CITY OF LUCAS CONSTRUCTION PLANS FOR

BAIT SHOP WATERLINE RELOCATION

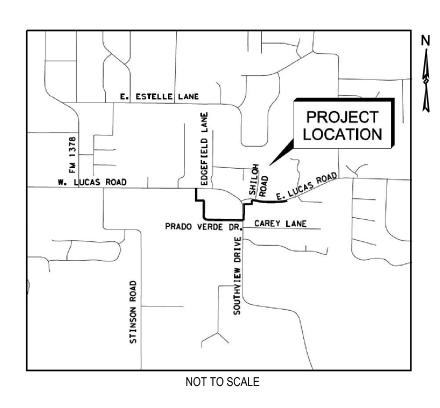


MAYOR

JIM OLK

CITY COUNCIL

KATHLEEN PEELE TIM JOHNSON
TIM BANEY DAVID KEER
PHIL LAWRENCE DEBBIE FISHER



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TXDOT NOTE: ALL FACILITIES, THAT WILL BE IN DIRECT CONFLICT WITH TXDOT CONSTRUCTION, INCLUDING THE EXISTING WATER LINE, ARE REQUIRED TO BE REMOVED FROM R.O.W. ALL CONDUIT OR PIPE UNDER EXISTING PAVING WILL REMAIN. ALL CONDUIT OR PIPE 3 INCHES IN DIAMETER AND GREATER UNDER EXISTING PAVING WILL BE PURGED OF ALL CONTENTS, CAPPED, AND GROUT FILLED. THERE WILL BE NO EXCAVATION OF EXISTING PAVING FOR THE REMOVAL OF ANY FACILITIES. THERE WILL BE NO WET BORES IN TXDOT R.O.W. THE APPROXIMATE DEPTH OF THE EXISTING PIPELINE OR CONDUIT TO BE ABANDONED IS +/- 4'. THE APPROXIMATE LINEAR FOOTAGE OF THE EXISTING PIPELINE THAT SHALL BE REMOVED IS 2480 LF. SEE END OF PLAN SET & APPENDIX OF BID BOOK FOR REMOVAL & ABANDONMENT EXHIBIT.

PREPARED BY:

HUITT-ZOLLARS

Huitt-Zollars, Inc. 5430 Lyndon B Johnson Fwy, Suite 1500 Dallas, Texas 75240 Phone (214) 871-3311 Fax (214) 871-0757 Firm Registration No. F-761

OWNER:

CITY OF LUCAS ENGINEERING DEPARTMENT 665 COUNTRY CLUB ROAD LUCAS, TEXAS 75002-7651 PHONE: (972) 727-8999

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GENERAL NOTES

- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THAT ELECTRIC POWER AND TELEPHONE POLES ARE EITHER MOVED TO A SAFE LOCATION BY THE AFFECTED UTILITY COMPANY OR ARE NOT DISTURBED DURING CONSTRUCTION. ALL COSTS INCURRED FOR MOVING ELECTRIC POWER AND TELEPHONE POLES SHALL BE INCLUDED THE PROPERTY OF THE PRO IN THE PRICE BID FOR THE CONSTRUCTION OF THE PROJECT.
- THE CONTRACTOR SHALL RESTORE ALL PROPERTY INCLUDING DRIVEWAYS, PUBLIC STREETS, SIDEWALKS AND ALL OTHER IMPROVEMENTS REMOVED OR DAMAGED INSIDE AND OUTSIDE THE PROJECT LIMITS DURING CONSTRUCTION TO AS GOOD AS OR BETTER CONDITION THAN BEFORE CONSTRUCTION. RESTORATION SHALL BE MADE IMMEDIATELY AFTER THE PROPERTY NO LONGER INTERFERES WITH CONSTRUCTION.
- 7. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
- THE CONTRACTOR SHALL NOT PLACE FILL OR WASTE MATERIAL ON ANY PRIVATE PROPERTY WITHOUT PRIOR WRITTEN PERMISSION FROM THE ENGINEER. NO EXCESS EXCAVATED MATERIAL SHALL BE EPOSITED IN LOW AREAS OR EXCAVATED MATERIAL SHALL BE EPOSTIED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAYS THAT WILL RESTRICT THE NATURAL FLOW OF WATER. IF THE CONTRACTOR PLACES EXCAVATED MATERIAL IN LOW AREAS THAT WILL CAUSE FLOOD DAMAGE, CONTRACTOR WILL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM SUCH FILL, AND HE SHALL REMOVE THE FILL AT THE CONTRACTOR'S EXPENSE.
- 9. ALL STREETS WITHIN THE SCOPE OF THE CONTRACT SHALL BE KEPT ACCESSIBLE TO FIRE TRUCKS, AMBULANCES AND OTHER EMERGENCY VEHICLES.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PUBLIC SAFETY DURING THE DURATION OF CONSTRUCTION, ALL BARRICADES, WARNING SIGNS, LIGHTS, DEVICES, ETC., FOR THE GUIDANCE AND PROTECTION OF TRAFFIC AND PEDESTRIANS MUST CONFORM TO THE INSTALLATION SHOWN IN THE MOST RECENT TEXAS MANUAL ON UNIFORM TRAFFIC IN THE MOST RECEIVED THAT IT THE MOST RECEIVED THAT IT THE TEXAS CONTROL DEVICES, AS CURRENTLY AMENDED BY THE TEXAS DEPARTMENT OF TRANSPORTATION. CONTRACTOR SHALL AT ALL LIMES PROVIDE BARRICADES, WARNING SIGNS AND LIGHTING ADEQUATE TO SAFEGUARD THE PUBLIC FROM ANY HAZARDS RESULTING FROM OPEN TRENCHES DURING NON-WORK
- 11. EROSION CONTROL MEASURES SHALL BE PROVIDED IN ACCORDANCE WITH THE EPA REGULATIONS.
- 12. THE CONTRACTOR SHALL USE THE PUBLIC RIGHT-OF-WAYS AND EXISTING UTILITY EASEMENTS FOR ACCESS TO THE JOB
- 13. THE CONTRACTOR SHALL SELECT THE SUBCONTRACTOR TO BE UTILIZED FOR TESTING AND LAB WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING FOR TESTING AND LAB WORK. SELECTION OF SUBCONTRACTOR FOR THIS PURPOSE WILL BE SUBJECT TO APPROVAL BY THE OWNER. TESTING REFERRED TO HEREIN INCLUDES COMPACTION AND WATER PRESSURE TESTING, WHICH SHALL BE REQUIRED ON THIS PROJECT. TESTING SHALL INCLUDE TESTING OF CONCRETE REQUIRED TO DETERMINE AND ASCERTAIN THAT CONCRETE STRENGTHS IN THE SPECIFICATIONS ARE ATTAINED FOR ALL CONCRETE MEMBERS ON THE PROJECT.
- 14. THE CONTRACTOR SHALL KEEP EXCAVATED TRENCHES FREE OF GROUNDWATER DURING CONSTRUCTION. IF NECESSARY, CONTRACTOR SHALL UTLILIZE DEWATERING PROCEDURES ORDER TO CONTROL GROUNDWATER DURING CONSTRUCTION SUCH THAT IT DOES NOT AFFECT HIS CONSTRUCTION WORK.
- 15. THE CONTRACTOR SHALL PROVIDE MEANS FOR ADEQUATELY CONTROLLING AND AVOIDING SOIL EROSION DURING CONSTRUCTION, THE CONTRACTOR SHALL NOT STORE SPOIL 31. IN DRAINAGE WAYS DURING CONSTRUCTION.

- 1. IT IS THE CONTRACTOR'S RESPONSIBILTY TO MAINTAIN NEAT AND ACCURATE PLANS OF RECORD.

 2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ADEQUATE SITE DRAINAGE THROUGHOUT THE DURATION OF THIS PROJECT.

 3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS BEFORE CONSTRUCTION BEGINS.

 4. THE CONTRACTOR SHALL REPLACE ALL FENCES REMOVED DURING CONSTRUCTION IN AS GOOD AS OR BETTER CONDITION THAN BEFORE CONSTRUCTION.

 5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS

 5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS IN A MANNER AND QUANTITY AS DIRECTED BY THE CITY.
 - 17. NO EXISTING SPRINKLER / IRRIGATION SYSTEMS HAVE BEEN SHOWN ON THE PLANS; HOWEVER, THEY MAY EXIST IN CERTAIN AREAS. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ANY EXISTING IRRIGATION SYSTEMS WITHIN THE PROJECT LIMITS AND DETERMINE IF THEY WILL BE AFFECTED BY THIS CONSTRUCTION. IF THE CONTRACTOR ENCOUNTERS ANY SPRINKLER SYSTEMS DURING CONSTRUCTION, HE SHALL REPAIR AND/OR REPLACE IN AS GOOD AS OR BETTER CONDITION THAN BEFORE CONSTRUCTION. CONSTRUCTION.
 - THE CONTRACTOR SHALL MAINTAIN ADEQUATE SANITARY FACILITIES FOR USE BY WORKERS THROUGHOUT CONSTRUCTION.
 - 19. THE CONTRACTOR SHALL CONFORM TO THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION'S (OSHA) STANDARDS FOR TRENCH SAFETY THAT ARE IN EFFECT DURING THE PERIOD OF CONSTRUCTION.
 - 20. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CITY OF LUCAS STANDARDS AND SPECIFICATIONS AND THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENT (NCTCOG) STANDARDS AND SPECIFICATIONS, EXCEPT AS NOTED. IN THE EVENT OF A CONFLICT, THE CITY OF LUCAS STANDARDS AND SPECIFICATIONS SHALL GOVERN.
 - 21. NO EXISTING TREES SHALL BE REMOVED WITHOUT APPROVAL OF THE CITY.
 - 22. CONTRACTOR SHALL PROVIDE ALL NECESSARY CONSTRUCTION STAKING.
 - 23. CONTRACTOR'S WORKING HOURS SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF THE CURRENT CITY ORDINANCE GOVERNING HOURS OF CONSTRUCTION WORK IN THE CITY.
 - 24. DRIVEWAYS AFFECTED BY CONSTRUCTION SHALL BE REPLACED WITH DRIVEWAY OF SAME TYPE MATERIAL AND SURFACE AS THAT REMOVED FOR INSTALLATION OF THE WATER LINE.
 - 25. DRIVEWAY CULVERTS SHALL NOT BE REMOVED FOR CONSTRUCTION OF THE WATER LINE.
 - 26. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS (MINIMUM 6 SACKS OF CEMENT PER CUBIC YARD) UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL AND DOWEL BARS IN PAVEMENT SHALL BE SUPPORTED AND MAINTAINED AT THE CORRECT CLEARANCES BY THE USE OF BAR CHOIRS OR OTHER APPROVED SUPPORT.
 - ALL EXISTING WATER LINES AND SERVICE LINES TO REMAIN IN SERVICE DURING CONSTRUCTION. AT TIMES WHEN WATER HAS TO BE CUIT-OFF, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO NOTIFY THE AFFECTED AREA AT LEAST 48 HOURS PRIOR TO WATER CUT-OFF.
 - 28. THE CONTRACTOR SHALL PHASE HIS DAILY WORK SCHEDULE SO THAT ALL DRIVEWAY CROSSINGS ARE TO BE COMPLETE PRIOR TO THE END OF THE DAY. NO DRIVEWAY CROSSINGS ARE TO BE LEFT OPEN OVERNIGHT. DURING INSTALLATION OF THE PIPELINE ACROSS DRIVEWAYS, THE CONTRACTOR SHALL BE PREPARED TO PROVIDE ACCESS ACROSS TRENCHES AND DRIVEWAYS AT ALL TIMES IN CASE OF EMERGENCY.
 - 29. WATER LINE SHALL BE POLYVINYL CHLORIDE (PVC) AWWA
 C900. NEW WATER SERVICE LINE SHALL BE POLY TUBING
 WITH COMPRESSION TYPE FITTINGS. MAIN LINE VALVES AND FITTINGS SHALL BE FORD BRASS.
 - 30. CONTRACTOR SHALL INSTALL ISOLATION GATE VALVES AND FIRE HYDRANTS AT LOCATIONS SHOWN ON PLANS UNLESS OTHERWISE DIRECTED BY OWNER. OWNER MAY DIRECT CONTRACTOR TO LOCATE VALVES AND FIRE HYDRANTS AT LOCATIONS OTHER THAN THOSE SHOWN ON PLANS. IN ADDITION, OWNER MAY ADD ADDITIONAL ISOLATION GATE VALVES AND FIRE HYDRANTS AS REQUIRED FOR OPERATIONAL PURPOSES. PURPOSES.
 - THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS, PARKING AREAS, SIDEWALKS, ETC., ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS FROM CONSTRUCTION.

- THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR PROTECTION OF PUBLIC UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, VALVE BOXES, FIRE, HYDRANTS. ETC., MUST BE ADJUSTED TO PROPER LINE AND GRADE BY THE CONTRACTOR PRIOR TO AND/OR AFTER PLACING ANY PERMANENT PAVING. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR SUPPORT OF EXISTING UTILITY POLES, STREET SIGNS, ETC., WHEN EXCAVATING IN THE VICINITY OF SUCH POLES. 32. THE
- 33. THE CITY OF LUCAS PUBLIC WORKS DEPORTMENT IS TO BE NOTIFIED 48 HOURS (2 WORKING DAYS) PRIOR TO ANY CONSTRUCTION OF PAVING AND UTILITIES IN RIGHTS-OF-WAY, EASEMENTS AND ALLEYS.
- 34. THE CONTRACTOR SHALL RENT A HYDRANT METER FROM THE CITY OF LUCAS FOR CONSTRUCTION WATER.
- ALL LOCATIONS OF UNDERGROUND UTILITY LINES ARE APPROXIMATE. CONTRACTOR SHALL CONTACT THE PROPER UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, SHALL INFORM THEM OF BEGINNING OF CONSTRUCTION AND SHALL MAKE ARRANGEMENTS TO HAVE UTILITIES LOCATED BY FLAGGING. FLAGGING OF UTILITIES SHALL BE COMPLETED PRIOR TO BEGINNING CONSTRUCTION.
- 36. PVC PIPE SHALL BE MANUFACTURED FROM A LOW FILLER PVC COMPONENT CAPABLE OF MEETING THE HIGHE STANDARDS OF THE ASTM SPECIFICATIONS.
- 37. CONSTRUCTION SITES SHALL BE SECURE AT ALL TIMES.
 SAFETY PRECAUTIONS SHALL BE TAKEN TO PROTECT THE
 PUBLIC FROM ANY INJURY THAT MIGHT RESULT FROM
 CONSTRUCTION ACTI VITIES.
- AS PART OF BID ITEM, EROSION CONTROL", THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ANY AND ALL EROSION CONTROL MEASURES AS NEEDED TO CONTROL RUNOFF OF SILTATION FROM THE PROJECT SITE. THIS SHALL INCLUDE, BUT IS NOT LIMITED TO, SILT FENCING, ROCK BERMS, INLET PROTECTION, ETC. THE CONTRACTOR SHALL MAINTAIN THESE EROSION CONTROL MEASURES AS REQUIRED UNTIL THE CONSTRUCTION IS COMPLETED AND GRASS HAS BEEN PLACED OVER DISTURBED AREAS.
- 39. THERE IS NO SEPARATE PAY RESULTING FROM ANY OF THE WORK REQUIRED BECAUSE OF THE REQUIREMENTS INCLUDED IN THESE GENERAL NOTES. ALL WORK REQUIRED SHALL BE INCLUDED IN THE PRICE BID FOR THE PROJECT.
- 40. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) REQUIREMENTS DURING THE INSTALLATION OF THE PROPOSED WATER MAIN IN AND NEAR TXDOT RIGHT-OF-WAY. TXDOT IS TO BE NOTIFIED 48 HOURS (2 WORKING DAYS) PRIOR TO ANY CONSTRUCTION OF PAVING AND UTILITIES IN RIGHTS-OF-WAY AND EASEMENTS.

WATER NOTES

- A 3M LOCATOR COMPATIBLE WITH TYPE 1265 SHALL BE FURNISHED AND INSTALLED NO DEEPER THAN 4 FEET BY THE CONTRACTOR BESIDE ALL VALVES, ABOVE ALL BENDS AND ABOVE ALL CORPORATION STOPS ON THE PROPOSED WATER
- EMBEDMENT FOR THE PROPOSED WATER MAINS SHALL BE CLASS B+ EXCEPT FOR THE PIPELINE EMBEDMENT AT SANITARY SEWER LINE CROSSINGS, IN WHICH CASE THE EMBEDMENT SHALL BE CONCRETE ENCASEMENT TO NINE FEET EACH SIDE OF THE SANITARY SEWER LINE.
- WATER MAIN SHALL BE POLYVINYL CHLORIDE (PVC) AWWA
- WATER SERVICES SHALL BE SDR-9 HDPE SERVICE LINES. 4.
- ALL WATER FITTINGS AND VALVES SHALL BE FLANGED.
- CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING BURIED LINES, LOCATIONS OF PIPELINES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE TO THE BEST KNOWLEDGE OF THE CITY. CONTRACTOR WILL MAKE ALL REPAIRS TO EXISTING LINES DAMAGED DURING CONSTRUCTION WORK AND WILL HAVE MATERIALS ON HAND TO MAKE SUCH REPAIRS.
- CONTRACTOR SHALL TAKE THE EXISTING WATER LINES OUT OF SERVICE AND ABANDON IN PLACE ONCE ALL SERVICE CONNECTIONS ARE CHANGED OVER. CONTRACTOR SHALL CUT AND PLUG EXISTING WATER MAINS IN A SUFFICIENT MANNER TO PREVENT LOSS OF WATER.
- TO PREVENT LOSS OF WATER.

 CONTRACTOR SHALL CONNECT EXISTING SERVICE CONNECTIONS TO PROPOSED WATER MAIN ONCE WATER MAIN INSTALLATION HAS BEEN COMPLETED AND WATER LINE HAS BEEN TESTED AND DISINFECTED, ALL BACTERIOLOGICAL SAMPLES HAVE PASSED, AND THE WATER MAIN HAS BEEN PLACED IN SERVICE. ALL SERVICE CONNECTIONS SHALL HAVE A 3M LOCATOR, (TOILET SEAT) PLACED 18 INCHES ABOVE CORPORATION DIRECTLY ABOVE PROPOSED WATER MAIN. THE CITY WILL FURNISH THE METER SETUP AT EACH SERVICE CONNECTION, INCLUDING A METER, A GATE VALVE, A BACK-FLOW PREVENTER, AND A 6 INCH NIPPLE THE FOR CONTRACTOR TO INSTALL. THE CONTRACTOR WILL FURNISH ALL OTHER MATERIALS REQUIRED FOR THE NEW SERVICE CONNECTIONS, INCLUDING NEW METER BOXES AND NEW SERVICE LINES AND WILL INSTALL ALL MATERIALS REQUIRED FOR THE SERVICE FITTINGS AND APPURTENANCES SHALL BE FORD BRASS.
- CONTRACTOR SHALL FURNISH AND INSTALL A TRACER WIRE CONTRACTOR SHALL FURNISH AND INSTALL A TRACER WIRE THAT IS COMPATIBLE WITH AND WILL ALLOW DETECTION BY RADIODETECTION CORPORATION'S DIGITAL PXL-2 PIPE LOCATOR. THE TRACER WIRE SHALL BE INSTALLED JUST ABOVE THE PROPOSED WATER MAINS AND THROUGHOUT THE LENGTH OF THE WATER LINES. THE TRACER WIRE SHALL BE MINIMUM 14 GAUGE WIRE.

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NTMWD NOTES

- 1. NORTH TEXAS MUNICIPAL WATER DISTRICT (NTMWD) 20-INCH WATER TRANSMISSION PIPELINES ARE LOCATED WITHIN LIMITS OF CONSTRUCTION.
- 2. OPERATION OF HEAVY EARTH MOVING EQUIPMENT, COMPACTION EQUIPMENT OR HEAVY CONSTRUCTION EQUIPMENT, SUCH AS CONCRETE TRUCKS, SHALL BE RESTRICTED TO SPECIFIC CROSSING POINTS ACROSS NTMWD EASEMENTS, AS APPROVED BY THE NTMWD. THE CROSSINGS SHALL BE DESIGNATED AND VERIFIED TO PROVIDE A MINIMUM OF FIVE FEET OF COVER.
- 3. TO ASSURE THAT PLACING OF SIGNIFICANT LOADS OVER THE NTMWD PIPELINE DOES NOT DAMAGE THE EXISTING PIPELINE, NO MATERIALS SHALL BE STOCKPILED ON THE NTMWD EASEMENT WITHOUT AUTHORIZATION FROM THE NTMWD. IF THE CONTRACTOR DESIRES TO USE NTMWD'S EASEMENT FOR STOCKPILE OF MATERIALS. CONTACT NTMWD ENGINEERING AT (972) 442-5405 SO YOUR PLANS FOR USE OF NTMWD'S EASEMENT CAN BE REVIEWED.
- 4. UNLESS OTHERWISE SHOWN OR REQUIRED A MINIMUM OF ONE-FOOT CLEARANCE SHALL BE PROVIDED FOR ALL UTILITIES CROSSING THE NTMMD PIPELINES.
- 5. "THE CONTRACTOR SHALL CONTACT NTMWD ENGINEERING AT (972) 442-5404 AT LEAST 48 HOURS PRIOR TO PERFORMING ANY WORK IN THE VICINITY OF THE NTMWD FACILITIES.
- 6. FOR OPEN CUT WHERE CROSSING UNDER THE NTMWD PIPELINE, WITHIN TEN FEET EITHER SIDE OF CENTERLINE OF PIPELINE. THE TRENCH WIDTH SHALL BE LIMITED TO FOUR-FOOT WITH VERTICAL WALLS. NO SLOPING BANKS AND WITH THE APPROPRIATE TRENCH SAFETY. THE ENTIRE EXCAVATION WITHIN THE LIMITS NOTED ABOVE SHALL BE BACKFILLED WITH SAND TO ONE-FOOT ABOVE TOP OF NTMWD PIPELINE. ONE-FOOT MINIMUM VERTICAL CLEARANCE IS REQUIRED BETWEEN NTMWD PIPELINE AND PROPOSED UTILITIES.
- 7. WATER LINES CROSSING THE NTMWD EASEMENT SHALL BE INSTALLED IN COMPLIANCE WITH THE RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS PARAGRAPH 290.44 (E), LOCATION OF WATER LINES.

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

- 1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. At a minimum, construction for public water systems must always meet TCEQ's "Rules and Regulations for Public Water Systems."
- 2. All newly installed pipes and related products must conform to American National Standards Institute (ANSI)/NSF International Standard 61 and must be certified by an organization accredited by ANSI [§290.44(a)(1)].
- 3. Plastic pipe for use in public water systems must bear the NSF International Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less [§290.44(a)(2)].
- 4. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply [§290.44(a)(3)].
- 5. All water line crossings of wastewater mains shall be perpendicular [§290.44(e)(4)(B)].
- 6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface [§290.44(a)(4)].
- 7. The maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures is 0.25 percent [§290.44(b)].
- 8. The contractor shall install appropriate air release devices with vent openings to the atmosphere covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent [§290.44(d)(1)].
- 9. The contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation [§290.44(f)(1)].
- 10. When waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the waterline shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested [§290.44(f)(2)].

- 11. Pursuant to 30 TAC §290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.
 - The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$Q = \frac{LD\sqrt{P}}{148,000}$$

Where:

- Q = the quantity of makeup water in gallons per hour,
- L = the length of the pipe section being tested, in feet,
- D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).
- The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$L = \frac{SD\sqrt{P}}{148,000}$$

Where:

- L = the quantity of makeup water in gallons per hour,
- S = the length of the pipe section being tested, in feet,
- D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).
- 12. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet §290.44(e)(1)-(4).
- 13. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-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 sealant [§290.44(e)(5)].
- 14. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction [\$290.44(e)(6)].

- 5. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line [§290.44(e)(7)].
- 16. Waterlines shall not be installed closer than ten feet to septic tank drainfields [\$290.44(e)(8)].
- 17. The contractor shall disinfect the new waterlines in accordance with AWWA Standard C-651-14 or most recent, then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer [§290.44(f)(3)].
- Dechlorination of disinfecting water shall be in strict accordance with current AWWA Standard C655-09 or most recent.

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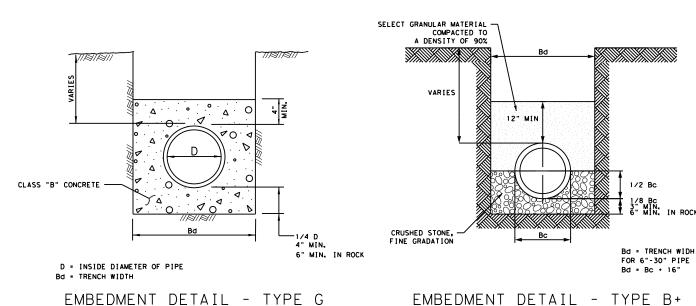


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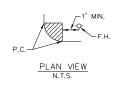




FLANGED JOINT (BEFORE VALVE)

VARIABLE

- 1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
- 2. ALL JOINTS SHALL BE FLANGED JOINTS.
- TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
- 4. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
- 5 STANDARD BURY DEPTH 5' FEET
- 6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
- 7. F.H. SHALL BE LOCATED MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW)
- 8. FIRE HYDRANTS SHALL BE WATEROUS HYDRANTS.



FIRE HYDRANT INSTALLATION N. T. S.

8'-0" MAX.

MIN. 7 CUBIC FEET OF

WASHED GRAVEL OR CLEAN STONE FILL

THRUST BLOCK MUST

NOT BLOCK WEEP HOLE

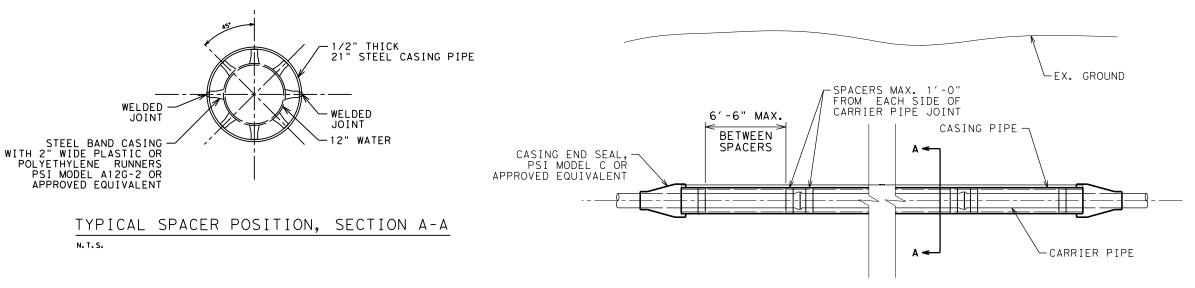
TYPICAL PIPE ENCASEMENT

CONC. PAD CLASS "A" CONCRETE, IN UNPAVED AREAS

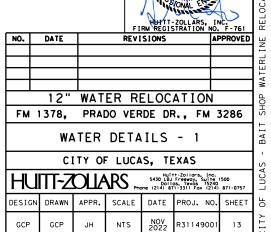
-FINISH GRADE AT HYDRANT

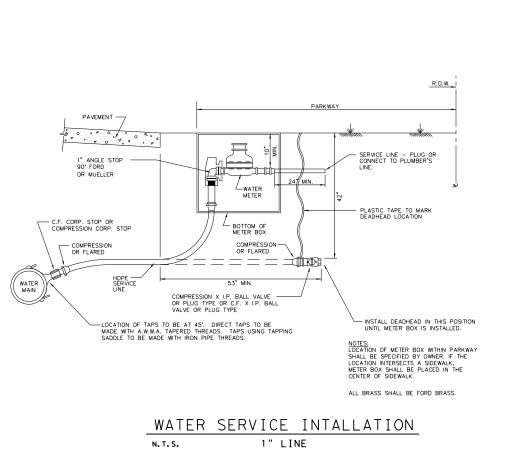
FLANGED JOINT-(AFTER VALVE)

CONC. PAD CLASS "A" CONCRETE, IN UNPAVED AREAS



TXDOT NOTE: ALL FACILITIES, THAT WILL
BE IN DIRECT CONFLICT WITH TXDOT
CONSTRUCTION, INCLUDING THE EX. WATER
LINE, ARE REQUIRED TO BE REMOVED FROM
R.O.W. ALL CONDUIT OR PIPE UNDER EX.
PAVING WILL REMAIN. ALL CONDUIT OR PIPE
3 INCHES IN DIAMETER AND GREATER UNDER
EX. PAVING WILL BE PURGED OF ALL
CONTENTS, CAPPED, AND GROUT FILLED.
THERE WILL BE NO EXCAVATION OF EX.
PAVING FOR THE REMOVAL OF ANY
FACILITIES. THERE WILL BE NO WET BORES
IN TXDOT R.O.W. THE APPROXIMATE DEPTH
OF THE EX. PIPELINE OR CONDUIT TO BE
ABANDONED IS */- 4'. THE APPROX. LINEAR
FOOTAGE OF THE EX. PIPELINE THAT SHALL
BE REMOVED IS 2480 LF. SEE END OF SET
FOR REMOVAL & ABANDONMENT EXHIBIT.





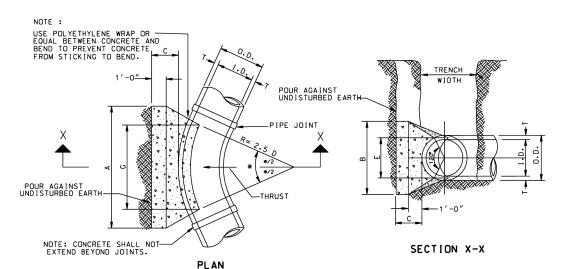
TF550 BLOW OFF GROUND LINE 2" NOZZLE AND CAP TF 550 5 1/4" VALVE BOX 2" SUPPLY PIPE 4 2" SUPPLY PIPE . 2" 90 DEGREE ELBOW+ 2" CURB STOP VALVE + . - SUPPLIED BY OTHERS Hydrant shall have a 2' vertical FIP injet and a 2' NPT nozzle outlet. Hydrant shall be operated by turning a top-mounted % equare nut counterclockwise to open, clockwise to close. All internal working parts, the inlet, and the outlet shall be brass. All working parts shall be serviceable from above with no digging required. All wear parts (o-rings and valve seat) shall be commonly available dimensions and materials, and none may be vendor—unique design. Hydrant shall be model TF550 as manufactured by Kupferty Foundry Co., St. Louis, Mo. 63102. -insure that the hydrant is free to move vertically within the valve box in order to prevent the transmitton of traffice loads the to hydrant. It should not be jammed or wedged against the valve box ID. -The normal position of the top of the operating nit is about 6" below the top of the valve box. But you can freely adjust this position to suit your circumstances. Just keep in mind the maintanance procedures are best preformed when bolts attaching the top cap are within an easy reach.

Follow the suggestions of the AWWA for hydrant installation. 1-14-1 KUPFERLE FOUNDRY COMPANY 2511 NORTH 9TH STREET, ST. LOUIS, MO 63102 314-231-8738 800-231-3990 FAX 314-231-2820 SHEET 1 OF 1 PART NO. #TF550 BLOW OFF

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JOHN HO 58873

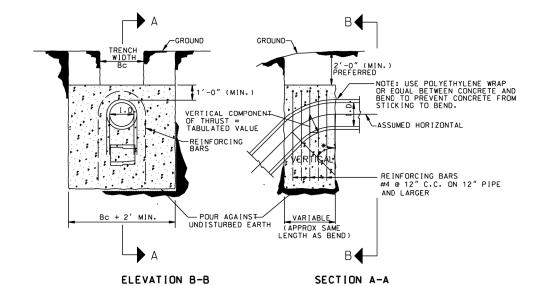
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Г			С	r				Ε	ARTI	4	F	ROCK					ART	н	F	ROCK				E	ARTI	н	F	ROCK	
	I.D. (IN)			22.50 FT.	(FT)	G (FT:	THRUST TONS	(FT)	B (FT)	VOL	(FT)	B (FT:	VOL (CY)	G (FT:	THRUST TONS	(FT	B (FT:	VOL (CY)	(FT)	B (FT)	VOL (CY)	G (FT:	THRUST TONS	(FT)	B (FT)	VOL (CY)	(FT)	B (FT)	VOL K C Y
4	•6•8	0.4	1.5	1.5	0.9	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.
	12	0.5	1.5	1.5	1.2	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.3

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I.D. (IN)	(IN)	11.25 FT.	22.50 FT.	E (FT)	G (FT)	THRUST TONS	A (FT)	B (FT:	VOL :	(FT	B	VOL X CY	G (FT:	THRUST TONS	(FT	B	VOL X CY	(FT	B (FT)	VOL	G (FT:	THRUST TONS	(FT	В	VOL	(FT	B	VOL VCY
4.6.8	0.4	1.5	1.5	0.9	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2
12	0.5	1.5	1.5	1.2	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5

HORIZONTAL THRUST BLOCK

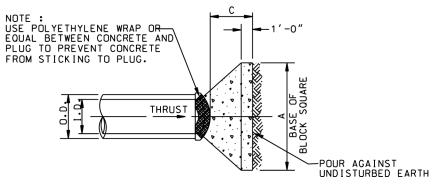


I	11.25°		11.25° 22.50°		3	30°		5°	67	.50°	9	10°
1.D (IN	THRUST TONS	VOL.	THRUST TONS	VOL.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.
6	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5
8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5
12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7

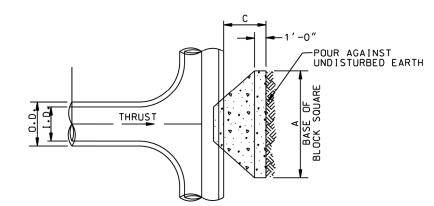
VERTICAL BEND THRUST BLOCK

GENERAL NOTES FOR ALL THRUST BLOCKS:

- 1. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 P.S.I.
- 2. VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.
- 3. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
- 4. CONCRETE FOR BLOCKING SHALL BE CLASS B CONCRETE.
- 6. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.



PLAN OF PLUG THRUST BLOCK



PLAN OF TEE THRUST BLOCK

		ΕA	RTH	ROCK		
I.D. (IN)	THRUST TONS	C (FT)	A (FT)	VOL.	A (FT)	VOL.
4,6,8	5.1	1.5	2.5	0.3	2.0	0.2
12	11.3	1.5	3.5	0.6	2.5	0.3
24	45.2	2.5	7.0	3.1	5.0	1.7

PLUG AND TEE THRUST BLOCK

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