.

Attachment “F”

Eligibility Ratio

Texas Transportation Code 203.092 provides that the adjustment of any utility facilities necessitated by the improvement of any highway on the interstate highway system will be made by the utility at the expense of TxDOT, provided such adjustment is eligible for Federal participation.

Eligibility Ratio is 100%.

Attachment “G”

Betterment Calculations and Estimate

League City elected to have a betterment on this I-45 expansion project by increasing the pipe size of a water line replacement. League City plans for the 10” Water Line along FM 518 from Sta. 14+28 to Sta. 27+21 (crossing IH-45 at ML Sta. 933+62) to be replaced by a 12” Water Line. The design, management, contract labor, and other material costs (besides the betterment pipe) remain the same. There are no other elective betterments on this project. See below cost summary and attached cost sheets for reference.

Calculation of Betterment Ratio:

$$\text{Betterment Ratio} = \frac{\text{Replacement with Betterment} - \text{Replacement with No Betterment}}{\text{Replacement with Betterment}}$$

Total Estimated Cost With Betterment: \$2,062,223.30

Total Estimated Cost With No Betterment: \$1,996,873.30

Total Betterment (Difference): \$65,350

$$0.03169 = \frac{\$2,062,223.30 - \$1,996,873.30}{\$2,062,223.30}$$

Estimate Pages Attached:

Pages 1-2 of 4 – Cost Estimate associated with Betterment (12” Water Line)

Sheet 3-4 of 4 – Cost Estimate associated with No Betterment (10” Water Line)

Control CSJ 0500-04-117
ROW CSJ 0500-04-120
U14908

COST ESTIMATE
League City

U14908 Cost Summary

CATEGORY	NOTES	SUBTOTAL
Water and Wastewater Utility Construction Cost Estimate	Included in highway construction contract-to be paid by TxDOT directly to highway contractor	\$ 1,140,785.00
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Reimbursable Costs Estimate	Based on League City hourly rates- to be paid by TxDOT to League City	\$ 15,852.53
Reimbursable Title Research for League City Water Line Easements	League City may retain the use of a Title research firm to conduct easement research along TxDOT ROW. Research expenses to be paid by TxDOT to League City	-
	SUB-TOTAL	\$ 2,062,223.30

WITH BETTERMENT
City of League City IH 45 Utility Adjustment Items

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3	7017	6074	ABANDON SANITARY SEWER (2IN)	EA	1	\$ 1,500.00	\$1,500.00
4	7017	6077	ABANDON SANITARY SEWER (8IN)	EA	1	\$ 2,500.00	\$2,500.00
5	7017	6091	FM CONNECTION (FORCE MAIN)	EA	2	\$ 1,500.00	\$3,000.00
6	7017	6096	SAN SWR (FM) PVC (RESTRAINED JT) 2IN	LF	232	\$ 45.00	\$10,440.00
7	7017	6097	JCK BOR OR TUN CASING (STL) (SAN SWR) (8 IN)	LF	67	\$ 200.00	\$13,400.00
8	7017	6098	CONNECTION TO EXIST MANHOLE (SANITARY SEWER)	EA	1	\$ 1,000.00	\$1,000.00
9	7017	6099	CONNECT EXIST SAN SWR TO MANHOLE	EA	2	\$ 1,000.00	\$2,000.00
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11	7049	6021	WTR MAIN PIPE (PVC)(RESTRAINED JT) 12IN	LF	1307	\$ 140.00	\$182,980.00
12	7049	6068	JCK TUN BOR OR AUG CSG (STL) (16IN)	LF	377	\$ 450.00	\$169,650.00
13	7049	6069	JCK TUN BOR OR AUG CSG (STL) (18IN)	LF	356	\$ 500.00	\$178,000.00
14	7049	6076	SERVICE LINE (SHORT SIDE) (1-1/2" TO 2")	EA	10	\$ 1,500.00	\$15,000.00
15	7049	6083	TAPPING SLEEVE AND VALVE (8IN X 8IN)	EA	1	\$ 7,500.00	\$7,500.00
16	7049	6104	FIRE HYDRANT ASSEMBLY	EA	4	\$ 4,300.00	\$17,200.00
17	7049	6124	CUT AND PLUG WATER MAIN (2IN)	EA	1	\$ 2,500.00	\$2,500.00
18	7049	6126	CUT AND PLUG WATER MAIN (6IN)	EA	2	\$ 3,000.00	\$6,000.00
19	7049	6127	CUT AND PLUG WATER MAIN (8IN)	EA	5	\$ 3,500.00	\$17,500.00
20	7049	6128	CUT AND PLUG WATER MAIN (10IN)	EA	4	\$ 4,000.00	\$16,000.00
21	7049	6137	WET CONNECTION (2IN)	EA	2	\$ 800.00	\$1,600.00
22	7049	6139	WET CONNECTION (6IN)	EA	2	\$ 1,600.00	\$3,200.00
23	7049	6140	WET CONNECTION (8IN)	EA	8	\$ 2,000.00	\$16,000.00
24	7049	6141	WET CONNECTION (10IN)	EA	4	\$ 2,500.00	\$10,000.00
25	7049	6157	WTR MAIN PIPE (PVC)(RESTRAINED JT) 2IN	LF	103	\$ 35.00	\$3,605.00
26	7049	6158	WTR MAIN PIPE (PVC)(RESTRAINED JT) 6IN	LF	747	\$ 50.00	\$37,350.00
27	7049	6159	WTR MAIN PIPE (PVC)(RESTRAINED JT) 10IN	LF	1303	\$ 130.00	\$169,390.00
28	7049	6160	JCK TUN BOR OR AUG CSG (STL) (20IN)	LF	367	\$ 525.00	\$192,675.00
						TOTAL:	\$1,140,785.00

Control CSJ 0500-04-117
ROW CSJ 0500-04-120
U14908

COST ESTIMATE
League City (no betterment)

U14908 Cost Summary

CATEGORY	NOTES	SUBTOTAL
Water and Wastewater Utility Construction Cost Estimate	Included in highway construction contract-to be paid by TxDOT directly to highway contractor	\$ 1,075,435.00
Lift Station Construction Cost Estimate	Lift Station construction contract to be bid out by and paid by League City. Costs to be paid by TxDOT to League City. Lump Sum	\$ 799,849.00
Water and Wastewater Engineering Design Cost Estimate	Paid by TxDOT to HDR Engineering by Contract No. 36-6IDP5195-WA4	\$ 25,563.21
Lift Station Engineering Design Cost Estimate	Paid by TxDOT to HDR Engineering by Contract No. 36-6IDP5195-WA4-SWA1	\$ 80,173.56
Reimbursable Costs Estimate	Based on League City hourly rates- to be paid by TxDOT to League City	\$ 15,852.53
Reimbursable Title Research for League City Water Line Easements	League City may retain the use of a Title research firm to conduct easement research along TxDOT ROW. Research expenses to be paid by TxDOT to League City	\$ -
	SUB-TOTAL	\$ 1,996,873.30

NO BETTERMENT
City of League City IH 45 Utility Adjustment Items

ITEM NO.	TxDOT BID CODE		DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	7017	6005	SANITARY SEWER (8IN) (PVC) (C900)	LF	203	\$ 85.00	\$17,255.00
2	7017	6051	MANHOLE (SAN SEWER) (4' DIA)	EA	2	\$ 4,500.00	\$9,000.00
3	7017	6074	ABANDON SANITARY SEWER (2IN)	EA	1	\$ 1,500.00	\$1,500.00
4	7017	6077	ABANDON SANITARY SEWER (8IN)	EA	1	\$ 2,500.00	\$2,500.00
5	7017	6091	FM CONNECTION (FORCE MAIN)	EA	2	\$ 1,500.00	\$3,000.00
6	7017	6096	SAN SWR (FM) PVC (RESTRAINED JT) 2IN	LF	232	\$ 45.00	\$10,440.00
7	7017	6097	JCK BOR OR TUN CASING (STL) (SAN SWR) (8 IN)	LF	67	\$ 200.00	\$13,400.00
8	7017	6098	CONNECTION TO EXIST MANHOLE (SANITARY SEWER)	EA	1	\$ 1,000.00	\$1,000.00
9	7017	6099	CONNECT EXIST SAN SWR TO MANHOLE	EA	2	\$ 1,000.00	\$2,000.00
10	7049	6020	WTR MAIN PIPE (PVC)(RESTRAINED JT) 8IN	LF	628	\$ 55.00	\$34,540.00
11	7049	xxxx	WTR MAIN PIPE (PVC)(RESTRAINED JT) 10IN	LF	1307	\$ 90.00	\$117,630.00
12	7049	6021	WTR MAIN PIPE (PVC)(RESTRAINED JT) 12IN	LF	0	\$ 140.00	\$0.00
13	7049	6068	JCK TUN BOR OR AUG CSG (STL) (16IN)	LF	377	\$ 450.00	\$169,650.00
14	7049	6069	JCK TUN BOR OR AUG CSG (STL) (18IN)	LF	356	\$ 500.00	\$178,000.00
15	7049	6076	SERVICE LINE (SHORT SIDE) (1-1/2" TO 2")	EA	10	\$ 1,500.00	\$15,000.00
16	7049	6083	TAPPING SLEEVE AND VALVE (8IN X 8IN)	EA	1	\$ 7,500.00	\$7,500.00
17	7049	6104	FIRE HYDRANT ASSEMBLY	EA	4	\$ 4,300.00	\$17,200.00
18	7049	6124	CUT AND PLUG WATER MAIN (2IN)	EA	1	\$ 2,500.00	\$2,500.00
19	7049	6126	CUT AND PLUG WATER MAIN (6IN)	EA	2	\$ 3,000.00	\$6,000.00
20	7049	6127	CUT AND PLUG WATER MAIN (8IN)	EA	5	\$ 3,500.00	\$17,500.00
21	7049	6128	CUT AND PLUG WATER MAIN (10IN)	EA	4	\$ 4,000.00	\$16,000.00
22	7049	6137	WET CONNECTION (2IN)	EA	2	\$ 800.00	\$1,600.00
23	7049	6139	WET CONNECTION (6IN)	EA	2	\$ 1,600.00	\$3,200.00
24	7049	6140	WET CONNECTION (8IN)	EA	8	\$ 2,000.00	\$16,000.00
25	7049	6141	WET CONNECTION (10IN)	EA	4	\$ 2,500.00	\$10,000.00
26	7049	6157	WTR MAIN PIPE (PVC)(RESTRAINED JT) 2IN	LF	103	\$ 35.00	\$3,605.00
27	7049	6158	WTR MAIN PIPE (PVC)(RESTRAINED JT) 6IN	LF	747	\$ 50.00	\$37,350.00
28	7049	6159	WTR MAIN PIPE (PVC)(RESTRAINED JT) 10IN	LF	1303	\$ 130.00	\$169,390.00
29	7049	6160	JCK TUN BOR OR AUG CSG (STL) (20IN)	LF	367	\$ 525.00	\$192,675.00
						TOTAL:	\$1,075,435.00

Attachment “H”

Proof of Property Interests

League City will relinquish any existing property interests through a Quitclaim Deed once proof of property interest is provided.

A new utility request permit will be obtained by the contractor prior to construction.

Attachment “I”

Inclusion in Highway Construction Contract

The Water and Wastewater construction plans will be included with the Texas Department of Transportation highway contract. See attached Inclusion in Highway Construction Contract form.

The Sanitary Sewer Lift Station designs will not be included with the highway contract. League City will bid out and award the lift station construction contract in the best interest of the State and League City.

ATTACHMENT "I"
(to be used only for Inclusion in Highway Construction Contract)

In the best interest of both the **State** and the **Utility**, the **Utility** requests the **State** to include the plans and specifications for this work in the general contract for construction of Highway IH 45 in this area, so that the work can be coordinated with the other construction operations; and the construction contract is to be awarded by the **State** to the lowest qualified bidder who submits a proposal in conformity with the requirements and specifications for the work to be performed.

Utility: City of League City
Name of Utility

By: _____
Authorized Signature

Print or Type Name

Title: _____

Date: _____

Initial Date
TxDOT

Initial Date
Utility