CAPITAL IMPROVEMENT AGREEMENT WITH 44.76 SEGUIN, LLC FOR 24 INCH WATER TRANSMISSION MAIN CONSTRUCTION ALONG STATE HIGHWAY 123 BYPASS

This Capital Improvement Agreement (the "Agreement) is made on ~~June~~ July 15th, 2024 between the City of Seguin, Texas, a Texas municipal corporation (the "City"), whose mailing address is 205 N. River Street, Seguin, Texas 78155, and 44.76 Seguin, L.L.C., a Texas limited liability company, whose mailing address is 3200 Southwest Freeway, Suite 3000, Houston, Texas 77027 ("Developer") and ARMZ PRASLA GROUP LLC, a Texas limited liability company, and RODEO SEGUIN TWO LLC, a Texas limited liability company, as TENANTS-IN-COMMON, whose mailing address is 11700 Shoreview Overlook, Austin, Texas 78132 ("Lot 3 Owner").

WHEREAS, the Developer owns a certain tract of real property (the "Developer Property") located at 3320 N State Hwy 123, Seguin, Texas 78155, with a legal description of North Seguin Commercial Lot #1, 3.575 acres, and North Seguin Lot #2, 1.258 acres.

WHEREAS, the Lot 3 Owner owns a certain tract of real property (the "Lot 3 Property", and together with the Developer Property, the "Property") located at 3320 N State Hwy 123, Seguin, Texas 78155, with a legal description of North Seguin Commercial Lot #3, 2.692 acres.

WHEREAS, The City desires to construct a 24 inch water transmission main (the "Project") on a portion of the property as described on the Subdivision Plat of North Seguin Commercial Replat as shown in Volume 9, Page 730-791 shown as a 15' Sanitary Sewer Easement (Doc #201999026777) and a 20' Public Utility Easement (Volume 9 Page 712) of the Deed Records of Guadalupe County; and

WHEREAS, Developer has offered to construct the Project so that no disruption to their development activities would occur should the City build the Project.

NOW THEREFORE, in consideration of the foregoing premises, the mutual covenants set forth in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the City and Developer agree as follows:

1. Award of Design and Construction Contracts.

   A. The City awarded a contract to TRC Engineering, Inc. (the "Project Engineer") for design and construction management of the Project. The Project Engineer has provided technical specifications required for the proposed improvements as shown in **EXHIBITS A and B**. The City shall ensure that the Project Engineer undertakes and completes the design of the Project in a timely manner, so as to ensure that all deadlines specified hereunder are met by the City.

   B. The Developer has agreed to enter into a contract with its contractor who will proceed with the Project such that it is completed by December 31, 2024. Construction shall occur Between Stations 96+86.02 and 107+77.26 as shown in **EXHIBIT A**.

   C. If the Project is not completed by this December 31, 2024, then the City shall have a right to notify Developer that it intends to take over construction of the Project, enter the Property, and utilize its own employees and contractors to complete the Project. If the City invokes its right to complete the Project under this Section, the Parties shall execute a Temporary Construction Easement, effective January 1, 2025, substantially in the form of the document attached hereto as **EXHIBIT C**. Whatever reasonable costs the Developer has incurred in furtherance of the Project prior to the City invoking its rights to complete

the Project under this Section shall be paid by the City, pursuant to Section 2, below. Once the City has invoked its rights under this Section, Developer and/or Developer's contractors shall perform no more work in furtherance of the Project.

2. Agreements by the Parties.

   A. The City shall pay Developer the actual costs of the Project in an amount not to exceed $587,758.95, as set forth in the proposal from Lowden Excavating as attached in **EXHIBIT D**.

   B. The City shall make monthly progress payments to the Developer based on the invoices submitted by the contractor hired by Developer. Said invoices shall be paid within 30 days of receipt thereof.

   C. The Lot 3 Owner shall grant to the Developer a twelve (12) month temporary construction easement over the Lot 3 Property, and the Lot 3 Owner and the Developer will enter into a Temporary Easement Agreement in such form as reasonably agreed to between the Lot 3 Owner and the Developer.

3. Construction of Improvements.

   Developer will ensure that the construction of the Project is performed in accordance with the following:

   A. Developer will require the contractor to obtain a performance bond and a payment bond, on a form approved by the City, in the full amount of the construction contract from the contractor, naming Developer and the City as obliges.

   B. Developer will require the contractor to maintain commercial general liability insurance coverage for all of its operations and those of its subcontractors, and all persons engaged in world on the site must be covered by workers' compensation insurance as set forth in the attached **Exhibit E.**

   C. Developer will cause all necessary licenses and permits for the Project to be obtained from authorities having jurisdiction over the work and pay all fees related to such permits.

   D. Developer will require the contractor to construct the Project in a good and workmanlike manner and in accordance with the plans and specifications for the facilities prepared by the Project Engineer and approved by the City Utility Engineer.

4. City Inspections and Acceptance.

   The City agrees, at no cost to Developer, through the Project Engineer, to:

   A. Inspect the construction of the Project as construction progresses;

   B. Inspect the Project promptly upon completion of construction; and

C. Issue a certificate of acceptance of the Project to Developer after 1) all required inspections for the Project are issued, 2) Developer submits a one-year warranty against defects in materials and workmanship in the Project executed by the Developer; Developer submits a one-year bond in the amount of 15% of the costs for the Project as required by the Seguin Unified Development Code Section 2.9.10.G2; and 3) the Project Engineer submits as-built drawings for the Project to the City. The date that the City issues a certificate of acceptance will be the "Acceptance Date."

5. General Provisions.

A. Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and assigns, including without limitation, and receivers, administrators, or trustees in bankruptcy. Developer may assign its obligations under this Agreement to any purchaser of the Property from Developer without the consent of the City.

B. Severability. If any word, phrase, clause, sentence, paragraph, section or other portion of this Agreement is held to be invalid for any reason by a court or agency of competent jurisdiction, the remainder of the Agreement shall not be affected by the invalidity and shall be construed as if the invalid portion was not contained in the Agreement. The Provisions of this Agreement are expressly deemed severable for this purpose.

C. Cooperation. The parties to this Agreement agree to cooperate at all times in good faith to effectuate the purposes and intent of this Agreement.

D. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes all prior or contemporaneous understandings or representations, whether oral or written, respecting the subject matter of this Agreement.

E. Amendments. Any amendment of this Agreement must be in writing and signed by the authorized representative of each party to this Agreement.

F. No Amendment of Other Agreements. Unless otherwise expressly stipulated in this Agreement, this Agreement is separate from and is not an amendment or modification of any other agreement between the parties.

G. Applicable Law. This Agreement shall be construed under and in accordance with Texas law. Venue for any action arising hereunder shall be in Guadalupe County, Texas.

H. Further Assurances. Each party agrees that it will without further consideration execute and deliver such other documents and take such other action, as may be reasonably requested by the other party to consummate more effectively the purposes or subject matter of this Agreement.

Executed and effective on ~~June~~ July 15th 2024.

CITY OF SEGUIN,
a Texas municipal corporation

By:_____
Steve Parker, City Manager

ARMZ PRASLA GROUP LLC, a Texas limited liability company, Tenant-In-Common

By:_____
Name: MANSOOR PRASLA
Title: Member

RODEO SEGUIN TWO LLC, a Texas limited liability company, Tenant-In-Common

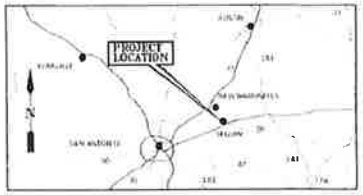
By:_____
Name: Nasmeldin Mahesania
Title: Manager

44.76 SEGUIN, L.L.C., a Texas limited liability company

By: James A. McAlister, IV
Name: James A. McAlister, IV
Title: President

CITY OF SEGUIN, TEXAS
24'' WATER TRANSMISSION MAIN
(VETTER BOOSTER STATION TO SH 123 TANK)

CONFORMED SET



VICINITY MAP

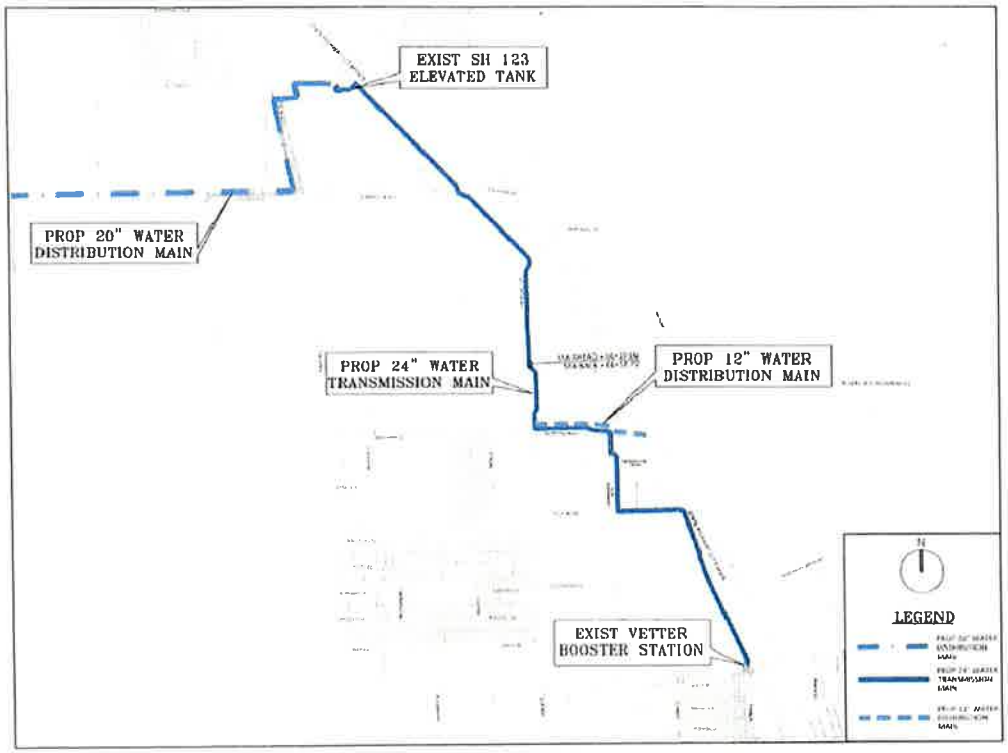
CITY COUNCIL
DONNA DODGEN, MAYOR
MONICA CARTER, MAYOR PRO-TEM

JASON BIESENBACH
PAUL GAYTAN
BILL KELLER
JIM LIEVENS
SONIA MENDEZ
CHRIS RANGEL
JOE REA

CITY MANAGER
STEVE PARKER

DEPUTY CITY MANAGER
RICK CORTES

DIRECTOR OF WATER/WASTEWATER
TIM HOWE



LOCATION MAP

SUBMITTED FOR APPROVAL BY:

PHILIP M. MULLAN, P.E.
SEGUIN, TEXAS
TRC ENGINEERS, INC

APPROVED FOR CONSTRUCTION BY:

TIM HOWE
DIRECTOR OF WATER / WASTEWATER
CITY OF SEGUIN

Exhibit A

SEGUIN TEXAS
It's real.

TRC
TRC ENGINEERS, INC

TRC PROJECT NUMBER 475169

MARCH 2024

A. GENERAL NOTES

1. BLASTING IS NOT PERMITTED ON THIS PROJECT.
2. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
3. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THE WORK.
4. THE TRENCH EXCAVATION AND SHORING SAFETY SYSTEM AS OUTLINED IN THE TECHNICAL SPECIFICATIONS WILL BE REQUIRED AS A MIN. MUST TRENCH SAFETY MEASURE.
5. A PRE-CONSTRUCTION CONFERENCE IS TO BE HELD PRIOR TO BEGINNING CONSTRUCTION. THIS CONFERENCE SHALL TAKE PLACE AT A LOCATION SELECTED BY OWNER & ENGINEER. CONTRACTOR TO ARRANGE A MEETING DATE WITH THE OWNER AT LEAST SEVEN DAYS PRIOR TO THE MEETING TIME.
6. CONTRACTOR SHALL NOTIFY THE OWNER, OWNER'S REPRESENTATIVE, AND TCEQ BY TELEPHONE A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION STARTUP, FOLLOWED BY A LETTER OF CONFIRMATION.
7. CONTRACTOR SHALL ASSURE HIMSELF THAT ALL CONSTRUCTION PERMITS HAVE BEEN OBTAINED PRIOR TO COMMENCEMENT OF WORK. REQUIRED PERMITS THAT CAN ONLY BE ISSUED TO CONTRACTOR ARE TO BE OBTAINED AT THE CONTRACTOR'S EXPENSE.
8. CONTRACTOR SHALL GIVE A MINIMUM OF 48 HOURS NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCEMENT OF WORK.
9. CONTRACTOR SHALL TAKE ALL DUE PRECAUTIONS TO PROTECT EXISTING FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF THESE CONSTRUCTION OPERATIONS ARE TO BE REPAIRED IMMEDIATELY BY THE CONTRACTOR TO AT LEAST THE PRE-EXISTING CONDITION AT NO ADDITIONAL COST TO OWNER.
10. LOCATION OF EXISTING UTILITIES SHOWN ON PLANS WAS COMPILED FROM RECORD INFORMATION. NO WARRANTY IS IMPLIED AS TO THE ACTUAL LOCATION OF EXISTING UTILITIES. CONTRACTOR TO FIELD VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
11. WHEN UNLOCATED OR INCORRECTLY LOCATED UNDERGROUND PIPING OR A BREAK IN A LINE OR OTHER UTILITIES AND SERVICES ARE ENCOUNTERED DURING SITE WORK OPERATIONS, THE CONTRACTOR SHALL NOTIFY THE APPLICABLE UTILITY COMPANY IMMEDIATELY TO OBTAIN PROCEDURE DIRECTIONS. THE CONTRACTOR SHALL COOPERATE WITH THE APPLICABLE UTILITY COMPANY IN MAINTAINING ACTIVE SERVICES IN OPERATION.
12. THE CONTRACTOR SHALL MAINTAIN ACCESS TO PUBLIC AND PRIVATE FACILITIES DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES TO BE COORDINATED WITH THE OWNER.
13. THE CONTRACTOR SHALL COORDINATE INTERRUPTIONS OF ALL UTILITIES AND SERVICES WITH APPLICABLE UTILITY COMPANY OR COMPANIES. ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY COMPANY OR AGENCY INVOLVED.
14. THE CONTRACTOR SHALL LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, AND CONTROL POINTS. RE-ESTABLISH DISTURBED OR DESTROYED ITEMS BY REGISTERED PUBLIC SURVEYOR IN THE STATE OF TEXAS AT NO ADDITIONAL COST TO OWNER.
15. EXISTING PAVING, BUILDINGS, AND OTHER ITEMS SHOWN ON PLANS NOT SPECIFICALLY RELATED TO THE WORK OF THE CONTRACTOR IS FOR INFORMATION ONLY.
16. DEMOLITION PERMITS (IF NEEDED) ARE TO BE OBTAINED BY THE CONTRACTOR.
17. EXISTING SURFACE AND SUBSURFACE STRUCTURES (GAS MAINS, WATER MAINS, STORM SEWERS, TELEPHONE CABLES, ETC.) ARE SHOWN ON THE PLANS IF THEIR LOCATION HAS BEEN DETERMINED, BUT IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AVOID DAMAGING THESE EXISTING STRUCTURES WHETHER OR NOT THEY ARE SHOWN ON THE PLANS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY FOR FAILURE TO SHOW ANY OR ALL OF THESE STRUCTURES ON THE PLANS OR TO SHOW THEM IN THEIR EXACT LOCATION. IF ANY STRUCTURE IS DAMAGED BY THE CONTRACTOR, IT SHALL BE HIS RESPONSIBILITY TO REPAIR THE DAMAGE AT HIS OWN EXPENSE AND RESTORE THE STRUCTURE TO ITS ORIGINAL CONDITION.
18. THE ORIGINAL PLANS FOR THIS PROJECT WERE PREPARED ON FULL SIZE STANDARD SHEETS (24 INCHES X 36 INCHES). THE SPECIFIC SCALE FOR THE INDIVIDUAL UNITS WOULD BE TRUE ONLY ON THE ORIGINAL TRACING. REPRODUCED COPIES, REDUCTIONS OR OTHER METHODS OF PRINTING MAY CHANGE OR ALTER THE SCALE. THE ENGINEER IS NOT RESPONSIBLE FOR SCALE DIMENSIONS UTILIZED BY OTHERS ON THESE PLANS.
19. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS, ELEVATIONS AND DIMENSIONS OF ADJACENT AND/OR CONFLICTING UTILITIES IN ADVANCE OF CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES IF REQUIRED. THE CONTRACTOR SHALL PRESERVE AND PROTECT PUBLIC UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT HIS EXPENSE. THE ENGINEER SHALL BE NOTIFIED WHEN PROPOSED FACILITY GRADES CONFLICT WITH EXISTING UTILITY GRADES.
20. ALL CONCEPTS, IDEAS, DESIGNS, ARRANGEMENTS, AND PLANS INDICATED OR REPRESENTED BY THESE INSTRUMENTS, AS OUTLINED ON THE TITLE SHEET INDEX AND BY ANY ADDENDUM ARE OWNED BY AND ARE THE PROPERTY OF TRC ENGINEERS, INC. AND WERE CREATED AND DEVELOPED FOR THE USE ON AND IN CONNECTION WITH THE SPECIFIED PROJECT. THESE CONCEPTS, IDEAS, DESIGNS, ARRANGEMENTS OR PLANS SHALL NOT BE USED BY ANY PERSON, FIRM OR CORPORATION FOR ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN PERMISSION AND CONSENT OF TRC ENGINEERS, INC. OF SEGUIN, TEXAS.

B. GENERAL ENVIRONMENTAL NOTES

1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS REGARDING EXCESS AND WASTE MATERIAL, INCLUDING METHODS OF HANDLING AND DISPOSAL.
2. CONTRACTOR SHALL LOCATE MATERIAL STORAGE AREAS AWAY FROM STORM WATER CONVEYANCE SYSTEMS. PROVIDE PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS, AND OTHER POTENTIALLY TOXIC MATERIALS.
3. FUEL STORAGE IS NOT ALLOWED ON THIS PROJECT.
4. THE CONTRACTOR SHALL REPORT ANY FUEL OR TOXIC MATERIAL SPILLS TO THE APPROPRIATE STATE OR FEDERAL AGENCY, AS WELL AS THE LOCAL FIRE DEPARTMENT. THE OWNER SHALL BE ADVISED IMMEDIATELY, VERBALLY AND IN WRITING, OF ANY FUEL OR TOXIC MATERIALS SPILLS WITHIN THE PROJECT/CONSTRUCTION AREA AND THE ACTIONS TO BE TAKEN TO REMEDY THE PROBLEM.
5. THE CONTRACTOR SHALL DISPOSE OF FUELS, HAZARDOUS MATERIALS, AND CONTAMINATED EXCAVATIONS IN A LEGALLY APPROVED MANNER.
6. NO OPEN BURNING IS ALLOWED WITHIN THE CITY LIMITS. NO VARIANCE WILL BE ALLOWED FOR THIS PROJECT.
7. CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, LABOR, AND EQUIPMENT TO FIX DAMAGED TREES OR ROOTS OF TREES IMPACTED BY CONSTRUCTION ACTIVITIES. ALL EQUIPMENT SHALL BE STERILIZED AFTER CUTTING OF ROOT, BRANCHES, ETC. TO LIMIT POTENTIAL SPREAD OF OAK WILT. OWNER SHALL BE NOTIFIED OF ANY TREE DAMAGE IMMEDIATELY BY THE CONTRACTOR. NO SEPARATE PAY.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL DEBRIS RELATED TO CONSTRUCTION AT THE END OF EACH DAY FROM THE ROW. USE OF PRIVATE TRASH CANS IS NOT ACCEPTABLE. IF THE CONTRACTOR DOES NOT OWN HIS OWN ROLL OFF FOR DISPOSAL, ONE OF THESE SELECTED COMPANIES SHALL BE USED: REPUBLIC SERVICES, RUDY RODRIGUEZ (210) 648-5222, APACHE DISPOSAL (830) 914-3900, OR PROGRESSIVE WASTE.

C. STORM WATER NOTES

1. THROUGHOUT THE CONSTRUCTION, AND AT THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL ASSURE THAT DRAINAGE OF STORM WATER RUNOFF IS NOT BLOCKED.
2. DURING CONSTRUCTION, THE STORM WATER RUNOFF FROM ALL DISTURBED AREAS TO BE FILTERED BY SILT FENCES AND/OR ROCK BERMS. THESE TEMPORARY EROSION AND SEDIMENTATION CONTROLS ARE TO REMAIN IN PLACE UNTIL THE DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS TO BE INSPECTED PERIODICALLY FOR DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES AND FOLLOWING EVERY RAINFALL. DAMAGED OR OBSTRUCTED CONTROLS TO BE REPAIRED/REPLACED AS NECESSARY TO MAINTAIN THEIR PROPER OPERATION.
3. CONTRACTOR SHALL ENSURE EXISTING DRAINAGE PATTERNS ARE MAINTAINED AS SHOWN.
4. ALL SPRING FLOW DISTURBED AND GROUND WATER ENCOUNTERED DURING CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO RESOLVE AND HANDLE.

D. SITE GRADING NOTES

1. THE CONTRACTOR SHALL CONTROL DUST CAUSED BY THE WORK AND COMPLY WITH POLLUTION CONTROL REGULATIONS OF GOVERNING AUTHORITIES. ALLOW AT LEAST FOUR TIMES PER DAY WHEN NEEDED.
2. EXCESS EXCAVATED MATERIAL SHALL BE STOCKPILED IN STAGING AREA. REINFORCED FILTER FABRIC FENCE TO BE INSTALLED AROUND STOCKPILE ON DOWNSTREAM SIDE AND BOTH SIDES ADJACENT TO THE DOWNSTREAM SIDE. STOCKPILES ARE NOT TO TRAP OR POND WATER. TOPSOIL TO BE STOCKPILED SEPARATELY. ALL EXCESS EXCAVATED MATERIAL IS TO BE REMOVED FROM THE SITE. CONTRACTOR TO NOTIFY TCEQ AND THE OWNER'S REPRESENTATIVE OF LOCATION OF DISPOSAL BEFORE MATERIAL IS REMOVED.
3. THE FINISHED GRADE ELEVATIONS SHOWN ARE INTENDED TO PROVIDE DRAINAGE AWAY FROM STRUCTURES. MINOR FIELD CHANGES MAY BE NECESSARY TO PROVIDE ADEQUATE DRAINAGE. GRADE UNIFORMLY BETWEEN ELEVATIONS SHOWN TO PROVIDE DRAINAGE.
4. ADJUST MANHOLE COVERS, VALVE BOXES, ELECTRICAL MANHOLES, ETC. TO MATCH PROPOSED FINISHED GRADE. NO SEPARATE PAY.

E. PAVING NOTES

1. ANY EXISTING PAVEMENT, CURBS, AND/OR SIDEWALK DAMAGED OR REMOVED BY THE CONTRACTOR ARE TO BE REPAIRED BY THE CONTRACTOR TO AT LEAST THE PREEXISTING CONDITION AT HIS EXPENSE BEFORE ACCEPTANCE OF THE WORK.
2. TRAFFIC CONTROLS DURING CONSTRUCTION TO BE CONTRACTOR'S RESPONSIBILITY AND INSTALLED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. NO SEPARATE PAY.
3. REPLACE EXISTING ROADWAY THAT IS CUT BY PIPE TRENCHES WITH SIMILAR ROADWAY.
4. MAINTAIN ALL MANHOLE FRAMES AND COVERS TO BELOW PAVEMENT SUBGRADE ELEVATION UNTIL PLACEMENT OF PAVEMENT BASE HAS BEEN COMPLETED. RAISE MANHOLE FRAMES AND COVERS TO FINISH PAVEMENT GRADES WHEN BASE IS COMPLETE.
5. CONTRACTOR SHALL COORDINATE ALL ROAD CLOSURES WITH OWNER. THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM 7 DAY ADVANCE NOTICE.
6. CONTRACTOR SHALL ADJUST ALL EXISTING MANHOLES (TO INCLUDE TELEPHONE, SANITARY SEWER, OR OTHER), VALVE COVERS (TO INCLUDE GAS OR OTHER) TO MEET THE GRADE OF THE FINISHED ASPHALT (REF. SPECS). NO SEPARATE PAY.
7. FOR ALL CONCRETE/ASPHALT DRIVES, THE CONTRACTOR SHALL MATCH THE PROPOSED TOP OF ASPHALT TO THE TOP OF THE EXISTING DRIVES WITHOUT ALTERING EXISTING DRAINAGE PATTERNS OR CAUSING AREAS OF PONDING WATER. NO SEPARATE PAY.
8. ALL DECORATIVE DRIVEWAYS INCLUDING BUT NOT LIMITED TO PEBBLE SURFACE, BRICK OUT LAYING, ETC SHALL BE RETURNED TO THEIR ORIGINAL CONDITION. PAYMENT SHALL BE PER THE UNIT PRICE IN THE DRIVEWAY BID ITEM.
9. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.

F. EROSION/SEDIMENTATION & TREE PROTECTION NOTES

1. THE CONTRACTOR TO INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, GRADING, OR EXCAVATION). CONTRACTOR TO REMOVE EROSION/SEDIMENTATION CONTROLS AT THE COMPLETION OF PROJECT AND GRASS RESTORATION.
2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS TO BE IN ACCORDANCE WITH THE PROPOSED SWPPP. DEVIATIONS FROM THE PLAN MUST BE SUBMITTED TO AND APPROVED BY THE OWNER.
3. EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILDUP WITHIN TREE DRIPLINES.
4. TO AVOID SOIL COMPACTION, NO VEHICULAR TRAFFIC, PARKING, OR STORAGE OF EQUIPMENT OR MATERIALS IS ALLOWED IN THE TREE DRIPLINE AREAS.
5. TREES SCHEDULED TO BE REMOVED SHALL BE DONE SO IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
6. INTENTIONAL RELEASE OF VEHICLE OR EQUIPMENT FLUIDS ONTO THE GROUND IS NOT ALLOWED. CONTAMINATED SOIL RESULTING FROM ACCIDENTAL SPILL TO BE REMOVED AND DISPOSED OF PROPERLY.
7. TREES GREATER THAN 6" Ø SHALL REMAIN, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL CONDUCT THE NECESSARY PRECAUTIONS TO PRESERVE THE INTEGRITY OF THE TREES. TREES TO REMAIN SHALL BE FLAGGED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.
8. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH (1") IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION.

G. SITE SPECIFIC NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION AND SUBMITTAL OF THE STORM WATER POLLUTION PREVENTION PLAN (SW3P) AND THE NOTICE OF INTENT (NOI). A COPY OF THE NOI SHALL BE SUBMITTED TO THE CITY. REFERENCE THE SPECIFICATIONS, SECTION SW3P.
2. CONTRACTOR TO STRIP 4-6 INCHES OF TOPSOIL FROM ALL AREAS TO BE DISTURBED BY CONSTRUCTION. STOCKPILE TOPSOIL AT A LOCATION DESIGNATED BY THE OWNER. SUBSEQUENT TO CONSTRUCTION ACTIVITY, REPLACE TOPSOIL ON EXPOSED AREAS.
3. MANHOLE RIM ELEVATIONS SHOWN ON PLAN AND PROFILE DRAWINGS ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY.
4. TRC ENGINEERING, INC. PROVIDED TOPOGRAPHICAL SURVEYING SERVICES FOR THE DESIGN PORTION OF THIS PROJECT. INFORMATION TO THE CONTRACTOR FOR CONSTRUCTION STAKING MAY BE AVAILABLE FROM TRC ENGINEERING, INC.

   NICK HALL
   TRC ENGINEERS, INC.
   505 E. HUNTLAND DRIVE
   AUSTIN, TX 78752
   PHONE: 512-454-8716

5. COORDINATES SHOWN ON THESE PLANS ARE IN TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83 (93) SOUTH CENTRAL ZONE.
6. THE CONTRACTOR WILL PROVIDE ALL CONSTRUCTION STAKING SERVICES FOR THE PROJECT. THE COST OF THESE SERVICES WILL BE REFLECTED IN THE UNIT PRICE AMOUNT BID IN THE PROPOSAL. NO SEPARATE PAYMENT WILL BE MADE.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE TELEPHONE AND GAS COMPANIES FOR LOCATION OF ALL EXISTING LINES. NO SEPARATE PAY.
8. THE CONTRACTOR SHALL IMMEDIATELY REMOVE ALL SURFACE OR SEEPAGE WATER FROM SEWERS, DRAINS, DITCHES, AND OTHER SOURCES WHICH MAY ACCUMULATE DURING THE EXCAVATION AND CONSTRUCTION WORK BY PROVIDING THE NECESSARY UNDERDRAINS OR OTHERWISE AND BY DOING THE NECESSARY PUMPING, BAILING OR DRAINING. AT ALL TIMES, THE CONTRACTOR SHALL HAVE AVAILABLE SUFFICIENT EQUIPMENT IN PROPER WORKING ORDER FOR DOING THE WORK HEREIN REQUIRED. ALL WATER REMOVED FROM EXCAVATIONS SHALL BE DISPOSED OF IN AN APPROVED MANNER SO AS TO NOT CREATE UNSANITARY CONDITIONS NOR TO INTERFERE UNDULY WITH THE USE OF STREETS, PRIVATE DRIVEWAYS, OR ENTRANCES. PUMPING, BAILING, DRAINING, UNDERDRAINS, DITCHES, ETC. SHALL BE CONSIDERED AS INCIDENTAL WORK AND WILL NOT BE PAID FOR AS SEPARATE ITEMS, BUT THEIR COST SHALL BE INCLUDED IN THE CONTRACT PRICES BID IN THE PROPOSAL FOR THE VARIOUS BID ITEMS. NO SEPARATE PAY.
9. CONTRACTOR SHALL ADJUST ALL EXISTING UTILITIES AS REQUIRED FOR THE INSTALLATION OF THE PROPOSED IMPROVEMENTS INCLUDING RELOCATING THE EXISTING UTILITIES IF NECESSARY. NO SEPARATE PAY.
10. A GEOTECHNICAL REPORT HAS BEEN PROVIDED AS AN APPENDIX OF THE SPECIFICATIONS. THIS REPORT IS FOR THE CONTRACTOR'S INFORMATION ONLY. THE CITY OR THE ENGINEER DO NOT GUARANTEE OR WARRANT SOIL CONDITIONS THROUGHOUT THE PROJECT LIMITS WILL BE CONSISTENT WITH THE GEOTECHNICAL REPORT. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE SOIL CONDITIONS FOR THE PURPOSE OF PREPARING THIS BID. ALL EXCAVATION WILL BE UNCLASSIFIED.

G. SITE SPECIFIC NOTES (CONT.)

11. CONTRACTOR SHALL PROVIDE DUST ABATEMENT AS DIRECTED BY OWNER. NO SEPARATE PAY. THIS SHALL INCLUDE ALL MATERIALS, LABOR AND EQUIPMENT FOR TRANSPORTING, GATHERING, ETC. OF WATER. WATER AT LEAST FOUR TIMES PER DAY WHEN NEEDED, REGARDLESS IF WORK IS TAKING PLACE OR NOT.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING A STAGING AREA FOR EQUIPMENT, MATERIALS, ETC. STAGING WITHIN THE EXISTING R.O.W. IS ALLOWED CONTINGENT UPON IT DOES NOT IMPEDE OR INTERFERE WITH EMERGENCY SERVICES, MAIL DELIVERY, OR ACCESS FOR RESIDENTS DURING NON WORKING HOURS.
13. CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND ENGINEER AND HIS EMPLOYEES, PARTNERS, OFFICERS, DIRECTORS, OR CONSULTANTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER, ENGINEER'S DIRECTORS, OFFICERS, EMPLOYEES, OR CONSULTANTS.
14. CONTRACTOR TO CONTACT THE ENGINEER FOR ANY FIELD CHANGES. ANY REVISIONS OR CHANGES TO THE APPROVED CONSTRUCTION PLANS WILL REQUIRE ADDITIONAL APPROVAL BY THE OWNER IN WRITING.
15. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
16. OSHA REGULATIONS PROHIBIT OPERATIONS THAT WILL BRING PERSONS EQUIPMENT WITHIN 10 FEET OF AN ENERGIZED LINE. WHERE WORKMEN AND/OR EQUIPMENT HAVE TO WORK CLOSE TO AN ENERGIZED ELECTRICAL LINE, THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL POWER COMPANY INVOLVED AND MAKE WHATEVER ADJUSTMENTS NECESSARY TO ENSURE THE SAFETY OF THOSE WORKMEN. NO SEPARATE PAY.
17. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
18. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192 (B), GAS COMPANIES MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
19. ALL WORK WITHIN TXDOT R.O.W. MUST BE IN ACCORDANCE WITH TXDOT REQUIREMENTS. NO SEPARATE PAY.
20. THE CONTRACTOR WILL OWN THE PROJECT UNTIL ACCEPTANCE BY THE OWNER. HE SHALL ARRANGE AND PURCHASE INSURANCE FOR FLOOD OR ANY OTHER DAMAGES TO HIS WORK DURING CONSTRUCTION.
21. POWER POLES TO BE BRACED AT CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL NOTIFY/COORDINATE WITH THE APPROPRIATE UTILITY COMPANY.
22. REMOVE AND REPLACE EXISTING FENCES AS NECESSARY. THE REQUIRED REMOVAL OF ANY TREES, SHRUBS, OR SMALL STRUCTURES SHALL BE SUBSIDIARY TO THE TOTAL COST OF THE PROJECT. TEMPORARY FENCING SHALL BE PROVIDED BY THE CONTRACTOR, AS REQUIRED. NO SEPARATE PAY.
23. CONTRACTOR SHALL PROVIDE PRECONSTRUCTION VIDEO/PHOTOS PRIOR TO CONSTRUCTION.
24. THERE SHOULD BE AN ASSIGNED 24 HOUR COMPETENT PERSON ON CALL FOR THE OCCURRENCE OF RAIN EVENTS.
25. A MINIMUM OF 48 HOURS NOTICE SHALL BE GIVEN BY THE CONTRACTOR FOR ANY DISRUPTION TO PRIVATE SERVICE.
26. ALL FITTINGS FOR THE WATER MAIN SHALL BE RESTRAINED, EQUAL TO MEGA LUG OR ENGINEER APPROVED EQUAL.

H. CONCRETE CONSTRUCTION NOTES

1. ALL STRUCTURAL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI AND SHALL CONTAIN SIX (6) SACKS OF CEMENT PER CUBIC YARD OF CONCRETE (UNLESS OTHERWISE SHOWN). SEE SPECIFICATIONS FOR CONCRETE PAVEMENT COMPRESSIVE STRENGTH.
2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A 615/A 615M, GRADE 60.
3. ALL CONCRETE AND REINFORCING STEEL SHALL CONFORM TO CURRENT A.C.I. CODE.
4. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE PERMITTED, UNLESS OTHERWISE NOTED. WALL FORMING AND CONCRETE PLACEMENT PLAN, TO ALLOW FOR VERTICAL CONSTRUCTION JOINTS, SHALL BE PREPARED AND SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL VERTICAL CONSTRUCTION JOINTS TO INCLUDE STANDARD KEYWAY AND WATERSTOP.

I. DETOURS, BARRICADES, WARNING SIGNS, ETC.

1. A CERTIFIED FLAGGER (REQUIRED WITHIN UPRR R.O.W.) SHALL BE STATIONED WHERE ANY EQUIPMENT IS WORKING ON THE ROAD OR WHERE ANY OTHER HAZARDS DUE TO CONSTRUCTION OPERATIONS EXIST OR AS DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES THROUGHOUT ALL PHASES OF CONSTRUCTION. ADEQUACY OF ACCESS WILL BE AT THE DISCRETION OF THE ENGINEER. SAFE ENTRANCE AND EXIT TO ALL DRIVEWAYS SHALL BE PROVIDED WITH A MINIMUM OF INCONVENIENCE.
3. FOR THIS PROJECT, UNLESS OTHERWISE NOTED IN THE PLANS AND/OR AS DIRECTED BY THE ENGINEER, NO LANE CLOSURES SHALL BE ALLOWED OTHER THAN THOSE IN THE TRAFFIC CONTROL PLAN.
4. THE CONTRACTOR SHALL INSTALL AND MAINTAIN AN ADEQUATE NUMBER OF BARRICADES, WARNING AND DIRECTIONAL SIGNS TO DELINEATE TRAFFIC FOR ANY DETOURS.
5. ALL CONSTRUCTION TRAFFIC SHALL BE REGULATED SO AS TO CAUSE A MINIMUM OF INCONVENIENCE TO THE TRAVELING PUBLIC. AT POINTS WHERE IT IS NECESSARY FOR TRUCKS TO STOP AND UNLOAD, WARNING SIGNS AND FLAGGERS SHALL BE PROVIDED AS NECESSARY TO ADEQUATELY PROTECT TRAVEL.
6. THE CONTRACTOR MAY, WITH THE APPROVAL OF AND AS DIRECTED BY THE ENGINEER, BE REQUIRED TO FURNISH ADDITIONAL SIGNS AND BARRICADES TO THOSE INDICATED ON THE PLANS TO MAINTAIN THE SAFE PASSAGE OF TRAFFIC THROUGHOUT THE CONSTRUCTION PARTICULARLY IN THOSE AREAS OF IMMEDIATE WORK.
7. UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE IS MADE, THE CONTRACTOR SHALL SHAPE AND FINISH SUCH PORTIONS OF THE RIGHT OF WAY AS MAY HAVE BEEN DISTURBED IN MAKING THE ABOVE PROVISIONS FOR TRAFFIC AND WILL BE REQUIRED TO LEAVE THE ENTIRE RIGHT-OF-WAY IN A SMOOTH, NEAT AND SIGHTLY CONDITION.
8. ALL WORK AND MATERIALS REQUIRED BY THESE PROVISIONS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS OF THE CONTRACT, UNLESS OTHERWISE INDICATED IN THE PLANS OR SPECIFICATIONS.
9. CONTRACTOR SHALL HAVE A COMPANY REPRESENTATIVE CERTIFIED IN FLAGGER TRAINING APPROVED BY THE OWNER.
10. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR FURNISHING ALL TRAFFIC CONTROL DEVICES AND FLAGGERS. THE CONSTRUCTION METHODS SHALL BE CONDUCTED TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC SO AS TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL ALLOWABLE DIRECTIONS AT ALL TIMES.
11. THE CONTRACTOR SHALL PROVIDE FOR THE PASSAGE OF TRAFFIC THROUGH THE PROJECT WITH SIGNS, WARNING LIGHTS, BARRICADES, ETC. IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS REQUIRED FOR MAINTENANCE ACTIVITIES AND TO THE SATISFACTION OF THE ENGINEER. ALL BARRICADES, SIGNS, WARNING LIGHTS, ETC. SHALL BE ACCORDING TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
12. LANE CLOSURES WILL NOT BE ALLOWED UNLESS PRIOR APPROVAL IS GIVEN BY THE ENGINEER. IF LANE CLOSURES ARE APPROVED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER 48 HOURS IN ADVANCE OF THE CLOSURE.

I. DETOURS, BARRICADES, WARNING SIGNS, ETC. (CONT.)

13. CONTRACTOR SHALL OPEN NO MORE TRENCH THAN CAN BE COVERED AND TEMPORARILY SURFACED IN A SINGLE DAY. ALL TRENCH SHALL BE BACKFILLED AND RETURNED TO DRIVABLE SURFACE AT THE END OF EACH WORK DAY.

J. SANITARY FACILITIES

1. THE CONTRACTOR SHALL PROVIDE SUFFICIENT CHEMICAL TOILET FACILITIES FOR THE USE OF HIS FORCES. ADEQUACY OF THESE FACILITIES WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER & MAINTENANCE OF SAME MUST BE SATISFACTORY TO THE ENGINEER AT ALL TIMES. CONTRACTOR SHALL PROVIDE A MAINTENANCE SCHEDULE TO THE OWNER FOR APPROVAL.

K. SAFETY FENCE NOTES

1. SAFETY FENCE SHALL BE USED TO PROTECT ALL EXCAVATIONS AND TO SEPARATE CONSTRUCTION ACTIVITIES FROM PEDESTRIAN/NON CONSTRUCTION ACTIVITIES DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ALL SAFETY FENCING SHALL BE PLASTIC, 4'-0" MINIMUM HEIGHT AND ORANGE IN COLOR.
3. SAFETY FENCE USED WITHIN THE ROADWAY SHALL BE REFLECTORIZED WITH A MINIMUM OF TWO (2) STRIPS OF RETROREFLECTIVE MATERIAL, A MINIMUM OF 1'-0" WIDE THE LENGTH OF THE FENCE OR DELINEATED BY CHANNELIZING DEVICES.
4. SAFETY FENCE USED TO SEPARATE SIDEWALKS FROM CONSTRUCTION ACTIVITIES SHALL HAVE MINIMUM ENCROACHMENT TO THE SIDEWALK.
5. FENCE MATERIAL SHALL BE SUPPORTED FROM 1/4" DIA. NYLON ROPE FROM POSTS SPACED ON MAXIMUM 8 FT CENTERS. POSTS SHALL EXTEND 4'-0" ABOVE NATURAL GROUND. FENCE MATERIAL SHALL BE SECURED TO POSTS W/ PLASTIC WIRE TIES, MINIMUM 3 PER POST.
6. POSTS SHALL INCLUDE SUPPORT BRACES SUFFICIENT TO HANDLE ALL LOADS.
7. PAYMENT FOR SECURITY FENCE SHALL BE CONSIDERED INCIDENTAL WORK (LABOR, MATERIALS, EQUIPMENT, ETC.) NO SEPARATE PAY.

L. COLORED LINES FOR UTILITIES

1. THE ORIGINAL PLANS FOR THIS PROJECT HAVE COLORED LINES FOR CERTAIN UTILITIES (GREEN FOR SEWER, BLUE FOR WATER, ETC). IF THE PLANS ARE PLOTTED BLACK AND WHITE, THE COLORED LINES MAY APPEAR TO BE FADED OUT SUCH THAT THE LINES FOR PROPOSED UTILITIES WOULD NOT APPEAR AS DARK OR BOLD LINES. FOR THIS OCCURRENCE THE CONTRACTOR SHALL REFERENCE THE ELECTRONIC DRAWING FILES THAT SHOW THE COLORED LINES.

M. WATER IMPROVEMENT NOTES

1. PROPOSED WATER DISTRIBUTION MAINS AND LATERALS SHALL BE C-900 DR 18 PVC PIPE UNLESS OTHERWISE NOTED IN PLANS.
2. PROPOSED WATER TRANSMISSION MAIN SHALL BE POLYETHYLENE ENCASED CLASS 250 DIP PIPE UNLESS OTHERWISE NOTED IN PLANS.
3. ALL PIPE FITTING SHALL HAVE CONCRETE THRUST BLOCKING (SEE SHEET 51).
4. THE CONTRACTOR SHALL OPERATE ALL EXISTING WATER MAIN VALVES FOR ISOLATION PURPOSES. THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM 7 DAY ADVANCE NOTICE PRIOR TO START OF CONSTRUCTION ON ANY WATER FACILITY IN THIS PROJECT. CONTRACTOR SHALL ASSIST OWNER FOR ALL OPERATIONS AND SHUTDOWNS OF EXISTING VALVES. NO SEPARATE PAY.
5. PIPELINE SHALL BE INSTALLED WITH A MINIMUM 42 INCHES OF COVER.
6. AS CONSTRUCTION ACTIVITIES APPROACH AN EXISTING UTILITY LINE, THE CONTRACTOR SHALL LOCATE THE LINE, DETERMINE ITS EXACT ELEVATION, AND MAKE GRADE ADJUSTMENTS BY DEFLECTING THE PIPELINE FITTINGS. THE MINIMUM COVER OVER THE PROPOSED WATER LINE SHALL NOT BE LESS THAN 42 INCHES. MAXIMUM FITTING DEFLECTION SHALL BE PER MANUFACTURER'S WRITTEN INSTRUCTIONS. NO SEPARATE PAY.
7. WHERE THE EXISTING SANITARY SEWER IS SHOWN, THE LOCATION IS APPROXIMATE ONLY. THE PROPOSED WATER MAIN SHALL BE INSTALLED A MIN. OF 9 FEET HORIZONTAL DISTANCE FROM THE OUTSIDE TO OUTSIDE OF THE PIPE FROM THE EXISTING SANITARY SEWER LINE.
8. CONTRACTOR SHALL BACKFILL VOID FROM WATER MAINS, VALVES, FIRE HYDRANTS, ETC. REMOVAL WITH COMPATIBLE SOIL MATERIALS. THIS MATERIAL SHALL BE FREE OF BRUSH, DEBRIS, AND TRASH. ROCKS OR STONES HAVING A DIMENSION LARGER THAN 6 INCHES AT THE LARGEST DIMENSION SHALL BE SIFTED OUT AND REMOVED BEFORE THE MATERIAL IS USED FOR BACKFILL. BACKFILL MATERIAL SHALL BE PLACED IN MAXIMUM 12 INCH LOOSE LIFTS. DENSITY TESTING ON 12 INCH LIFTS MAY BE REQUIRED AT THE DIRECTION OF THE CITY.
9. ALL EXISTING SERVICE CONNECTIONS (WATER, SEWER, GAS, ETC.) NOT SHOWN FOR CLARITY.
10. EXISTING SURFACE AND SUBSURFACE STRUCTURES (GAS MAINS, WATER MAINS, STORM SEWERS, TELEPHONE CABLES, ETC.) ARE SHOWN ON THE PLANS IF THEIR LOCATION HAS BEEN DETERMINED, BUT IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AVOID DAMAGING THESE EXISTING STRUCTURES WHETHER OR NOT THEY ARE SHOWN ON THE PLANS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY FOR FAILURE TO SHOW THEM IN THEIR EXACT LOCATION. IF ANY STRUCTURE IS DAMAGED BY THE CONTRACTOR IT SHALL BE HIS RESPONSIBILITY TO REPAIR THE DAMAGE AT HIS OWN EXPENSE AND RESTORE THE STRUCTURE TO ITS FUNCTIONAL USE AND ORIGINAL CONDITION.
11. CONTRACTOR SHALL LOCATE AND DETERMINE ELEVATION (VERIFY IF DEPTH IS SHOWN ON PLANS) OF ALL EXISTING UNDERGROUND UTILITIES A MINIMUM OF 500 FT AHEAD OF TRENCHING. IF A UTILITY IS FOUND TO BE IN CONFLICT WITH PROPOSED GRADES, THE ENGINEER SHALL BE CONTACTED AND GRADES ADJUSTED TO AVOID CONFLICT.
12. ALL MJ FITTINGS SHALL HAVE MEGA LUG GLANDS.
13. CONTRACTOR IS REQUIRED TO GIS ALL THE WATER LINE PIPES & APPURTENANCES. CONTRACTOR SHALL REFERENCE THE APPENDIX "CITY OF SEGUIN GIS DATA STANDARDS" IN THE CONTRACT. CONTRACTOR SHALL PROVIDE GIS FILES OF ALL PIPE & APPURTENANCES PRIOR TO FINAL ACCEPTANCE.
14. CONTRACTOR SHALL VERIFY PIPE CLASS REQUIREMENTS WITH PIPE MANUFACTURE FOR ALL AREAS WHERE PIPE IS BEING INSTALLED BY BORE.

Exhibit A

DESIGN BY	DRAWN BY	CHECKED BY	SCALE	JOB NUMBER	NO.	REVISION	DATE
			NONE		△	CONFORMED SET	

CONFORMED SET

TRC ENGINEERS, INC.
505 E. HUNTLAND DR., STE 250, AUSTIN, TX 78752
T.B.P.E. FIRM REGISTRATION F-6532
(512) 454-8716

PHILIP W. MILLER, LICENSED PROFESSIONAL ENGINEER, STATE OF TEXAS — 03/04/2024

CITY OF SEGUIN, TEXAS
24" WATER TRANSMISSION MAIN
GENERAL CONSTRUCTION NOTES I

SEGUIN TEXAS — It's real.

SHEET 3

MARCH 2024

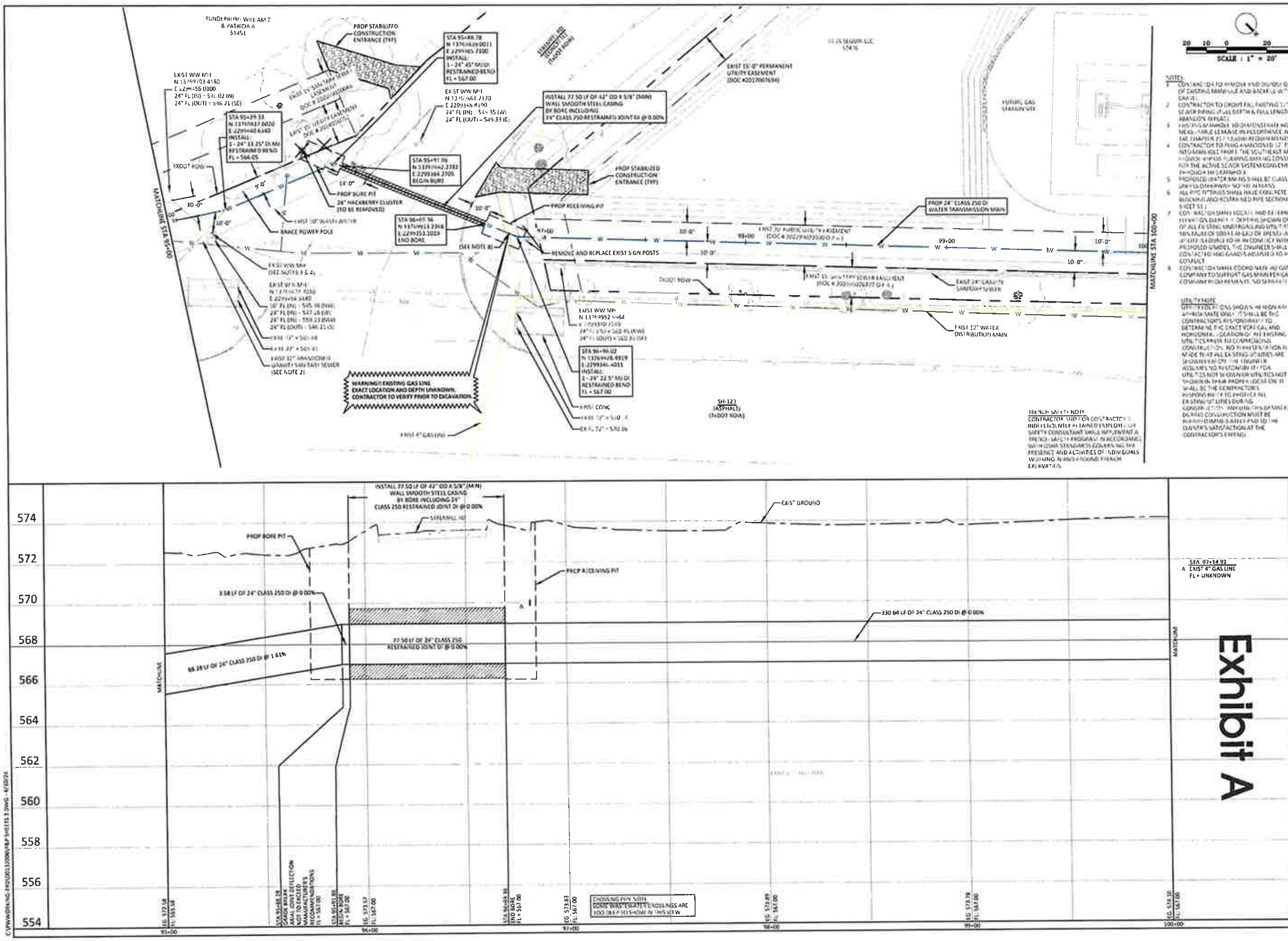


Exhibit A

TRC ENGINEERS, INC.

CONFORMED SET

CITY OF SEGUIN, TEXAS
24" WATER TRANSMISSION MAIN
24" STA 95+00 TO 100+00

SEGUIN TEXAS It's real.

SHEET 26

MARCH 2024

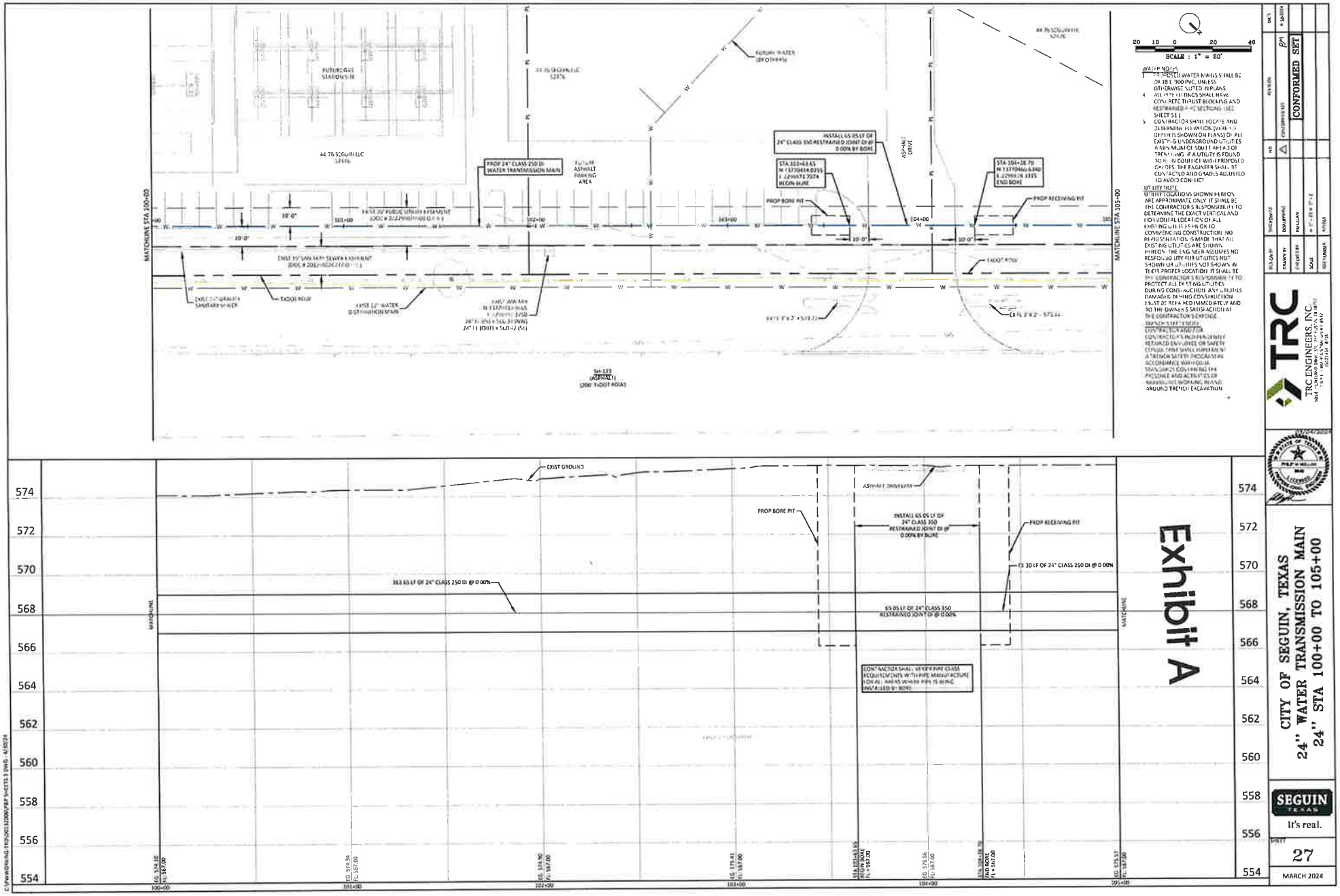


Exhibit A

CITY OF SEGUIN, TEXAS
24" WATER TRANSMISSION MAIN
24" STA 100+00 TO 105+00

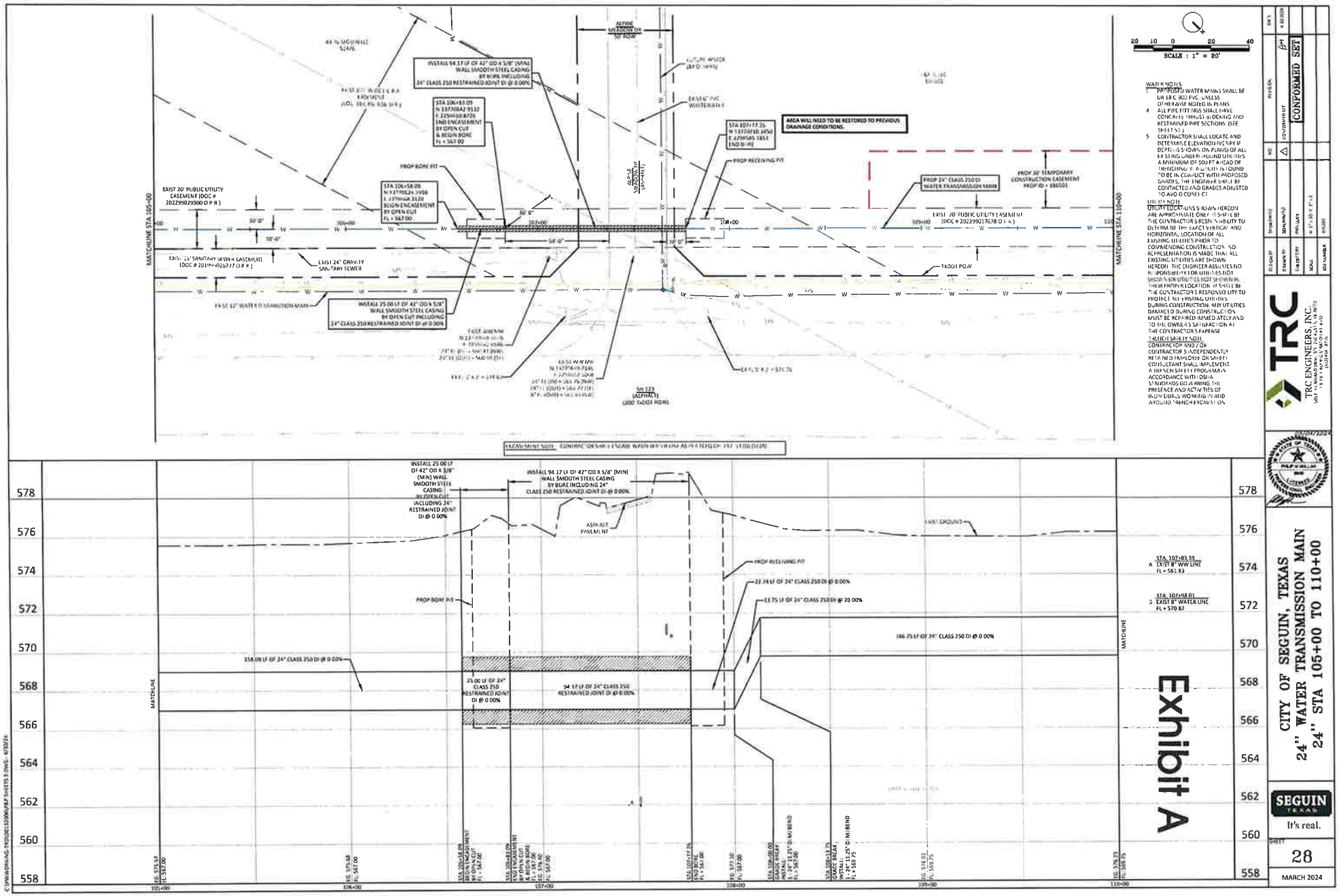
CONFORMED SET

TRC ENGINEERS, INC.

SEGUIN TEXAS
It's real.

SHEET 27

MARCH 2024



CONFORMED SET

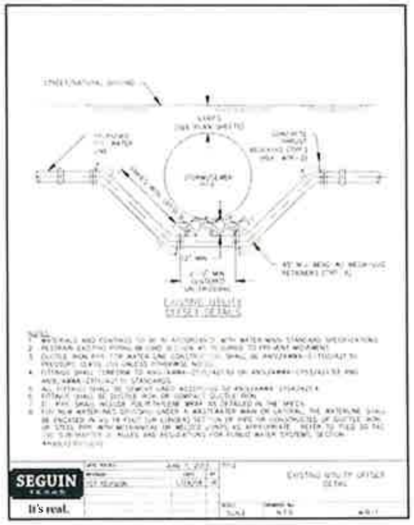
TRC ENGINEERS, INC.

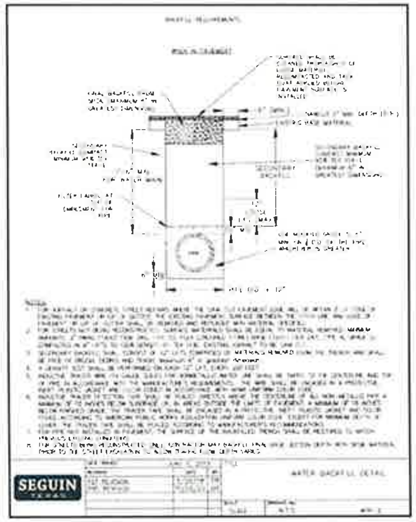
CITY OF SEGUIN, TEXAS
24" WATER TRANSMISSION MAIN
24" STA 105+00 TO 110+00

SEGUIN TEXAS
It's real.

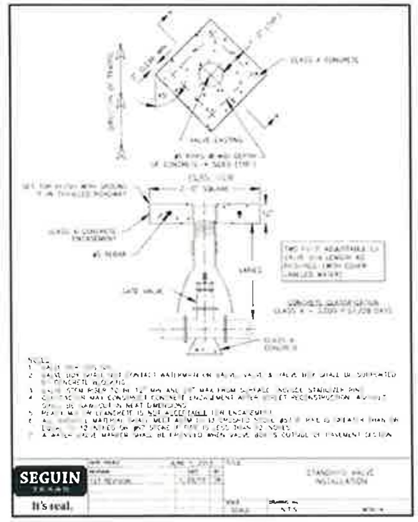
SHEET 28

MARCH 2024

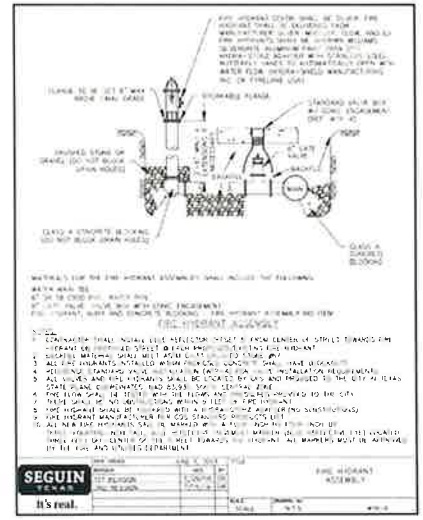


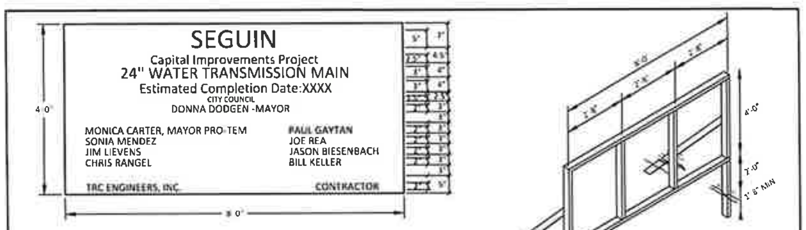


NOTE:
1. WHEN BACKFILLING UNDER STREETS OR STREET CROSSINGS REFER TO WTR-13.



NOTE
1. VALVE SHALL BE GATE OR BUTTERFLY AS SHOWN ON THE PLAN/PROFILE SHEETS

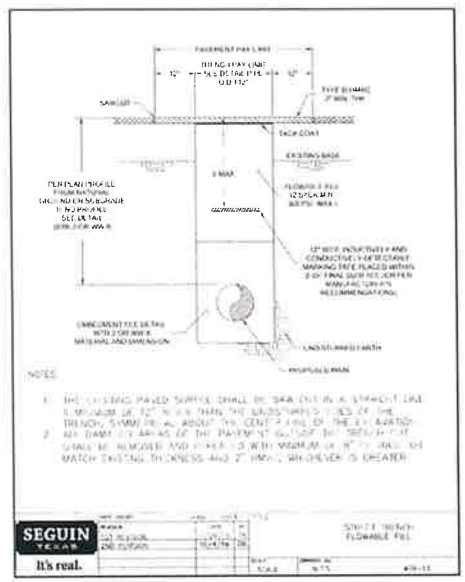




SPECIFICATIONS
SIGN PANEL - 3/4" LAMINATED DUO OR MASONITE OR 3/4" MARINE PLYWOOD
FRAME - 2" x 4" STOCK
FRAME TO BE PAINTED "WHITE"
PAINT BACKGROUND OF SIGN "WHITE"
PAINT MESSAGE OF SIGN "BLUE"
ALL PAINT TO BE EXTERIOR GRADE

NOTES
1. SIGN MAY BE ADAPTED TO USE SANDBAGS IF NECESSARY.
2. CONTRACTOR SHALL PROVIDE A MINIMUM OF FOUR (4) SIGNS AND MAINTAIN THEM THROUGHOUT CONSTRUCTION.
3. LOCATION AND PLACEMENT OF SIGNS SHALL BE APPROVED BY THE OWNER.
4. CONTRACTOR SHALL CONFIRM CITY COUNCIL NAMES PRIOR TO FABRICATION.

SIGN DETAIL
NTS



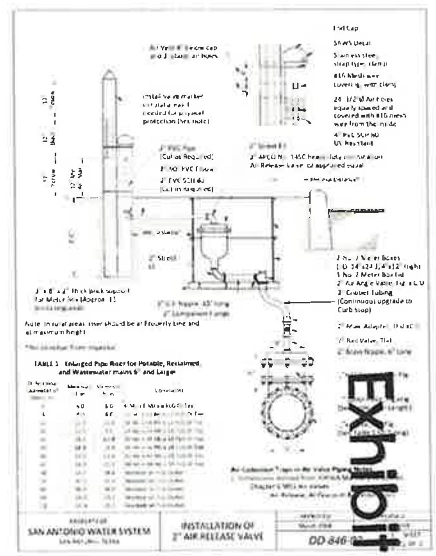


Exhibit A

AIR RELEASE VALVE DETAIL
NTS

DESIGN BY	SHOPOWITZ	NO.	REVISION	DATE
DRAWN BY	SOLAPANOV	△	CONFORMED SET	4-30-2024
CHECKED BY	PHILLIAN		CONFORMED SET	
SCALE	NONE			
JOB NUMBER	419238			

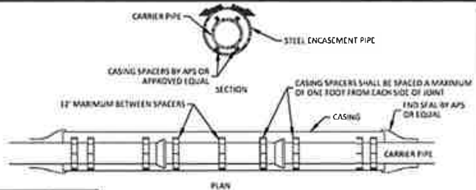
TRC ENGINEERS, INC.

CITY OF SEGUIN, TEXAS
24" WATER TRANSMISSION MAIN
DETAILS 1

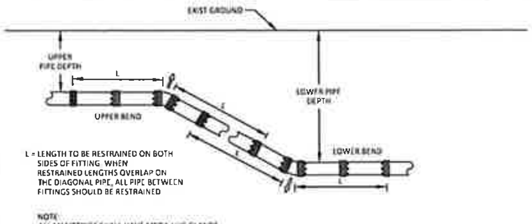
SEGUIN
TEXAS
It's real.

SHEET
50
MARCH 2024

Exhibit A



BORE AND CASING DETAIL
NTS



L = LENGTH TO BE RESTRAINED ON BOTH SIDES OF FITTING. WHEN RESTRAINED LENGTHS OVERLAP ON THE DIAGONAL PIPE, ALL PIPE BETWEEN FITTINGS SHOULD BE RESTRAINED

NOTE:
ALL MJ FITTINGS SHALL HAVE MEGA LUG GLANDS

THRUST RESTRAINT SUMMARY TABLE

VERTICAL BENDS

BEND TYPE	PIPE DIAMETER, INCHES	BEND ANGLE, DEGREES	PIPE DEPTH, FT UPPER SIDE	PIPE DEPTH, FT LOWER SIDE	THRUST RESTAINT LENGTH*, FT UPPER SIDE	THRUST RESTAINT LENGTH*, FT LOWER SIDE	Sheet Reference
VERTICAL	24"	22.5	7	18	46	9	SHEET 8
			4	23	26	8	SHEET 9
		11.25	6	11	27	7	SHEET 20
			4	9	39	9	SHEET 25
VERTICAL	20"	45	4	12	138	23	SHEET 32
			4	11	138	23	SHEET 37
			[illegible]	12.75	77	77	SHEET 43
			5	12	75	21	SHEET 43
		22.5	7	18	33	8	SHEET 8
			8	23	46	7	SHEET 9
		11.25	6	11	23	6	SHEET 20
			4	9	31	7	SHEET 24

*THRUST RESTAINT LENGTH IS DIMENSION "L" IN THE GRAPHIC

BEND TYPE	PIPE MATERIAL	FITTING TYPE	FITTING SIZE	DEPTH OF BURY (FT)	THRUST RESTAINT LENGTH, FT (1)	SHEET REFERENCE
HORIZONTAL	DUCTILE IRON	BUTTERFLY VALVE	24"	3.5	435	9,12, 18, 20, 25
HORIZONTAL	DUCTILE IRON	TEE	24"X6"	3.5	1	9, 12, 18, 20, 25, 30
HORIZONTAL	DUCTILE IRON	[illegible]	24	3.5	321	31
HORIZONTAL	DUCTILE IRON	[illegible]	[illegible]	5	174	31
HORIZONTAL	DUCTILE IRON	BUTTERFLY VALVE	20"	5	[illegible]	[illegible]
HORIZONTAL	DUCTILE IRON	TEE	20"X20"	6	405	34
HORIZONTAL	DUCTILE IRON	TEE	20"X6"	5	1	36
HORIZONTAL	DUCTILE IRON	TEE	20"X6"	6	1	43
HORIZONTAL	DUCTILE IRON	REDUCER	20"X16"	6	531	32
HORIZONTAL	DUCTILE IRON	REDUCER	16"X20"	7	71	43
HORIZONTAL	DUCTILE IRON	GATE VALVE	12"	7	[illegible]	44
HORIZONTAL	DUCTILE IRON	TEE	12"X6"	4	1	44
HORIZONTAL	DUCTILE IRON	TEE	12"X6"	5	1	47, 48
HORIZONTAL	DUCTILE IRON	TEE	12"X6"	7.5	1	49
HORIZONTAL	DUCTILE IRON	GATE VALVE	8"	3.5	149	49
HORIZONTAL	DUCTILE IRON	REDUCER	12"X8"	3.5	127	49

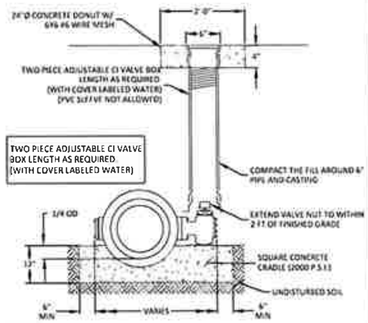
NON BEND FITTING THRUST RESTRAINT NOTES
1. FOR TEE FITTINGS, THE "LENGTH ALONG RUN SIDE" IS ASSUMED TO BE 1 FEET
2. BUTTERFLY VALVES AND GATE VALVES ARE ASSUMED TO BE "DEAD ENDS" WITH THE RESTRAINTS TO BE PLACED ON THE UPSTREAM SIDE OF THE VALVES

HORIZONTAL BENDS

BEND TYPE	PIPE DIAMETER, INCHES	Pipe Material	BEND ANGLE, DEGREES	THRUST RESTAINT LENGTH, FT (1)	Sheet Reference
HORIZONTAL	24"	DUCTILE IRON	11.25	17	SHEET 15, 16, 21, 22 & 23
			22.5	37	SHEET 7, 12, 15, 22, 24, 26
			45	77	SHEET 10, 11, 13, 15, 16, 19, 20, 25, 26, 34 & 35
HORIZONTAL	20"	DUCTILE IRON	45	64	SHEET 35
		PVC	[illegible]	[illegible]	SHEET 40, 41, 48
			45	14	SHEET 37, 47 & 48
HORIZONTAL	12"	DUCTILE IRON	11.25	11	SHEET 46
			22.5	21	SHEET 46, 47
			45	44	SHEET 47

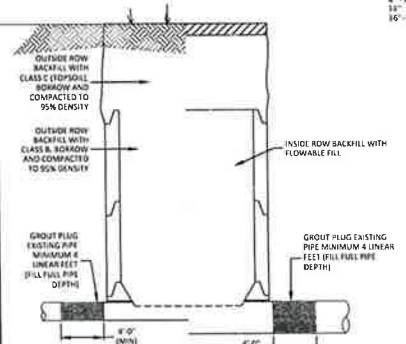
THRUST RESTRAINT NOTES
[illegible]

THRUST RESTRAINT TABLE
NTS



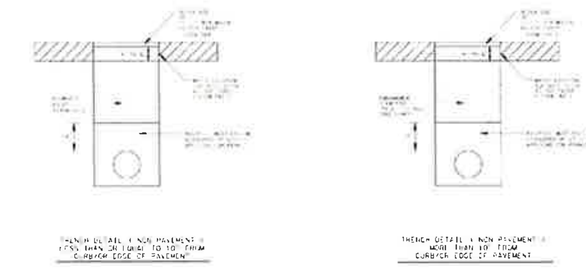
NOTES
1. VALVE BOX SHALL NOT CONTACT WATERMAIN OR VALVE, VALVE & VALVE BOX SHALL BE SUPPORTED BY CONCRETE BLOCKING
2. VALVE STEM RISER TO BE WITHIN 3' OF SURFACE.
3. READY MIX OR LEANCRETE IS NOT ACCEPTABLE FOR ENCASEMENT
4. VALVE SHALL BE RESTRAINED ON BOTH SIDES W/ EBAA IRON SERIES 1100 MEGALUG MJ RESTRAING

BUTTERFLY VALVE DETAIL
NTS



NOTE
1. THE PLUG SHALL BE COMPOSED OF A MATERIAL SIMILAR TO THE EXISTING PIPE AS INSTRUCTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE

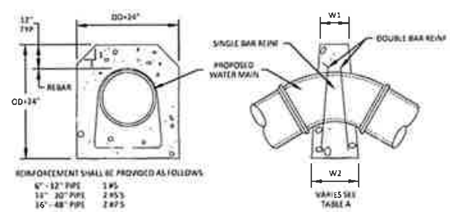
EXISTING MANHOLE ABANDONMENT DETAIL
NTS



Texas Department of Transportation
SAN ANTONIO DISTRICT
TRENCH BACKFILL DETAIL
NON PAVEMENT

REVISED JUNE 28, 2018

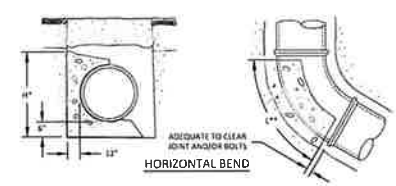
TXDOT TRENCH BACKFILL DETAIL



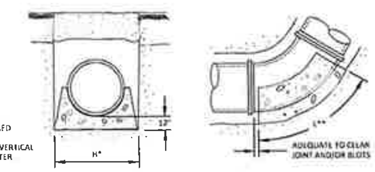
REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS
6" - 12" PIPE 1 #5
14" - 20" PIPE 2 #5 S
16" - 48" PIPE 2 #7 S

VERTICAL DOWN BEND

TABLE A UPWARD THRUST GRAVITY BLOCKS			
PIPE DIAMETER	MIN TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH W2 (in)
6"	6"	0-5	NOTE 2
		5-15	24
		15-25	48
		>25	NOTE 1
8"	6"	0-5	NOTE 2
		5-9	30
		9-15	36
		>15	NOTE 1
10"	6"	0-5	NOTE 2
		5-9	48
		9-15	60
		>15	NOTE 1
12"	6"	0-5	NOTE 2
		5-15	48
		>15	NOTE 1
16"	12"	0-5	NOTE 2
		5-10	60
		10-15	96
		>15	NOTE 1
18" THRU 36" DIAMETER		>5.0	NOTE 1
42" THRU 48" DIAMETER		>3.0	NOTE 1



HORIZONTAL BEND

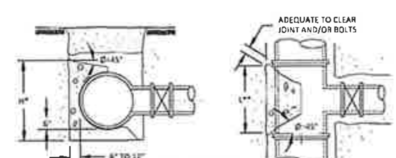


VERTICAL BEND UPWARD

NOTES
1. FOR ANGLES GREATER THAN THOSE INDICATED, MEGA LUG RESTRAINED JOINTS SHALL BE INSTALLED.
2. FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER

THRUST BLOCK DESIGN AS FOLLOWS:
A. PRESSURE OF 150 PSI (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE
B. MAXIMUM SOIL BEARING SEE TABLE BELOW

PRESSURE	SOIL TYPES
LOOSE OR SPONGY SOIL	1500 LB/SQ FT
UNDISTURBED SOIL, CALICHE	2000 LB/SQ FT
LIMESTONE ROCK	4000 LB/SQ FT



TEE / OUTLET

* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

CONCRETE THRUST BLOCKING DETAIL
NTS

NO.	REVISION	DATE
△	CONFORMED SET	4-12-2024

CONFORMED SET

DESIGN BY: SHEPONSKI
DRAWN BY: DOUBRAVA
CHECKED BY: PHILLIPS
SCALE: NONE
JOB NUMBER:

TRC
TRC ENGINEERS, INC.
5051 - ANTONIO, TX 78232
TBPE FIRM F-1172

CITY OF SEGUIN, TEXAS
24" WATER TRANSMISSION MAIN
DETAILS 2

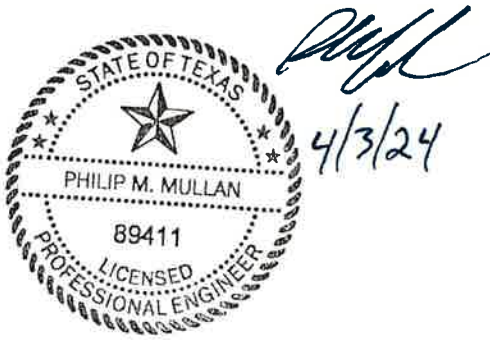
SEGUIN TEXAS
It's real.

SHEET
51

MARCH 2024

C:\PWWORKING\TRC\D0133008\DETAILS DWG - 4/12/24

Exhibit B



SECTION 33 05 31.16

WATER MAIN CONSTRUCTION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. These specifications for construction of water mains are intended to be so written that only first-class workmanship and finish of the best grade and quality will result. The fact that the following specifications may fail to be so complete as to cover all details will not relieve the CONTRACTOR of full responsibility for providing a complete project of high-quality, first-class finish and appearance and satisfactory for operation.

B. The CONTRACTOR shall furnish all materials, labor, and equipment for constructing the work included in these specifications and as detailed on the plans.

1.02 SUBMITTALS

A. Shop Drawings shall be submitted as provided in Section 01 33 00 "Submittal Procedures". Provide certified schematics and shop and erection drawings showing details, sizes, grades, materials of construction, and dimensions.

B. Provide warranty information in accordance with Section 00 61 00 "Warranties and Bonds".

C. Provide complete bill of materials for all equipment components.

D. Operating and maintenance instructions shall be furnished as specified in Section 01 78 23 "Operation and Maintenance Data."

In the event that it is impossible to conform to certain details of the Specifications, describe completely all non-conforming aspects.

E. Number of Copies: Submit six (6) copies of each submittal, unless otherwise indicated. ENGINEER will return two (2) copies.

1.03 QUALITY ASSURANCE

A. All equipment in this section shall be furnished by the polymer mixing system manufacturer except as otherwise indicated. This does not require that all equipment be manufactured by the system manufacturer but does require that the system manufacturer shall be responsible for the satisfactory operation of the system and the associated equipment furnished hereunder.

B. Qualifications and Manufacturer

1. Minimum of ten (10) years' experience in the design and manufacture of the specified systems, along with a minimum of ten (10) successful installations that can be referenced by the ENGINEER.

C. The specifications direct attention to certain required features of the equipment, but do not purport to cover all details entering into its design and construction. The CONTRACTOR shall furnish the equipment complete in all details and ready for operation for the intended purpose.

1.04 DESIGN PRESSURES

A. Fittings for water lines shall be designed to withstand minimum internal working pressures of 250 pounds per square inch unless otherwise noted on the plans or in the bid proposal. C900 DR 18 water lines shall be designed to withstand minimum internal working pressures of 235 pounds per square inch unless otherwise noted on the plans or in the bid proposal.

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage of Materials

1. Materials delivered to the site of the work prior to their use shall be stored so as to cause the least inconvenience to the public, and in a manner satisfactory to the ENGINEER.

2. Materials that will deteriorate such as cement and mortar shall be stored in weather tight buildings.

B. Pipe Handling

1. Proper implements, tools, and facilities shall be provided and used by the CONTRACTOR for the safe and convenient prosecution of the work. All pipe, fittings, and valves shall be carefully lowered into the trench piece by piece by means of derrick ropes or other suitable tools or equipment in such a manner as to prevent damage to pipe or pipe coating. Under no circumstances shall pipe or accessories be dropped into the trench.

2. At all times when pipe laying is not in progress, the open ends of the pipe shall be closed by approved means. No trench water shall be permitted to enter the pipe. All foreign matter or dirt shall be removed from the pipe, and it shall be kept clean by approved means during and after laying. No pipe shall be laid in water or when trench conditions are unsuitable for such work.

3. Cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat workmanlike manner without damage to the pipe. Concrete pressure pipe shall not be cut on the job without the approval of the ENGINEER.

C. Service Connection Materials

1. The service pipe shall normally be 3/4" type "K" soft copper pipe, and shall conform to ASTM Class "A" Specifications and U.S. Government Specifications WW-T-799 as well as AWWA Specification 7S-CR. Within structures hard drawn Type L tubing (furnished in straight lengths) shall be used, rigidly and adequately supported.

2. Corporation cocks and angle stops shall be as shown on the plans.

3. Water meter boxes where required shall be of concrete construction with cast iron locking type lid. Brooks Products, Inc. plate No. 36 H.L.D. meter box for 3/4" water meter or equal.

D. No equipment shall be shipped until all submittals have been approved in writing by the ENGINEER.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The CONTRACTOR shall furnish and place materials meeting the requirements of these specifications, of the dimensions and types at the locations and elevations shown on the plans or established by the ENGINEER. All materials shall be approved by the ENGINEER before being installed and any of these materials placed before they are so approved shall be removed and replaced with approved materials.

2.02 BACKFILL MATERIALS

A. Unless otherwise noted on the drawings, backfilling shall be done with good sound earth. Broken concrete, rock, bituminous pavement, or other lumpy material shall not be used in the backfill except as the lumps are small and their dispersal in the backfill is made in the upper section in a manner satisfactory to the ENGINEER.

B. Materials of a perishable, spongy, or otherwise improper nature shall not be used in backfilling. Where good sound earth is not available from the excavated material, pea gravel cushion and/or sand and granular backfill material will be used for the initial backfill operation to a point 12" above the top of the pipe.

C. Gravel cushion and/or granular backfill material will not be required when concrete encasement is specified or used around the pipe.

D. No backfill shall be made until it is authorized by the ENGINEER. All debris shall be removed.

E. Sheeting, shoring and bracing shall be pulled and removed during the progress of the backfilling in a manner satisfactory to the ENGINEER.

2.03 CONCRETE ENCASEMENT

A. Concrete encasement, when required, shall be composed of a free-flowing material consisting of small stone, pea gravel, limestone chat, or pit run sand and gravel and shall always consist of at least 60% sand.

B. The material shall all pass a three-quarter 3/4" screen and be free from sticks, lumps, stones, and organic matter.

C. The material shall be mixed with Portland Cement in the proportions of one (1) part cement to ten (10) parts of the above-described granular material, by volume measurement. Concrete encasement shall be poured either wet or dry as may be directed by the ENGINEER.

D. When the concrete encasement backfill material is specified or ordered by the ENGINEER to be poured UDRYU, the CONTRACTOR shall place this material on each side of the pipe for the full width of the trench using shovels to cut the material back under the pipe and shall be tamped to a height of 6" above the pipe to receive final backfill.

E. Care must be exercised not to dislocate or disturb the grade and alignment of the pipe. If ordered by the ENGINEER to be poured UWETU, caution and care must be used not to float the pipe out of place.

F. In the event pipes are floated out of proper position they shall be removed and relaid at the expense of the CONTRACTOR.

2.04 PIPES, FITTINGS, AND VALVES

A. FLANGED CAST IRON PIPE AND FITTINGS

1. All flanged end, flange and bell, and flange and spigot pipe and fittings shall meet ANSI/AWWA Specifications as outlined below and shall have American Standard Class 125 flanges. Bolts, bolt circles, heads and nuts shall be standard as to quantity of material. Gaskets shall be made from the best quality insertion rubber 1/16 inch thick. Flanged fittings shall be American Standard Class 125, except where noted on the plans.

B. FITTINGS

1. Fittings shall conform to ANSI/AWWA - C110/A21.10 or ANSI/AWWA – C153/A21.53 and ANSI/AWWA - C111/A21.11 standards.

2. All fittings shall be cement lined according to ANSI/AWWA - C104/A21.4. Fittings may be gray or ductile iron.

C. DUCTILE IRON PIPE

1. Ductile iron pipe for water line construction shall be as described in Section 33 05 19 – "Ductile Iron Pipe and Fittings" of these specifications.

D. PVC PIPE

1. This specification designates general requirements for polyvinyl chloride pipe with integral thickened wall bells used primarily for conveying potable water under pressure.

2. All pipe furnished shall meet the requirements of AWWA C-900 or latest revisions thereof. PVC pipe must have a dimension ratio (DR) as shown on the plans or noted in special provision with outside diameters equivalent to cast iron pipe.

3. All pipe furnished shall have a pressure class rating as shown on the plans or noted in special provisions at 73.4Of and shall bear the National Sanitation Foundation Seal of approval for potable water pipe.

4. Provisions shall be made for contraction and expansion at each joint with a rubber ring type gasket in a thickened bell as part of each joint, or a separate double bell coupling.

5. All joints shall be made using a non-toxic lubricant in accordance with manufacturer's recommendations.

E. ORIGIN OF PIPE

1. All pipe shall be new, and shall be manufactured within the Continental Limits of the United States of America, and shall be approved by Underwriters Laboratories, Inc. or Factory Mutual and acceptable to the Texas State Board of Insurance.

F. GATE VALVES

1. In general, all gate valves shall conform to the Standard Specifications for Gate Valves for Ordinary Water Works Service, AWWA C 515 or latest revision for valves up to 12", and AWWA C 500, or latest revision for sizes over 12", except for changes or additions specifically outlined as follows:

2. Valves shall have hub, flanged, or mechanical joint ends, or a combination of hub, flange, or mechanical joint ends as may be specified. Bell and spigot pipe sizes 2" to 24" will use valves with bells conforming to AWWA C 100. Mechanical joint pipe sizes 2" to 36" will use valves with bells conforming to AWWA C 111. Flanged pipe will use valves with flanged ends conforming to ASA B 16.1 Class 125.

3. All gate valves shall be iron body, bronze mounted, resilient seat or double disc, parallel seat, non rising stem, internal wedging type. Valves must embody the best workmanship and finish, and open and close freely and easily. In closing, the gates must move without friction to their position opposite their ports, both discs being then closed squarely against the seat rings. When valves are in full opened position, the discs shall be raised clear of the water way and provide an opening equal to the full normal diameter of the valve.

4. Gate valves shall be tested at a hydrostatic pressure of 300 pounds per square inch and shall be guaranteed for 200 pounds water working pressure. Any leakage at the pressures through any castings or between the bronze ring and the cast iron body shall cause the said casting or assembled fitting to be rejected. No plugging or patching to stop any leakage will be permitted.

5. All gate valves shall open by turning to the left.

6. Gate valves 2" to 16", inclusive, shall be nut or handwheel operated, as shown on the plans. Gate valves 20" and larger shall be equipped with wheels and nuts. Gate valves 20" and larger shall be equipped with spur or beveled gears as indicated on the plans. All geared valves shall be equipped with extended type grease cases. Stuffing boxes shall be located on top of valve bonnet and shall be outside of the gear case. Gate valves 18" and larger shall be equipped with non rising stem bypass valves, wheel and nut operated, of the following sizes:

   a. Gate valves 18" and 20" – 3" bypass

   b. Gate valves 24" and 30" – 4" bypass, stem 60,000

   c. Gate valves 36" and 42" – 6" bypass, stem 80,000

7. All bronze metal used in the working parts of the valve, with the exception of the valve stem, shall have a tensile strength of 34,000 pounds per square inch.

8. Gate valves of the internal wedging type shall have solid wedges made of high-grade bronze, having a tensile strength of at least 50,000 pounds per square inch, with wide bearing surfaces of sufficient thickness to guarantee no bending or denting under abnormal strain, and such bearing surfaces shall be ground to flat surfaces on each face. The wedges in valves 12" and over may be trimmed with a heavy bronze mounting.

9. Gate valve stems or spindles shall be of high tensile strength manganese bronze, or other non corrodible metals which produce a valve stem or spindle having tensile properties at least equal to those of Class "A", Leaded High Strength Yellow Brass (Manganese Bronze) Sand Castings, ASTM Designation B.132.

10. A thrust collar on the spindle shall be cast integral with the spindle. A spindle having a thrust collar fastened or upset by any mechanical means is not acceptable. (There shall be provided a stem collar bushing suitably machined, to permit repacking the valve when it is in fully open position. The stuffing boxes and glands shall be bronze bushed).

11. All gray iron castings shall be made from superior quality iron, of touch and even grain, having a tensile strength of not less than 30,000 pounds per square inch, without blow or sand holes or defects of any kind.

12. All gate valves installed in horizontal position whose discs do not revolve shall be equipped with bronze tracks, rollers and scrapers. Valves installed flat in vertical lines shall be equipped with bronze shoes and slides.

13. The manufacturer shall be required to furnish the OWNER with certified copies of the hydrostatic tests and physical test of all metals used in the manufacture of the valves.

14. Detail prints shall be furnished on all valves.

15. Gate valves (including tapping sleeves and valves) shall be one of the products below, or an approved equal.

MANUFACTURER	PRODUCT IDENTIFICATION/COMMENT
Clow Valve Co. 902 South 2nd Street Oskaloosa, IA 52577	Model # 2638 (4" and larger) Model # 2639 and 2640 (R/W 2"- 12")
Kennedy Valve Company 1021 Water Street Elmira, NY 14902	KS-FW = C509 (2"-12") ~FW means full wall iron (cast iron) KS-RW = C515 (2"- 24") ~RW mean reduced wall (ductile iron)
Mueller Co. 500 West Eldorado Street Decatur, IL 62525-1808	A-2360 (2") ~ Will Be Discontinued in 2016 by Muller. A-2361 (2" and larger)
EJ (Formerly East Jordan Iron Works) 301 Spring Street East Jordan, MI 49727	FlowMaster (2" and larger)

G. BUTTERFLY VALVES

1. Butterfly valves shall be of the full lug (water service) body style as noted on the plans. All valves shall be suitable for use with ANSI 125 pound flanges and meet the requirements of AWWA C-504. Bodies shall be cast or ductile iron.

2. Lug body valves shall have a retained seat and shall provide tight shutoff up to the full valve rating on dead end or isolation service without the use of downstream flanges.

3. All valves shall be furnished with self-lubricated bearings of TFE coated stainless steel. Shaft seals shall be provided to prevent leakage and to protect bearings from internal or external corrosion.

4. Seats shall be of the reinforced resilient type and shall be field replaceable. Seats shall also act as a body liner to prevent flow from contacting the body casting. Seats shall have flange sealing lips to provide a positive seal without use of flange gaskets.

5. Seats shall be of Neoprene for Water Service. Shafts shall be one piece and shall be of 316 stainless steel. Shaft diameter shall meet the 75B standard from AWWA specification C 504 for butterfly valves. Shafts shall be finish ground and polished to minimize bearing and shaft seal wear. Shafts of 8" and larger valves shall have a non-adjustable thrust collar.

6. Discs shall be bronze or semi-steel with welded nickel edge. The disc-to-shaft connections shall be type 306 stainless steel. Pins, shaft and disc of all valves shall be individually machined and completely interchangeable.

7. Valves shall be available with field interchangeable manual or powered actuators as required. The actuator-to-shaft connection shall be designed to shear and prevent internal valve damage if the disc closes on foreign material in the pipeline. All actuators shall provide external indication of disc position.

8. All manually actuated valves shall be operated using a cast iron housing designed for burial service with 2" square wrench nut actuator available in buriable construction. All units will have adjustable open and closed position stops with provision to prevent accidental adjustment changes. Operating shaft to be supported axially and radially at input end by permanently lubricated bronze thrust and sleeve bearings.

9. Valve and actuators shall be as manufactured as stated in Section 2.04.F.15 or approved equal.

H. FLAP VALVES

1. Flap valves shall be of the circular port design with offset single pivoted hinge. They shall be of the iron body bronze mounted type and furnished with flanged end. The assembly shall consist of three parts: flap gate, body and hinge pin. The flap gate and body shall be cast iron conforming to ASTM specifications A-126 Class B. The seats and hinge pin shall be furnished of bronze. The flap gate seat ring shall be rolled into a dove-tailed grove under pressure to make one inseparable unit. The body seat ring shall be threaded and screwed into place in the body. Both gate and body seat ring faces shall be machined to a smooth finish. The valve shall be constructed with a 10o offset from vertical to ensure positive closure. The flange shall be drilled using and ANSI 125 pound template. Valves shall be as furnished by Clow Valve (F-3012-T), Waterman or approved equal.

2. The valves shall be installed in strict conformance to manufacturer's written instructions.

I. FLANGES

1. Flanges shall be cast solid and faced accurately at right angles to the axis of the casting. Dimensions and drilling of flanges shall be in accordance with the American Standards Association for a working pressure of 200 PSI for the gate and check valves and 125 PSI for all other valves. Special drilling shall be provided where necessary.

J. EXTENSION STEMS AND OPERATING WRENCHES

1. All valves to be furnished for buried installation shall be furnished with extension stems to reach a point not deeper than 2'-6" below finished grade elevation adjacent to the valve and valve box. Each set of valves shall be furnished with not less than two (2) operating wrenches of a size and length appropriate to operate the valves.

K. AIR VALVES

1. Air valves and vacuum valves, when shown on the plans or required, shall be the float and lever type, as is manufactured by Val-Matic, or equal. The inlet ends will be screwed for 2" and smaller and flanged for 3" and larger.

L. BRASS VALVES

1. 1 1/2" and 2" brass valves, when shown on the plans or required, shall be of all brass construction with double discs, and parallel seats, and warranted for a water working pressure of 150 pounds per square inch.

2. They must be of non shock type, with screw ends having internal standard pipe threads. They shall be fitted with a malleable iron operating wheel, and shall open by turning to the left.

2.05 FIRE HYDRANTS

A. Fire hydrants, when required and when shown on the plans, shall conform strictly to AWWA Specifications C 502 Fire Hydrants for Ordinary Water Works Service, with the following supplementary details and changes or additions:

B. Fire hydrants shall meet the requirements of the Texas State Board of Insurance.

C. Type of shut off may be compression type with the flow or compression type against the flow.

D. Unless otherwise ordered inlet connection shall be 6" standard mechanical joint hub, complete with all joint accessories. Inlet valve shall have not less than a 5" opening.

E. All hydrants shall be equipped with two (2) hose nozzles and one (1) pumper nozzle. The hose nozzles shall be 2 and 2 1/2" nominal I.D. National Standard Thread. Pumper nozzle shall be 4" nominal I.D. National Standard Thread.

F. Unless otherwise required by pipe laying conditions, hydrants shall be furnished for a four (4') foot depth of trench.

G. A drain opening will be required and drain valves operating through gravity will not be accepted.

H. All fire hydrants shall open by turning to the left (counterclockwise).

I. All fire hydrants shall be painted with two (2) coats of paint over one (1) shop coat.

J. No hydrant will be accepted that requires less than twelve (12) turns to open.

K. Hydrants shall be of the breakable type, designed to break approximately 3", but not over 5", above the ground line. These parts shall be of the breakable flange type, or integral flange with sawed bolts. Breakable flanges screwed to the standpipe are not acceptable. Flanges shall be so designed that an end wrench can be used on the nuts and bolts. Provision shall be made in the design of the stem to disconnect the stem from the hydrant parts above the standpipe breakpoint in the event of traffic accident. If breakable or sleeve type couplings are used, they shall have sufficient torsional strength such that a torsional failure of the stem will occur at some point other than at the coupling. Design of the coupling shall be such that when the coupling is broken no parts will come loose and fall into the hydrant, and the break will not occur through the pins or bolts holding the coupling to the stem.

L. All hydrants shall be capable of being extended to accommodate future grade changes.

M. Main valve seats on compression type hydrants closing with the flow shall be of such design that incorrect positioning is impossible and that the threads will be adequately guided into position. Arrangements shall also be made to hold the main valve gasket in place during assembly.

N. All packing gland nuts shall be bronze.

O. Gaskets furnished for ground line flanges shall be full face or the flange shall be recessed to hold the gasket in place.

P. Operating stems whose threads are located in the barrel or waterway shall be of manganese, bronze, everdur, or other high quality, non corrodible metal, and all working parts in the waterway shall be bronze to bronze. Operating stems whose threads are not located in the barrel or waterway may be made of high-grade bronze, genuine wrought iron or steel, and stem nuts shall be bronze. Iron or steel stems shall have a bronze, stainless steel or other non corrodible metal, sleeve where passing through stuffing box or O rings. Operating threads must be sealed against contact with the water at all times regardless of open or closed position of the main valve.

Q. O rings may be furnished in lieu of packing. They shall be the double O ring type, designed so that the rubber rings move against a bronze surface.

R. Hydrants closing with or against the pressure must have a bronze cap nut to seal the bottom end of stem threads against contact with water.

S. Hydrants must be so constructed that the nozzle may be faced in any direction.

T. No hydrant will be considered which has not been regularly manufactured and in successful continuous use for at least ten (10) years.

2.06 JOINTING PIPES MATERIALS

A. All component parts are to be furnished with and included in the price bid for pipe. The materials consist of a circular rubber gasket of modified bulb shape in cross section.

B. Where restrained joints are shown on the Drawings restraining glands shall be installed. Restraining glands for PVC pipe shall conform to AWWA C111 and be **Megalug 2,000 PV by EBAA Iron Sales Inc.** or equal. Restraints for PVC pipe joints shall be series 1,500 or 6,500 bell restraint by EBAA Iron Sales Inc. or equal. Nuts and bolts shall be Type 316 stainless steel conforming to AWWA C111/AZ1.11.

C. Joint restraint devices for ductile iron mechanical joint pipe and ductile iron mechanical joint fittings to ductile iron pipe shall be EBAA Iron Inc., Series 1100 Megalug (R), Uniflange, Romac Industries or approved equal. Bell joint restraint devices for ductile iron push joint pipe shall be EBAA Iron Inc., Series 1700 Megalug (R) for bell restraint or approved equal. Restrained push-on joints for push joint pipe shall be U.S. Pipe and Foundry, HDSS, McWane Inc., Super-Lock, American Cast Iron Pipe Company, Lok-Ring or Flex-Ring. Bolts and nuts shall be ASTM A307 Grade B or ASTM A242 Corten.

2.07 CONCRETE BACKING

A. Concrete shall be composed of normal Portland Cement, coarse aggregate, fine aggregate, and water proportioned and mixed properly in a concrete mixer.

B. Transit mix concrete will be allowed. Portland Cement shall be Type 1 and shall be fully protected until incorporated in this work.

C. Gravel to be used for coarse aggregate shall consist of clean hard, durable grains, and shall be free from an excess of salt or alkali and foreign materials.

D. Concrete shall have a compressive strength of not less than 2,000 pounds per square inch at 28-days and shall not have less than three (3) sacks of cement nor more than 6 and 6 3/4 gallons of water per cubic yard of concrete.

PART 3 - EXECUTION

3.01 PROTECTION

A. Work

1. When construction is stopped temporarily and at the end of the day's work, tight fitting stoppers or bulkheads shall be securely placed in or across the ends of all pipes.

2. The CONTRACTOR will be held responsible for the care of all work until final completion and acceptance, and he will be required to make good, at his own expense, any damage or injury it may sustain for any cause. He shall assume all risks from floods and casualties of every description and make no charge for damages from such cause

B. Pipes

1. It shall be the responsibility of the CONTRACTOR to protect and support all water, sewer, gas, and other conduits crossed by the excavation or work to be performed by him or to arrange for their temporary removal and subsequent replacement. All expense incidental to this phase of the work shall be borne by the CONTRACTOR.

C. Trees, Plants, Shrubbery, etc.

1. Where trees, plants, shrubbery, etc., are adjacent to the line of the work and are not to be removed or removed and replaced, the CONTRACTOR shall protect such trees, plants, shrubbery, etc., by substantial wooden boxes and guards and shall not permit machinery or employees to scrape, tear the limbs from or damage or attach guy cables to them and if, in the opinion of the ENGINEER, such trees, plants, shrubbery, etc. would be damaged by machinery, etc., hand excavation may be required. The CONTRACTOR shall be responsible for all damages to adjacent trees, plants, shrubbery, etc.

D. Buildings

1. The CONTRACTOR shall, at his own expense, shore up and otherwise protect any building or other structure which may, in the opinion of the ENGINEER, be endangered during the work, and he shall restore all buildings, culverts, fences, walls, or other properties disturbed during his work to a condition similar or equal to that existing before his operations.

2. The CONTRACTOR shall be responsible for any injuries to persons and property, for all damages to any pipe, conduit, sewer, or other structures injuriously affected by the work. The OWNER shall not be liable therefore.

E. Unfinished Work

1. Before leaving work for the night, during a storm, or at other times, care must be taken to protect and securely close the unfinished end of the pipe. Any earth or other materials that may find entrance into the pipe through any such open or unplugged end of the pipe must be removed at the CONTRACTOR'S expense.

F. Lights and Guards

1. The CONTRACTOR must provide and maintain adequate detours around the work under construction. The CONTRACTOR shall provide lights, warning signs, and/or watchmen to provide adequately for the safety of the public.

G. At such street, railroad, and all other crossings as may be designated by the ENGINEER, the trenches are to be filled in such a manner as to prevent any serious interruption of traffic upon the roadway or sidewalks. The cost thereof shall be borne by the CONTRACTOR.

3.02 TRENCHES

A. When creating a trench, follow section 31 50 00 "Excavation Support and Protection" from these specifications (or follow the following procedure:).

1. Trenches shall be excavated by trenching machine, backhoe, or dragline, except in locations where hand trenching is required. The banks of trenches shall be vertical, to a point 1 foot above the top of the pipe.

2. Trenches will be excavated to the lines and grades laid out by the ENGINEER or as shown on the plans. No change in locations of the lines is contemplated, but should any changes be made in the lines not materially altering the amount of character of the trenching to be done, the CONTRACTOR shall proceed with the changed alignment at the unit bid price. In case any change involves greater construction difficulties than the original alignment, the OWNER and the ENGINEER will agree with the CONTRACTOR for extra compensation therefor, prior to the construction of the changed line or lines.

3. The width of the trench shall be 6" minimum and 8" maximum on each side of the pipe bell.

4. Trenches for water pipe shall be of such depth as to provide a minimum of 42" of cover unless otherwise shown on the plans.

5. The excavation shall not advance more than 300 feet ahead of the completed and backfilled pipeline. Pipe shall be laid in all trenches that has been opened at the end of each day's work, unless the CONTRACTOR secures written permission to do otherwise from the ENGINEER.

6. If the bottom of the trench becomes an unstable foundation for the pipe through the neglect of the CONTRACTOR to adequately shore or dewater, the CONTRACTOR will be required to remove the unstable material and backfill the trench to the proper grade with approved compacted gravel, and no extra compensation will be granted for this material or work.

7. Also, if the trench is inadvertently excavated deeper than necessary it shall be backfilled to the proper grade with approved compacted gravel at the CONTRACTOR'S expense.

8. However, if the undisturbed material encountered at the grade depth constitutes, in the opinion of the ENGINEER, an unstable foundation for the pipe, the CONTRACTOR will be required to remove such unstable material and backfill the trench to the proper grade with approved compacted material.

9. The CONTRACTOR shall excavate all trenches, including work necessary in working around existing pipelines or other obstructions. The CONTRACTOR shall give notice to the OWNERS of any such lines or obstructions in order that they may have time to take the necessary precautions for protecting their property. The CONTRACTOR shall be responsible for protecting the OWNER from any damage from his operations in such work.

10. In rock, excavation shall be carried 3" below the bottom of the pipe, and loose earth or gravel, thoroughly tamped, shall be used for backfilling to the grade of the bottom of the pipeline.

11. After inspection of pipelines has been finished on any completed portion of the work the trench may be backfilled. Backfilling shall be accomplished in compliance with the applicable portions of these specifications.

B. Sheeting, Shoring, and Bracing shall follow the information below:

1. The sides of all excavations shall be sheeted, shored, and braced as deemed necessary by the CONTRACTOR to try to prevent slides, cave ins, settlement, or movement of the banks and to maintain the excavation clear of obstructions that will in any way hinder or delay the progress of the work.

2. In wet, saturated, or flowing materials, when it is necessary to install tight sheeting or cofferdams, wood or steel sheet piling of a design and type approved by the ENGINEER shall be used.

3. All sheet piling, shoring and bracing shall have sufficient strength and rigidity to withstand the pressure exerted and maintain the sides of the excavation properly in place and protect all persons or property from injury or damage.

4. When excavations are made adjacent to existing building or other structures or in paved streets, particular care should be taken to adequately sheet, shore, and brace the sides of

the excavation to prevent undermining of, or settlement beneath, the structures or pavement.

5. Underpinning of adjacent structures or pavement shall be done by the CONTRACTOR at his own cost and expense in a manner satisfactory to the ENGINEER and when required by the ENGINEER.

6. The pavement shall be removed, the void satisfactorily refilled and compacted, and the pavement replaced by the CONTRACTOR; the entire expense of such removal and subsequent replacement thereof shall be borne by the CONTRACTOR.

7. Sheeting, shoring and bracing shall not be left in place unless otherwise provided for in the contract or authorized by the ENGINEER.

8. The removal of sheeting, shoring, and bracing shall be done in such manner as not to endanger or damage either new or existing structures, private or public properties, and to avoid cave ins or sliding of the banks.

9. All holes or voids left by the removal of the sheeting, shoring, or bracing shall be immediately and filled and compacted with suitable materials.

10. Sheeting, shoring, and bracing ordered left in place by the ENGINEER will be paid for at the unit price bid for this item, when such pay item is provided.

    a. In the event no separate pay item is provided, then the cost of sheeting, shoring, and bracing is to be included in such items as are provided.

C. Pumping, Bailing, and Draining shall follow the information below:

1. The CONTRACTOR shall immediately remove all surface or seepage water from sewers, drains, ditches, and other sources which may accumulate during the excavation and construction work by providing the necessary underdrains or otherwise and by doing the necessary pumping, bailing, or draining.

2. The CONTRACTOR shall always have available sufficient equipment in proper working order for doing the work herein required.

3. All water removed from excavations shall be disposed of in an approved manner so as not to create unsanitary conditions nor to interfere unduly with the use of streets, private driveways, or entrances.

4. Pumping, bailing, draining, underdrains, ditches, etc., shall be considered as incidental work and will not be bid for as separate items but their cost shall be included in the contract prices bid in the Proposal for the various units of measure.

D. Disposal of Excavated Materials shall follow the information below:

1. Excavated materials, so far as needed and of a suitable character, shall be piled adjacent to the work to be used for backfilling as required.

2. Excavated materials unsuitable for the backfilling or more than that required for backfilling shall be disposed of in an approved manner at locations designated on the plans or approved by the ENGINEER.

3. Desirable topsoil, sod, etc. shall be carefully piled separately and replaced in its original position when required.

4. Excavated materials shall be always handled in such a manner as to cause a minimum of inconvenience to public travel and to permit safe and convenient access to private and public property adjacent to or along the line of the work.

5. In parkways and easements where it is necessary to deposit excavated materials on lawns during the work, burlap or canvas shall be placed on the lawn to prevent contact between excavated materials and the lawn.

E. Use of Explosives shall follow the information below:

1. Should the CONTRACTOR elect to use explosives in the prosecution of the work, they shall be used with utmost precaution, and no blasting shall be done within 50 feet of the completed work or exposed pipes, conduits, etc.

2. The CONTRACTOR shall assume all liability for any injury or damage to persons or property resulting from such usage.

3. All necessary precautions shall be taken by the CONTRACTOR, and provisions shall be made for the protection of the new work; all blasting shall be so conducted as not to endanger persons or property.

4. Only a sufficient quantity of explosives for the immediate day's work shall be kept at the site of the work by the CONTRACTOR. Caps, detonators and explosives shall be stored separately.

5. The CONTRACTOR shall be responsible for, and shall make good, any damage caused by blasting or accidental explosions

3.03 JACKING, BORING, OR TUNNELING

A. When creating a tunnel, follow the specification Section 33 05 05 "Tunneling, Boring, and Jacking" and TxDOT Item 476 JACKING, BORING, OR TUNNELING OF PIPE OR BOX.

B. Tunneling under highways, streets, or railroads, when required and shown on the plans, shall be accomplished by means of jacking, boring or tunneling equipment which has been approved by the ENGINEER prior to starting to tunnel operations.

C. Tunnels shall be backfilled as completely as practicable with selected materials and compacted by means of mechanical tampers.

D. The remainder of the tunnel backfill shall be of coarse sand, gravel or crushed rock hydraulically placed in such manner that no voids remain between the backfilled material and the roof of the tunnel.

3.04 BACKFILL

A. Excavation shall be backfilled only with approved materials. The placing of backfill material shall not begin until approval has been given by the ENGINEER and shall be done immediately when so ordered by the ENGINEER.

B. Backfilling shall be brought up to an elevation slightly above the original ground level to allow for subsequent settlement. The top surface or slopes of all backfill shall be neatly graded off in a workmanlike manner, and where select topsoil, sod, or other material is removed and piled separately, such material shall be carefully replaced in a manner satisfactory to the ENGINEER.

C. On water line construction when, in the opinion of the ENGINEER, the subgrade material encountered at grade is soft, spongy, and unsuitable, it shall be removed to such a depth that the replacement thereof with firmly tamped gravel or crushed stone will provide an unyielding, stable foundation.

1. The gravel used in cushion or backfill shall be pit run gravel or crushed stone and shall be free from silt, loam, or vegetable matter and shall be of a gradation suitable to the ENGINEER.

2. Gravel cushion or backfill, when required by the plans or the ENGINEER, will be paid for at the contract unit price and shall be the total compensation for furnishing all labor materials, tools, and equipment for performing this particular phase of work.

3. Subgrades that have been allowed to become unstable by neglect of the CONTRACTOR, by improper drainage or lack of drainage, and when in the opinion of the ENGINEER, the condition was caused by the neglect or fault of the CONTRTACTOR, the ENGINEER shall order the CONTRACTOR to remove the unstable subgrade and replace the same with gravel at the expense of the CONTRACTOR, and no extra compensation will be allowed.

D. Where backfill material shown or called for on the plans to be used in the pipe zone is cement stabilized sand, the material shall extend from a point 6" below the pipe to a point 6" above the top of the pipe.

1. The backfill material shall be deposited simultaneously on both sides of the pipe and worked carefully around and under the pipe with the point of a shovel.

2. Payment for this bedding material shall be included in the unit price bid per linear foot of cement stabilized backfill material.

3. Cement stabilized backfill shall contain a minimum of one (1) sack mix (per yard of pit run sand).

E. After the pipe has been laid, the pipelines shall be backfilled as follows unless otherwise shown on the plans:

1. Good sound earth, free of clods or lumps exceeding 3" in any dimension, from the spoil bank shall be brought up by hand backfilling equally on each side of the pipe to a height of 12" over the top of the pipe. To ensure a good firm bedding the backfill shall be cut under and around the pipe with shovels up to the spring line of the pipe. This backfill shall be done so as not to displace the pipe from its original position.

2. In summation, initial backfill will be composed of one (1) or more of the following in the manner described above:

a. Good sound earth free of lumps or clods in dimension not exceeding 3" shall be brought up 12" over the top of the pipe.

b. Gravel cushion, when shown on the plans, shall be poured into place to the top of the pipelines. Gravel cushion is defined as a free-flowing material like sand or mixed sand and pea gravel, free from lumps, large stone, clay and organic material. When wet, the material shall not form mud or muck.

c. 2,500-pound concrete poured and rodded into place 6" over top of the pipe and all around the pipe a minimum of 6" thickness as shown on the plans as concrete encasement or as required by the ENGINEER.

F. The final backfilling operation shall be one (1) of the following for any of the methods used in the initial backfill procedure, unless otherwise shown on the plans:

1. The remainder of the backfill material may be made from the spoil bank, free from clods or lumps exceeding 6" in any dimension, placed in uniformly compacted layers not exceeding 1 foot in loose depth and hand or mechanically tamped in a manner approved by the ENGINEER.

2. The backfill material may be placed loosely in the trench, rounded up over the trench slightly above the original ground elevation without tamping and the trench jetted with water until all settlement has ceased. In open rights of way, the trench may be left crowned above the original ground as directed by the ENGINEER. Except in cases where pipelines cross open field, surplus soil is in such excess that drainage and/or adjacent property may be affected, the surplus material shall be removed from the site as directed by the ENGINEER.

3. Where an existing street or driveway surface has been cut (all asphalt and concrete pavements shall be saw cut before excavation), the following procedure is to be used in backfilling and replacing the pavement (unless otherwise shown on the plans):

   a. The top 24" of the trench shall be filled with gravel aggregate, consisting of hard durable uncoated pebbles or stone particles mixed with sand, free from clay lumps, shales, salt or alkali, well graded from coarse, not to exceed 3", to fine with 55% retained on 1/4" screen or washed gravel will be poured and compacted into place taking care not to disturb the pipe to level with the finished surface.

   b. In not less than 14 days after backfilling of the pavement cut is completed, unless otherwise approved by the ENGINEER, the CONTRACTOR shall remove the gravel backfill to 1-1/2" below the pavement surface and furnish and place fine graded surface course hot mix asphaltic concrete, which when compacted will be not less than 1-1/2" thick.

4. Where concrete pavement is cut, the pavement shall be cut by sawing 6" beyond trench width on each side of the ditch and breaking out the concrete. The reinforcing steel shall be cut and bent back to be replaced after pipe laying operation has been completed. The ditch shall be backfilled from around the pipe and over the pipe to the pavement surface with pit run gravel or washed gravel jetted into place as in paragraph C (1) above. In not less than five (5) days after the backfilling of pavement cut is completed, the CONTRACTOR shall remove gravel backfill to 6" below the surface of the pavement and shall pour a 6" thick 3,000 psi concrete slab the width of the paving cut.

G. Prior to completion and final acceptance of the entire job, the CONTRACTOR will be required to refill and recrown all trenches which have settled below ground level or where the crown is reduced to indicate that such subsidence will occur.

3.05 INSTALLATION OF VALVES

A. All valves shall be installed as shown on the plans. For each valve the CONTRACTOR shall furnish and install a valve box.

B. Valve boxes shall be two (2) piece screw type cast iron of the extension type with cover labeled "Water". , o

C. Valves shall be carefully handled and lowered into position in such a manner as to prevent damage to any parts of the valve.

D. Valves shall be placed in such positions as indicated on the plans with the stem in a vertical position and securely held until all connections have been made.

E. Gate valves and pipe fittings shall be set and jointed to new pipe in the manner herein specified for cleaning, laying, and jointing pipe. Hub ended valves shall be jointed to pipe only with lead joints. Flanged and mechanical joint valves will be preferred where suitable.

F. Cast iron valve boxes shall be firmly supported and maintained centered and plum over the wrench nut of the gate valve. The box cover shall be set flush with the surface of the ground or at such other level as may be directed.

3.06 FIRE HYDRANT INSTALLATION

A. Fire hydrants shall be located as shown on the plans or as directed by the ENGINEER and shall be set truly vertical with the base resting upon a stone or concrete slab 4" thick and approximately 12" square.

B. The base of the hydrant shall be surrounded by not less than 2 cubic feet of clean crushed stone or gravel, size 1" to 2 inches.

C. Pipe joints shall be made as specified for pipe laying.

D. The hydrants shall be carefully and substantially blocked against firm trench walls with sound stone, sound slabs of old concrete or 2,000 p.s.i. concrete, but no additional pay will be allowed for same.

3.07 SERVICE CONNECTIONS

A. Water service connections shall be made by tapping the mains at specific points as designated by the ENGINEER. Service taps shall be made after the mains have been laid. The work shall be done by experienced workmen with suitable tapping machine and tools.

B. The copper (as called for on the plans) service pipe shall be connected to the corporation cock at the main and laid in the trench from one side to the other every 10 feet to give ample space for expansion and contraction of the pipe.

C. The service pipe shall have a cover of 24", except where the service pipe shall pass under the curb. At this point the service pipe shall be a minimum of 18" under the top of the curb or a minimum of 6" under the bottom of the curb and gutter section.

D. Excessive bending of the pipe which will injure or reduce the cross-sectional area of the pipe will not be permitted.

E. The length of the service line shall extend from the mains to a point 2 feet back of the street curb where curb exists, or to the property line if no curb exists. If there is a curb, the curb shall be marked with the letter "W" in good quality green paint at the point where the service pipe passed under the curb.

3.08 CONNECTION TO EXISTING WATER MAINS

A. Where indicated on the plans and/or hereinafter specified, the CONTRACTOR shall connect the new main with existing mains or lines. The CONTRACTOR shall furnish all labor, materials, equipment or services required for the locating and uncovering of the existing line, the making of cuts in the existing line, the removal, relocation, and lowering of existing lines as required, dewatering of the trench, connecting of the existing line into the new main and any and all appurtenant work required for a complete connection. Relocated mains or lines shall be laid so that all valves so relocated or installed shall be set vertically.

B. Only such connections to existing mains as are necessary to load, test and sterilize mains under construction with water from city mains will be permitted prior to the sterilization of new mains. All other connections to existing mains from a new main being constructed shall be made only after the new main has been adequately and satisfactorily sterilized and the ENGINEER or his inspector has authorized the connections to be made. CONTRACTORS will be required to plug and block lines, crosses, tees or other fittings installed in the new main to permit testing and sterilization prior to the making of connections. Such plugs and blocking shall be adequate to withstand a test pressure of 150 pounds per square inch.

C. Where cut-ins are made immediately adjacent to valves which are under pressure, the CONTRACTORS shall take all necessary precautions to brace such valves with temporary blocking and bracing which shall be of ample size and properly placed to prevent movement or blowing off of any pipe, valves or fittings due to water pressure on the main.

D. Connections to existing water mains shall be made at the locations shown, as specified, and/or as directed by the ENGINEER. All such connections shall be made in a most expeditious and workmanlike manner to cause the least inconvenience to water customers and to traffic and shall be made at night unless otherwise approved by the ENGINEER. The detailed schedule of operations for making each connection shall be approved by the ENGINEER or his inspector before any work thereupon is commenced.

3.09 CONCRETE BACKING

A. Concrete having compressive strength of not less than 2,000 pounds per square inch shall be used as a cradle or backing where shown on the plans or where directed by the ENGINEER. All materials including aggregates, cement, and water, as well as the mixing and placing of the concrete, shall be approved by the ENGINEER. Bends of 22 1/2 degrees and greater, plugs, and all tees, crosses, etc. shall be placed between solid ground and the fitting to be anchored; the area of bearing on pipe and on ground in each instance shall be that required by the ENGINEER. The

backing shall, unless otherwise directed, be placed so that the pipe and fitting joints will be accessible for repair.

3.10 STERILIZATION OF WATER MAINS

A. During the construction operations workmen shall be required to use utmost care to see those parts of the structures, inside of pipes, fittings, jointing materials, valves, etc., the surface of which come in contact with City water are maintained in a sanitary condition.

B. Every effort must be made to keep the inside of the pipe, fittings and valves free of all foreign matter, sticks, dirt, rocks, etc. As each joint of pipe is being laid it must be effectively swabbed so that all foreign matter is removed. All fittings and exposed open ends of pipe must be blocked or capped until the line is completed.

C. When the entire pipeline or certain selected sections thereof have been completed, tested, and made ready for turning over to the OWNER ready for use, the line or section of line shall be thoroughly sterilized according to AWWA C-651 and the following procedure:

1. The line shall be flushed out, completely replacing its entire volume with water from the OWNER's mains.

2. Chlorine will be injected into the section of line being sterilized so that its entire capacity will be filled with water containing chlorine in the amount of 50 p.p.m. or in such other quantity as determined by the ENGINEER. The sterilizing agent shall be introduced at one end of the section and the water released from the opposite end until the sterilizing agent is present at the discharge end in such quantity as to indicate a residual chlorine of 50 p.p.m. or as otherwise determined by the ENGINEER. All valves shall be opened and closed several times and the sterilizing solution permitted to remain in the pipeline section for not less than 24 hours.

3. At the end of the sterilizing period the sterilizing solution shall be discharged from the pipe and replaced with water direct from a main of the OWNER.

4. A sample of water from the sterilized main shall be taken (not through a fire hydrant) from a suitable tap under the supervision of the ENGINEER or his Inspector and submitted to an approved testing laboratory or the State Health Department for analysis. If the test shows a satisfactory quality of water, the line so sterilized shall then be placed in service by the CONTRACTOR who shall notify and assist the Water Superintendent in location and operation of all valves installed by the CONTRACTOR. If the sample shows unsatisfactory quality of water, the process of sterilization shall be repeated until a satisfactory water is obtained.

D. Sterilization of the line or any section thereof shall not be commenced until the ENGINEER'S approval of the method, apparatus, sterilizing agent, and the section of the line has been obtained.

3.11 SANITARY SEWER AND WATER MAIN SEPARATION DISTANCES

A. The following separation distances shall be maintained between potable water and wastewater treatment plants, and waterlines and sanitary sewers.

1. Water line/new sewer line separation. When new sanitary sewers are installed, they shall be installed no closer to waterlines than 9 feet in all directions. All separation distances

shall be measured from the outside surface of each of the respective pieces. Sewers that parallel waterlines must be installed in separate trenches. Any appurtenance shall be designed and constructed so as to prevent any possibility of sewage entering the drinking water system. Where the 9 feet separation distance cannot be achieved, the following guidelines will apply:

a. Where a sanitary sewer parallels a waterline, the sewer shall be constructed of cast iron, ductile iron or PVC meeting ASTM specifications with a pressure rating for both the pipe and joints of 150 PSI. The waterline shall be located at least a minimum of 2 feet above the wastewater main or lateral, measured vertically, and at least a minimum of 4 feet away, measured horizontally, from the wastewater main or lateral. The sewer shall be located below the waterline.

b. Where a sanitary sewer crosses a waterline, and the sewer is constructed of cast iron, ductile iron or PVC with a minimum pressure rating of 150 PSI, the potable waterline shall be at least a minimum of 6" above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral.

c. Where a sewer crosses under a waterline and the sewer is constructed of ABS truss pipe, similar semi-rigid plastic composite pipe, clay pipe or concrete pipe with gasketed joints, the potable waterline shall be at least a minimum two (2) feet above the wastewater main or lateral. The initial backfill shall be from one quarter diameter below the centerline of the pipe to one (1) pipe diameter (but not less than 12") above the top of the pipe.

d. Where a sewer crosses over a waterline all portions of the sewer within nine (9) feet of the waterline shall be constructed of cast iron, ductile iron, or PVC pipe with a pressure rating of at least 150 PSI using appropriate adapters. In lieu of this procedure, the new conveyance pipe may be encased in a joint of 150-PSI pressure class pipe at least 18 feet (or longer) and two (2) nominal sizes larger than the new conveyance pipe. The space around the carrier pipe shall be supported at 5 feet intervals with spacers or be filled to the springline with washed sand. The encasement pipe should be centered on the crossing and both ends sealed with cement grout or manufactured seal.

B. Waterline/manhole separation. Unless sanitary sewer manholes and the connecting sewer can be made watertight and tested for no leakage, they must be installed so as to provide a minimum of 9 feet of horizontal clearance from an existing or proposed waterline. Where the nine (9') foot separation distance cannot be achieved, a carrier pipe as described in subsection A (1) of this section may be used where appropriate.

3.12 CLEARANCE FROM OTHER PIPES

A. Water lines and sanitary sewers shall be installed no closer to each other than 9 feet. Where this cannot be achieved, the sanitary sewer shall be constructed of pressure type cast iron pipe or the equivalent of 150 psi pressure pipe with watertight joints used in water main construction for the 9 feet clearance. No physical connection shall be made between a drinking water supply, public or private, and the sewer or any appurtenances.

B. Any facilities for permitting discharge of drinking water into the sewer or any appurtenance thereof shall be constructed so as to prevent any possibility of sewage entering the drinking water system.

3.13 INSPECTION

A. During the process of unloading, all pipe and accessories shall be inspected by the CONTRACTOR for loss or damage in transit. No shipment shall be accepted by the CONTRACTOR until notation of any lost or damaged material shall have been placed on the bill of lading by the agent of the carrier.

B. All pipe and accessories shall be laid, jointed, tested for defects and for leakage with pressure, and chlorinated in the manner herein specified in the presence of the ENGINEER or his authorized Inspector and subject to their approval.

C. All material found during the progress of the work to have cracks, flaws, or other defects will be rejected by the ENGINEER, and the CONTRACTOR shall promptly remove from the site of the work such defective material.

D. The CONTRACTOR shall be responsible for all material furnished to him or by him and shall replace at his own expense all such material that is found to be defective in manufacturing or that has become damaged in handling after delivery by the manufacturer. The CONTRACTOR shall be responsible for the safe storage of material furnished by or to him until it has been incorporated in the completed project.

E. Pipe fittings, valves and other accessories shall be unloaded at the point of delivery, hauled to, and distributed at the site of the project by the CONTRACTOR. They shall, at all times, be handled with care to avoid damage. In loading and unloading they shall be lifted by hoists, slid, or rolled on skidways in such a manner as to avoid shock. Under no circumstances shall they be dropped. Pipe handled on skidways must not be skidded or rolled against pipe already on the ground.

F. In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench. Pipe shall be handled in such a manner that a minimum amount of damage to the coating will result. Damaged coating shall be replaced in a manner satisfactory to the ENGINEER.

G. Pipe shall be placed on the site of the work parallel with the trench alignment and with bell ends facing the direction on which the work will proceed unless otherwise directed. The interior of all pipes, fittings, and other accessories shall be kept free from dirt and foreign matter at all times.

3.14 JOINTING PIPES

A. Remove any foreign matter in the gasket seat of the socket, wipe gasket clean, flex gasket and place in socket with the large round end or bulb end entering first. Seat gasket evenly around inside of the socket with the groove fitted over the bead. Remove any bulges.

B. Apply a thin film of lubricant furnished by the pipe manufacturer to the inside surface of gasket.

C. No lubricant other than that furnished with the pipe by the pipe manufacturer will be allowed to be used.

D. Wipe plain end of pipe to be entered, clean and place in approximate alignment with the bell of the pipe to which it is to be joined.

E. Apply a thin film of the lubricant to the outside of the plain end for about 1" back from the end. Align the pipe and carefully enter the plain end into the socket until it just makes contact with the gasket.

F. Complete joint assembly by forcing the plain end of the entering pipe past the gasket until it makes contact with the bottom of the socket.

1. For pipe in sizes 10" and larger, a jack-type tool will be used to make up the joint and complete the assembly of the joint in forcing the plain end of the pipe past the gasket.

3.15 DEFLECTION OF JOINTS

A. The maximum deflection at each joint will not exceed 5 degrees for sizes through 12", 4 degrees for 14" and 16", and 3 degrees for 18", 20" and 24" pipe sizes, or the manufacturer's recommendations, whichever is less.

B. If a profile is shown on the plans, the CONTRACTOR will be required to lay the line to conform to the grades shown.

C. If it is necessary that water line shall have over 42" of cover in order not to exceed the manufacturer's recommendations for deflection of the pipe, the CONTRACTOR shall excavate the ditch with no extra compensation.

D. Regardless of the depth of ditch necessary, the CONTRACTOR shall, under no condition, exceed the manufacturer's recommendations for deflection of the pipe at joints. The CONTRACTOR will receive no extra compensation for extra depth necessary to cross existing utility lines.

E. Attention is called to the fact that concrete cylinder pipe must be laid on grade to insure proper jointing of the pipe. The grades will be determined in such a manner so as to avoid excessive use of fittings and specials and to provide a uniform grade between low points and high points.

F. No additional compensation will be paid for extra trench depth required, to meet these conditions. Any differences of opinions concerning the grades as set by the ENGINEER must be resolved by the CONTRACTOR prior to pipe laying.

3.16 ABANDONMENT/REMOVAL OF EXISTING MAINS

A. The CONTRACTOR shall accomplish all cutting, capping, plugging, and blocking necessary to isolate existing mains retained in service from abandoned mains.

B. The open ends of abandoned mains and all other openings or holes in such mains occasioned by cutting or removal of outlets shall be blocked off by pressure forcing cement grout or concrete into and around the openings in sufficient quantity to provide a permanent substantially watertight seal.

C. Capping or plugging of main is preferred over grouting. For mains 12'' and larger, under major thoroughfare or highways, grouting will be required.

D. When specified or shown otherwise in the contract documents, CONTRACTOR shall remove the main and all related appurtenances that are to be replaced, or will no longer be in service, and all

effort to accomplish this requirement will be considered subsidiary to the work required, and no direct payment will be made.

E. Valves abandoned in the execution of the work shall have the valve box and extension removed in its entirety and filled with flowable fill to within 12" inches of the surface.

1. The remaining 12" inches shall be filled with required asphaltic pavement or topsoil and sod and finished flush with the adjacent pavement or ground surface as required (N.S.P.I.).

3.17 CLEAN UP

A. During construction the CONTRACTOR shall maintain the premises in an orderly, neat, and presentable manner. Scraps and debris shall not be left scattered but shall be assembled and such as are unusable shall be moved from the premises or disposed of to the satisfaction of the ENGINEER. When construction of the contract has been otherwise completed, the CONTRACTOR shall remove all left-over construction materials, equipment, scraps, debris, and rubbish. Earthwork shall be smoothed and graded to the lines shown on the plans. Backfill over all trenches shall be left in a uniform and neat condition.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Pipe: Pipe will be measured from center of fitting to center of fitting or end of pipe without any deduction for the length of intermediate fittings or valves. Payment will be made at the price bid per foot for furnishing and installing pipe, which bid price will include all costs for the complete pipe installation, including trenching and backfill, and shall include all work not otherwise provided for in these specifications.

B. Fittings: Payment for fittings will be at the unit price per ton bid for such work. This shall include the furnishing and installation of the fitting. This unit price shall also include the cost of concrete backing or blocking. Weight shall be determined from the manufacturer's catalogs. No separate payment will be made for galvanized pipe fittings. If mechanical joint fittings are used, payment will be based on weights of mechanical joint fittings and joint accessories.

C. Gate valves and tapping sleeves and valves will be paid for at the unit price bid for each, which price shall include the cost of the valve or tapping sleeve and valve, as well as the valve box and labor complete in place.

D. Fire Hydrants: Payment for the furnishing and installing of fire hydrants will be made at the unit price bid for each, complete in place.

E. Connections to Existing Mains: Payment for valves, fittings, pipe, etc., will be made at the unit price bid for the various items. No additional payment will be made for "WET" connections, but a lump sum will be paid for each "DRY" connection made as specified in these specifications.

F. Concrete Backing: No separate payment will be made for concrete backing or blocking of fittings, valves, etc. The CONTRACTOR shall include such costs in the price bid for setting fittings, valves, etc.

G. Hydrostatic Test: No separate payment will be made for the hydrostatic test. The cost of the test shall be included in the bid price for pipe in place.

H. Sterilizing: No separate payment will be made for sterilizing the main. The cost of such work shall be included in the price bid for pipe in place.

I. Water Services: Water services will be paid for as a lump sum bid for each water service connection. The lump sum will include tapping the main, furnishing and installing the corporation stop, and the copper service line necessary to connect to the existing water service.

J. Abandonment: Grouting of abandoned water lines shall be measured by linear foot. Removal of valves & valve boxes for abandonment shall be measured on the basis of each one complete in place. Said price shall be full compensation for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work including trenching and backfill and shall include all work not otherwise provided for in these specifications.

K. Trenches: This item consists of excavating all necessary trenches for the water main and system construction and backfilling after the pipe has been properly laid, inspected, and tested.

L. Backfill: This work shall include the furnishing of all labor, materials, tools, equipment, and machinery necessary for clearing and removing from the site of the work, wherever located, all obstructions, trees, stumps, brush, vegetation and debris, and all earth, rock, and other materials to be excavated; the removal of existing structures except where specifically paid for as separate contract pay items; the stripping or removal of top soil or sod to be piled separately from other excavated materials and later to be restored to its original place after backfilling is completed; the furnishing, placing, and maintaining of all sheeting, shoring and bracing necessary to protect the work and adjacent properties, all pumping, bailing, and draining necessary to keep the excavation free from seepage water, water from sewers, drains, ditches, creeks, and other sources; provision for the uninterrupted flow of sewers and surface waters during progress of the construction; the removal, after completion of the work, of all sheeting, shoring, and bracing not necessary to support the sides of the excavation; the satisfactory disposal of excess and unsuitable materials not required or which cannot be used for backfilling, tamping, compacting, and refilling after settlement of all excavated areas; the restoring of all streets, alleys, fences, rights of way, and other lands or structures, private or public, damaged or occupied by the CONTRACTOR in the performance of the contract, to as good a condition as they were prior to the beginning of the work.

M. Excavation: In trenches for water line construction will be unclassified and will not be paid for separately but shall be included in the price bid per linear foot for the various sizes of pipe unless specific provision for separate payment is called for in the Special Instruction and on the Bid Form.

4.02 PAYMENT

A. The bid items include all components of the work, including testing of new water main, required for the completion of the job in every respect except as may be otherwise provided in these specifications. CONTRACTOR shall include the furnishing of all materials and labor, including any incidental labor, in its bid prices.

END OF SECTION

Exhibit B

Exhibit B

SECTION 00 61 00

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Compile specified warranties and bonds.

B. Co-execute submittals when so specified.

C. Review submittals to verify compliance with Contract Documents.

D. Submit to the ENGINEER for review and transmittal to OWNER.

1.02 RELATED REQUIREMENTS

A. Section 00 20 00 "Request for Bids": Bid Bonds.

B. Section 00 50 00 "Standard Form of Agreement": Standard Form of Agreement.

C. Section 00 60 00 and 00 61 00 "Performance and Payment Bonds": Conditions of Contract.

D. Section 01 77 00 "Closeout Procedures."

1.03 SUBMITTAL REQUIREMENTS

A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.

B. Number of Copies: Submit six (6) copies of each submittal, unless otherwise indicated. ENGINEER will return two (2) copies.

C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.

1. Product or work item.

2. Firm, with name of principal, address and telephone number.

3. Scope.

4. Date of beginning of warranty, bond or service and maintenance contract.

5. Duration of warranty, bond or service maintenance contract.

6. Provide information for OWNER'S personnel:

a. Proper procedure in case of failure.

b. Instances that might affect the validity of warranty or bond.

7. CONTRACTOR, name of responsible principal, address and telephone number.

1.04 FORMS OF SUBMITTALS

A. Prepare in duplicate packets.

B. Format:

1. Size 8-1/2 in. x 11 in., punch sheets for standard 3-post binder.

a. Fold larger sheets to fit into binders.

2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:

a. Title of Project.

b. Name of CONTRACTOR.

C. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of two (2) inches.

1.05 WARRANTY SUBMITTAL REQUIREMENTS

A. For all major pieces of equipment, submit a warranty from the equipment manufacturer. The manufacturer's warranty period shall be concurrent with the CONTRACTOR for two (2) years, unless otherwise specified, commencing at the time of final acceptance by the OWNER.

B. The CONTRACTOR shall be responsible for obtaining certificates for equipment warranty for all major equipment specified under DIVISION 11 - EQUIPMENT, DIVISION 13 - SPECIAL CONSTRUCTION and DIVISION 26 - ELECTRICAL and which has a 1 HP or larger motor, or which lists for more than $1,000. The ENGINEER reserves the right to request warranties for equipment not classified as major. The CONTRACTOR shall still warrant equipment not considered to be "major" in the CONTRACTOR'S two-(2) year warranty period even though certificates of warranty may not be required.

C. For certain pieces of equipment, the OWNER may require a warranty of longer duration. The requirement for a warranty of longer duration shall be specified in individual sections of the Specifications.

END OF SECTION

Exhibit B

SECTION 00 61 10

PERFORMANCE BOND

THE STATE OF TEXAS §
§
COUNTY OF GUADALUPE §

KNOW ALL BY THESE PRESENTS: That we, _____, as Principal herein, and [Surety], a corporation organized and existing under the laws of the State of [Surety's state of incorp], and who is authorized and admitted to issue surety bonds in the State of Texas, Surety herein, are held and firmly bound unto _____, located in _____ County, Texas, Obligee herein, in the sum of [verbal amount of bond] Dollars ($[numeric amount of bond]) for the payment of which sum we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a certain written contract with the Obligee dated the _____ day of _____, 2024, herein referred to as "the Contract" and incorporated herein and made a part hereof for all purposes, for the construction of the _____.

NOW, THEREFORE, the condition of this obligation is such, if the said Principal shall faithfully perform the work in accordance with the plans, specifications, and other Contract Documents and shall fully indemnify and hold harmless the Obligee from all costs and damages which Obligee may suffer by reason of Principal's failure to perform the Work in conformity with the Contract Documents, and reimburse and repay Obligee for all outlay and expense that Obligee may incur in making good such default, then this obligation shall be void; otherwise, to remain in full force and effect. Whenever Contractor shall be declared by Obligee to be in default under the Contract, the Surety shall, upon request of Obligee and within seven (7) calendar days from receipt of Obligee's notice of Contractor's default, commence and thereafter complete performance of Contractor's obligations under the Contract. This Bond covers all contractual obligations of Contractor under the Contract, including, without limitation, the indemnity, warranty and guaranty obligations. The Surety stipulates and agrees that no change, extension of time, alteration, omission, addition or other modification to the terms of any of the Contract will affect its obligations on this bond, and it hereby waives notice of any such changes, extensions of time, alterations, omissions, additions, or other modifications, to the Contract or to related subcontracts, purchase orders or other obligations, and any notices provided in such regard shall not create as to any party a duty related thereto. The penal limit of this bond shall automatically be increased by the amount of any change order, supplemental agreement or amendment which increases the price of the Contract.

PROVIDED, HOWEVER, that this bond is executed pursuant to Chapter 2253 of the Texas Government Code, as amended, and all rights and liabilities on this bond shall be determined in accordance with the provisions of such statute, to the same extent as if it were copied at length herein. All notices shall be delivered in writing to the addresses shown below or to addresses provided in the Contract Documents.

IN WITNESS WHEREOF, the duly authorized representatives of the Principal and the Surety have executed this instrument.

Exhibit B

SIGNED and SEALED this _____ day of _____, 2024.

The date of bond shall not be prior to date of Contract.

ATTEST:

_____
(Principal) Secretary

(S E A L)

_____
Witness as to Principal

_____
PRINCIPAL

By: _____

Name: _____

Title: _____

Address: _____

_____

_____

Telephone Number: _____

Fax Number: _____

Email: _____

ATTEST:

_____
Secretary

(S E A L)

_____
Witness as to Surety

_____
SURETY

By: _____

Name: _____

Title: _____

Address: _____

_____

_____

Telephone Number: _____

Fax Number: _____

An original copy of Power of Attorney shall be attached to Bond by the Attorney-in-Fact.

Exhibit B

Approved as to Form:

_____
_____
_____

By:_____

Title:_____

Date:_____

Executed __ originals.

(seal) (seal)

Exhibit B

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Exhibit B

SECTION 00 61 15

PAYMENT BOND

THE STATE OF TEXAS §
§
COUNTY OF GUADALUPE §

KNOW ALL BY THESE PRESENTS: That we, _____, as Principal herein, and _____, a corporation organized and existing under the laws of the State of _____ and who is authorized and admitted to use surety bonds in the State of Texas, as surety, are held and firmly bound unto _____ located in _____ County, Texas, Obligee herein, in the amount of [printed amount of bond] Dollars ($[numeric amount of bond] for the payment whereof, the said Principal and Surety bind themselves and their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee dated the ____ day of _____, 2024, which contract is hereby referred to herein as "the Contract" and is incorporated herein to the same extent as if copied at length, for the following project: _____.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall directly or indirectly timely make payment to each and every claimant (as defined in Chapter 2253, Texas Government Code, as amended) supplying labor or materials in the prosecution of the work under the Contract, then this obligation shall be void; otherwise, to remain in full force and effect. *This obligation may be enforced by the Obligee in the event of bankruptcy or default by Principal in payments to suppliers of labor or materials in the prosecution of the work under the Contract, in either of which events the Surety shall make such payments as Principal has failed to pay and as may be required to complete the work under the contract.* The Surety stipulates and agrees that no change, extension of time, alteration, omission, addition or other modification to the terms of the Contract will affect its obligations on this bond, and it hereby waives notice of any such changes, extensions of time, alterations, omissions, additions, or other modifications, to the Contract or to related subcontracts, purchase orders or other obligations, and any notices provided in such regard shall not create as to any party a duty related thereto.

PROVIDED, HOWEVER, that this bond is executed pursuant to Chapter 2253 of the Texas Government Code, as amended, and all rights and liabilities on this bond shall be determined in accordance with the provisions of said statute, to the same extent as if it were copied at length herein. All notices shall be delivered in writing to the addresses shown below or to addresses provided in the Contract Documents.

IN WITNESS WHEREOF, the duly authorized representatives of the Principal and the Surety have executed this instrument.

SIGNED and SEALED this _____ day of _____, 2024.

The date of bond shall not be prior to date of Contract.

Exhibit B

ATTEST:

_____
(Principal) Secretary

(S E A L)

_____
Witness as to Principal

_____
PRINCIPAL

By: _____

Name: _____

Title: _____

Address: _____

_____

_____

Telephone Number: _____

Fax Number: _____

Email: _____

ATTEST:

_____
Secretary

(S E A L)

_____
Witness as to Surety

_____
SURETY

By: _____

Name: _____

Title: _____

Address: _____

_____

_____

Telephone Number: _____

Fax Number: _____

An original copy of Power of Attorney shall be attached to Bond by the Attorney-in-Fact.

Approved as to Form:

_____

_____

_____

Exhibit B

By:_____

Title:_____

Date:_____

Executed ___ originals.

(seal)

(seal)

Exhibit B

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Exhibit B

SECTION 01 29 00

PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 ADMINSITRATIVE SUBMITTALS

A. Schedule of Values: Submit schedule on CONTRACTOR'S standard form.

B. Schedule of Estimated Progress Payments

1. Submit with initially acceptable schedule of values.

2. Submit adjustments thereto with Application for Payment.

C. Application for Payment: In accordance with the General Conditions and any modifications there to as specified herein.

D. Final Application for Payment: As specified herein.

PART 2 - PRODUCTS

2.01 SCHEDULE OF VALUES

A. Reference the General Conditions.

B. Format:

1. Prepare a separate schedule of values for each schedule of work under the Agreement.

2. Lump Sum Work:

a. Provide separate value for each item or task on the progress schedule.

b. An unbalanced or front-end loaded schedule will not be acceptable.

c. List separately such items as Bonds and insurance premiums, mobilization, demobilization and contract closeout, facility startup, and other appropriate activities included herein.

d. The maximum percentage of mobilization/demobilization (combined) cost shall be no greater than 3% (three percent) of the total contract value, unless noted otherwise.

3. Summation of the complete schedule of values representing all work under the Agreement to equal the Contract Price.

2.02 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

A. Show estimated payment requests throughout Contract Times aggregating initial Contract Price.

B. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract Price as reflected by modifications to the Contract Documents.

2.03 APPLICATION FOR PAYMENT

A. Reference the General Conditions.

B. Transmittal Summary Form: Provided by CONTRACTOR. Attach one Summary Form with each Application for Payment for each schedule, include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized Officer of CONTRACTOR.

C. Use Application for Payment Form acceptable to OWNER and ENGINEER.

1. Provide separate form for each schedule as applicable.

2. Include accepted schedule of values for each schedule or portion of work, the price breakdown for work, a listing of OWNER-selected equipment, if applicable, and allowances, as appropriate.

D. Preparation

1. List each Change Order and written Amendment executed prior to date of submission as separate line item. Totals to equal those shown on the Summary sheet for each schedule as applicable.

2. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form for each schedule as applicable, a listing of materials on hand for each schedule as applicable, and such supporting data as may be requested by ENGINEER.

PART 3 - EXECUTION

3.01 MEASUREMENT- GENERAL

A. Reference Article 11 of the General Conditions for additional requirements on Unit Price work.

3.02 PAYMENT

A. General: Progress payment will be made monthly on the date established at the preconstruction meeting.

B. Payment for all work shown or specified in the Contract Documents is included in the Contract Price.

C. Payment for Mobilization/Demobilization: Partial payment for mobilization will be as follows. The adjusted contract amount for construction items as used below is defined as the Total Contract Amount less the amount for mobilization.

1. When 1% (one percent) of the adjusted contract amount for construction items is earned, 33 percent of the mobilization/demobilization amount or 1% (one percent) of the Total Contract Amount.

2. When 5% (five percent) of the adjusted contract amount for construction items is earned, 50 percent of the mobilization/demobilization amount of 1.5 percent of the Total Contract Amount, whichever is less, will be paid less any previous payments under this item.

3. When 10 percent of the adjusted contract amount for construction items is earned, 67 percent of the mobilization/demobilization amount of 2% (two percent) of the Total Contract Amount, whichever is less, will be paid less any previous payments under this item.

4. Upon completion of all work under this contract, payment for the remainder of mobilization/demobilization amount will be made.

3.03 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

A. Payment will not be made for following:

1. Loading, hauling, and disposing of rejected material.

2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.

3. Rejected loads of material, including material rejected after it has been placed by reason of failure of CONTRACTOR to conform to provisions of Contract Documents.

4. Material not unloaded from transporting vehicle.

5. Defective work not accepted by OWNER.

6. Material remaining on hand after completion of work.

3.04 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

A. Partial Payment: Reference the General Conditions. No partial payments will be made for materials and equipment delivered or stored on site unless Shop Drawings or preliminary operation and maintenance manuals are acceptable to ENGINEER.

B. Final Payment: Will be made only for materials incorporated in work; remaining materials for which partial payments have been made, to revert to CONTRACTOR unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

3.05 FINAL APPLICATION FOR PAYMENT

A. Reference the General Conditions.

B. Prior to submitting final application, make acceptable delivery of required documents.

1. Affidavit of Bills Paid.

2. Certification of Completion

3. Other documentation that may be required elsewhere in the Contract Documents.

END OF SECTION

Exhibit B

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Exhibit B

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, and City of Seguin requirements apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. Related Sections include the following:

1. Section 00 61 00 "Warranties and Bonds" for submitting warranties.
2. Section 01 29 00 "Price and Payment Procedures" for submitting Applications for Payment.
3. Section 01 31 19 "Progress Schedules and Meetings" for submitting schedules and reports, including CONTRACTOR's Construction Schedule and the Submittals Schedule.
4. Section 01 32 33 "Construction Photographs" for submitting periodic construction photographs.
5. Section 01 43 00 "Quality Assurances Quality Control" for submitting test and inspection reports and Delegated-Design Submittals.
6. Section 01 77 00 "Closeout Procedures" for submitting Record Drawings, and Record Product Data.
7. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.03 DEFINITIONS

A. Action Submittals: Written and graphic information that requires ENGINEER'S responsive action.

B. Informational Submittals: Written information that does not require ENGINEER'S approval. Submittals may be rejected for not complying with requirements.

1.04 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. ENGINEER reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Submittals Schedule: Comply with requirements Section 01 31 19 "Progress Schedules and Meetings" for list of submittals and time requirements for scheduled performance of related construction activities.

C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on ENGINEER'S receipt of submittal.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. ENGINEER will advise CONTRACTOR when a submittal being processed must be delayed for coordination.

2. If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Allow 15 days for processing each resubmittal.

4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

D. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 4 by 5 inches on label or beside title block to record CONTRACTOR's review and approval markings and action taken by ENGINEER.
3. Include the following information on label for processing and recording action taken:

    a. Project name.

    b. Date.

    c. Name and address of ENGINEER.

    d. Name and address of CONTRACTOR.

    e. Name and address of subcontractor.

    f. Name and address of supplier.

    g. Name of manufacturer.

    h. Unique identifier, including revision number.

    i. Number and title of appropriate Specification Section.

j. Drawing number and detail references, as appropriate.

k. Other necessary identification.

E. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

F. Coordinate first paragraph and subparagraph below with office policy. Marking numerous copies of submittals can be time consuming.

G. Additional Copies: Unless additional copies are required for final submittal, and unless ENGINEER observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

1. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. ENGINEER will return submittals, without review, received from sources other than CONTRACTOR.

1. Include CONTRACTOR's certification stating that information submitted complies with requirements of the Contract Documents.

2. Transmittal Form: Use sample form at end of Section.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating action taken by ENGINEER in connection with construction.

PART 2 - PRODUCTS

2.01 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit one copy of each submittal, unless otherwise indicated. Retain mark up copy as a Project Record Document.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:

a. Manufacturer's written recommendations.

b. Manufacturer's product specifications.

c. Manufacturer's installation instructions.

d. Manufacturer's catalog cuts.

e. Wiring diagrams showing factory-installed wiring.

f. Printed performance curves.

g. Operational range diagrams.

h. Compliance with recognized trade association standards.

i. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

a. Dimensions.

b. Identification of products.

c. Fabrication and installation drawings.

d. Roughing-in and setting diagrams.

e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.

f. Shopwork manufacturing instructions.

g. Templates and patterns.

h. Schedules.

i. Notation of coordination requirements.

j. Notation of dimensions established by field measurement.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.

D. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location.

E. Delegated-Design Submittal: Comply with requirements in Division 01 Section 01 43 00 "Quality Assurance Quality Control."

F. Submittals Schedule: Comply with requirements in Division 01 Section "Sequence of Construction."

G. Application for Payment: Comply with requirements in Division 01 Section 01 29 00 "Price and Payment Procedures."

H. Schedule of Values: Comply with requirements in Division 01 Section 01 29 00 "Price and Payment Procedures."

I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use sample form at end of Section.

2.02 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit one copy of each submittal, unless otherwise indicated.

2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

3. Test and Inspection Reports: Comply with requirements in Division 01 Section 01 43 00 "Quality Assurance Quality Control."

B. CONTRACTOR's Construction Schedule: Comply with requirements in Section 01 31 19 "Progress Schedules and Meetings."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

K. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

Coordinate individual Specification Sections with first paragraph below by including specific model code organization in that Section. If all are same, insert name below.

M. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

N. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 01 Section 01 77 00 "Closeout Procedures."

O. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

P. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

Q. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections.

R. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

S. Construction Photographs: Comply with requirements in Division 01 Section 01 32 33 "Construction Photographs."

PART 3 - EXECUTION

Exhibit B

3.01 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to ENGINEER.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of CONTRACTOR's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ENGINEER'S ACTION

A. General: ENGINEER will not review submittals that do not bear CONTRACTOR's approval stamp and will return them without action.

B. Action Submittals: ENGINEER will review each submittal, make marks to indicate corrections or modifications required, and return it. ENGINEER will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Revise and Resubmit

2. Approved as Noted: Exceptions Taken

3. Approved: No Exceptions Taken

C. Informational Submittals: ENGINEER will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. ENGINEER will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION

Exhibit B

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Exhibit B

SECTION 01 43 00

QUALITY ASSURANCE QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve CONTRACTOR of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit CONTRACTOR'S quality-control procedures that facilitate compliance with the Contract Document requirements.

2. Requirements for CONTRACTOR to provide quality-control services required by ENGINEER, OWNER, or authorities having jurisdiction are not limited by provisions of this Section.

C. See Divisions 02 through 48 Sections for specific test and inspection requirements.

1.02 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by ENGINEER.

C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.03 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of CONTRACTOR by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to ENGINEER.

1.04 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to CONTRACTOR to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

C. Reports: Prepare and submit certified written reports that include the following:

1. Revise list below to suit Project.
2. Date of issue.
3. Project title and number.
4. Name, address, and telephone number of testing agency.
5. Dates and locations of samples and tests or inspections.
6. Names of individuals making tests and inspections.
7. Description of the Work and test and inspection method.
8. Identification of product and Specification Section.
9. Complete test or inspection data.
10. Test and inspection results and an interpretation of test results.
11. Ambient conditions at time of sample taking and testing and inspecting.
12. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
13. Name and signature of laboratory inspector.
14. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For OWNER'S records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

G. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by the latest ASTM standards that specializes in types of tests and inspections to be performed.

1.06 QUALITY CONTROL

A. OWNER Responsibilities: Where quality-control services are indicated as OWNER'S responsibility, OWNER will engage a qualified testing agency to perform these services.

1. OWNER will furnish CONTRACTOR with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.

2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to CONTRACTOR.

B. CONTRACTOR Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Where services are indicated as CONTRACTOR'S responsibility, engage a qualified testing agency to perform these quality-control services.

a. CONTRACTOR shall not employ the same entity engaged by OWNER, unless agreed to in writing by OWNER.

2. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.

3. Where quality-control services are indicated as CONTRACTOR'S responsibility, submit a certified written report, in duplicate, of each quality-control service.

4. Testing and inspecting requested by CONTRACTOR and not required by the Contract Documents are CONTRACTOR'S responsibility.

5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Special Tests and Inspections: OWNER will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of OWNER.

1. Testing agency will notify ENGINEER and CONTRACTOR promptly of irregularities and deficiencies observed in the Work during performance of its services.

2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to ENGINEER with copy to CONTRACTOR and to authorities having jurisdiction.

3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

5. Testing agency will retest and reinspect corrected work.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were CONTRACTOR'S responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with ENGINEER and CONTRACTOR in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify ENGINEER and CONTRACTOR promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through CONTRACTOR.

4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.

5. Do not perform any duties of CONTRACTOR.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify

agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.

2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

4. Facilities for storage and field-curing of test samples.

5. Delete first subparagraph below if not required or common practice in Project vicinity.

6. Delivery of samples to testing agencies.

7. Preliminary design mix proposed for use for material mixes that require control by testing agency.

8. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS

2.01 (NOT USED)

PART 3 - EXECUTION

3.01 TESTING OF PAVEMENT

A. GENERAL

1. All concrete work for pavement shall be tested by cylinder breaks at an approved testing laboratory. Three (3) standard test cylinders shall be taken during each continuous pour. Costs for these cylinder breaks will be borne by the CONTRACTOR.

2. Density tests will be taken of the CONTRACTOR'S finished subgrade, each base course lift, and asphalt at 100' intervals along the length of streets. Costs for the subgrade and base course densities will be per the bid item in the proposal. The cost for the asphalt densities will be borne directly by the CONTRACTOR. Densities by a nuclear density gauge will be accepted for asphalt testing. The cost of retesting cause by failure of initial test will be paid by the CONTRACTOR. Any other materials, testings and batch designs required by these specifications will be paid by the CONTRACTOR.

3. All testing of materials required under these specifications shall be performed by an approved agency for testing materials. The nomination of the laboratory and the

payment for such services shall be made by the CONTRACTOR. The ENGINEER shall approve the laboratory nominated to do the testing of material.

a. Concrete

1) Testing and control of concrete to be used in the work shall be done by a commercial laboratory employed and paid for by the CONTRACTOR.

2) The CONTRACTOR shall furnish the concrete and concrete materials for such testing at his expense, as provided hereinafter in these specifications.

b. HMAC

1) Testing and design of hot mix asphaltic concrete (HMAC) shall be performed by an independent laboratory employed and paid for by the CONTRACTOR.

2) The CONTRACTOR shall furnish all labor and materials necessary for such testing at his expense, as provided in these specifications.

3) As a minimum, the CONTRACTOR shall perform one (1) sample (three (3) test specimens) for determination of Proctor density and stability and one (1) sample for determination of proportioning of materials. These samples shall be daily during HMAC construction activities.

c. Density

1) Testing of subgrade, fill, and/or backfill layers shall be performed by an independent geotechnical testing agency employed and paid for by the CONTRACTOR.

2) The CONTRACTOR shall furnish all labor and materials necessary for such testing at his expense, as provided in these specifications.

3) CONTRACTOR shall proceed with subsequent work only after test results for previously completed work comply with requirements.

4) All failed tests shall be retested by the CONTRACTOR at the CONTRACTOR'S expense.

B. UTILITY BACKFILL

1. Backfill shall be tested at a frequency of one test per lift for every 100 linear feet of trench backfill. The CONTRACTOR shall be responsible for all costs associated with retesting due to noncompliance.

C. REPAIR AND PROTECTION

1. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

a. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

b. Retain subparagraph above or below. Above is for simple projects that do not include a "Cutting and Patching" Section and relies on patching and repair materials being the same as for new construction.

c. Comply with the Contract Document requirements for Section 32 01 26 "Asphalt Pavement Restoration."

2. Protect construction exposed by or for quality-control service activities.

3. Repair and protection are CONTRACTOR'S responsibility, regardless of the assignment of responsibility for quality-control services

3.02 TESTING OF PIPES

A. GENERAL

1. Hydrostatic pressure and leakage tests shall be made on all pressure pipelines carrying water or wastewater.

2. All labor and equipment, including test pump with regulated by-pass meters and gauges required for conducting pipeline tests, shall be furnished by the CONTRACTOR. The CONTRACTOR shall furnish equipment and necessary piping as required to transport water used in testing from source to test location.

3. Time and sequence of testing shall be scheduled by the CONTRACTOR, subject to observation and approval by the OWNER. The CONTRACTOR shall provide adequate labor, tools and equipment to operate valves and to locate and repair any leaks discovered during the initial filling of the pipeline prior to actual testing or during the course of the tests.

B. CLEANING

1. At the conclusion of the work, thoroughly clean all pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material that may have entered the pipes during the construction period. Debris cleaned from the lines shall be removed from the low end of the pipeline. If after this cleaning, obstructions remain, they shall be removed. After the pipelines are cleaned and if the groundwater level is above the pipe or following a heavy rain, the ENGINEER will examine the pipes for leaks. If any defective pipes or joints are discovered, they shall be repaired.

C. TEST PROCEDURES FOR GRAVITY PIPELINES

1. Gravity pipelines shall be installed and backfilled and then tested using either Exfiltration Water Testing or Low Pressure Air Testing. In addition, flexible pipes shall be tested using an Allowable Deflection Test.

2. Exfiltration Water Testing

a. The section of pipe to be tested shall be filled with water and allowed to stand for such time as is required for the pipeline to adsorb such water as it will and for the escape of all air from the line. The sections undergoing test shall be carefully examined for leakage. All known leaks shall be repaired, regardless of these test requirements.

b. The line shall then be filled to a reference level in manhole or in a reservoir of sufficient capacity to allow for a reference level to be established. The reservoir must be of sufficient capacity as to not allow the water level to drop below the crown of the pipe during the 24-hour test period. If the water level drops below the crown of the pipe, the test shall be voided and run again or until such time the water level is maintained above the crown throughout the duration of the test.

c. At the end of a 24-hour period, water, if needed, shall be added to the line to bring the water level back to the referenced line. All water added shall be accurately measured by an approved water meter so that an exfiltration rate can be established.

d. Leakage during the above test shall not exceed a rate equal to 25 gallons per inch of internal diameter per mile per twenty-four hours.

e. All observed leaks shall be repaired regardless of the measured leakage rate.

3. Low Pressure Air Testing

a. This test shall conform to the procedure described in ASTM C1244, or other appropriate procedures. For safety reasons, air testing of sections of pipe shall be limited to lines less than 36 in. average inside diameter. Lines 36 in. average inside diameter and larger may be air tested at each joint. The minimum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge during a joint test, regardless of pipe size, shall be 20 seconds. For sections of pipe less than 36 in. average inside diameter, the maximum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge shall be computed by the following equation:

PRODUCT DATA SHEET 0 - $T = 0.085\ (D)\ (K) / (Q)$

PRODUCT DATA SHEET 1 - where T = time for pressure to drop 1.0 pounds per square inch gauge in seconds

A. K = 0.00049DL, but not less than 1.0
B. D = average inside diameter in inches
C. L = length of line of same pipe size being tested in feet
D. Q = rate of loss, assume 0.0015 ft^3/min/sq. ft. internal surface

b. All observed leaks shall be repaired regardless of the air test results.

4. Allowable Deflection Test

a. Pipe deflection testing shall be conducted on all gravity pipes constructed of flexible materials (PVC or other plastic materials).

b. Pipe deflection measured not less than ninety (90) days after the backfill has been completed as specified shall not exceed five (5.0) percent. Deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

c. Deflection shall be measured with a rigid mandrel device cylindrical in shape and constructed with a minimum of nine evenly spaced legs. The outer diameter of the legs shall be 95 percent of the pipe's actual internal diameter. Drawings of the mandrel with complete dimensions shall be submitted to the ENGINEER for each diameter of pipe to be tested. The mandrel shall be hand pulled by the CONTRACTOR through all sewer lines.

d. Any section of sewer not passing the mandrel shall be uncovered at the CONTRACTOR'S expense and the bedding and backfill replaced to prevent excessive deflection. Repaired pipe shall be retested.

D. TEST PROCEDURES FOR PRESSURE PIPELINES

1. General

a. After the pipe has been laid and backfilled and the backfill has been otherwise consolidated, all newly laid pipe, or any valved section thereof, shall be subjected to the hydrostatic pressure and leakage tests specified below for that particular type of pipe. The duration of each hydrostatic pressure test shall be at least one hour and each leakage test at least four hours, unless otherwise specified or noted on the Drawings. All meters, fixtures, devices or appliances which are connected to the pipeline system and which might be damaged if subjected to the specified test pressure shall be disconnected and the ends of the branch lines plugged or capped during the testing procedures.

b. Each valved (capped or plugged) section of pipe shall be filled slowly with water and all air shall be expelled. If permanent air vents are not located at all high points, the CONTRACTOR shall install corporation or blow-off cocks at such points so that air can be expelled as filling takes place. After verification that all air has been expelled, the cocks shall be closed, and the pipe kept filled until tested. All exposed pipe, fittings, valves, hydrants and joints shall be examined while under test pressure and all visible leaks shall be stopped. Any cracked or defective pipe, fittings, valves or hydrants discovered during testing shall be removed and replaced by the CONTRACTOR. Replacement shall be with sound material and the test shall be repeated until satisfactory to the OWNER.

2. Special Requirements. Where any section of pipeline is provided with concrete thrust blocking, the hydrostatic pressure test shall not be made until at least five (5) days have elapsed after installation of the blocking. However, if high-early-strength cement is used in the concrete, two (2) days shall have elapsed prior to testing.

3. Hydrostatic Pressure Tests

a. After compliance with all applicable procedures described above, pressure of 150 percent of the pipe's normal operating pressure shall be applied, unless another test pressure is specified for the type of pipe being tested. This pressure, based on the

lowest point of the line or section under test, shall be corrected to the relative elevation of the test gauge and the pressure maintained for a period of not less than one (1) hour. CONTRACTOR shall coordinate all test pressures with ENGINEER.

b. Pipe Test Pressure Summary Schedule

PART 2 - Pipe ID	**PART 3 - Test Pressure, psi**
PART 4 - All Flanged Ductile Iron Piping	PART 5 - 150
PART 6 - All restrained mechanical joint ductile iron piping	PART 7 - 150
PART 8 - All bell and spigot, gravity, ductile iron piping	PART 9 - 25
PART 10 - All PVC solid wall piping	PART 11 - 100
PART 12 - Process Air Piping	PART 13 - 15

4. Leakage Tests

a. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain the specified leakage test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

b. Leakage shall be determined by recording the quantity of water pumped into the pipeline through a standard water meter of a size appropriate to secure an accuracy of ±2 percent at the average rate of flow pumped. Leakage rate shall be calculated by extrapolation of the total leakage during the testing period to a 24-hour period. Leakage test pressure shall be coordinated with ENGINEER and test pressure shall be maintained for a period of four (4) hours.

c. Allowable leakage for the types of pipe used shall be as follows:

1) Cast Iron and Ductile Iron. Allowable as permitted by AWWA Standard C-600-82, "Installation of Gray and Ductile Cast-Iron Water Mains and Appurtenances", which is not to exceed that determined by the formula:

$$L = (SD\sqrt{P})/133{,}200$$

2) Where L is the allowable leakage in gallons per hour, S is the length of pipeline tested in feet, D is the nominal diameter of the pipe in inches, and P is the average test pressure during the leakage tests in pounds per square inch gauge.

d. In the event any section of the line tested fails to meet the above specified requirements for water tightness, the cause of the excessive leakage shall be determined and remedied at the expense of the CONTRACTOR, including retesting if required.

E. FINAL ACCEPTANCE

1. No pipe installation will be accepted until all known leaks have been repaired whether or not leakage is within allowable limits. Locating and repairing of leaks shall be performed by the CONTRACTOR at no additional cost to the OWNER.

2. The OWNER will certify that all required pressure and leakage tests have been successfully completed before the pipeline is accepted.

F. WATER SOURCE

1. Water shall be made available by the OWNER for testing and other work on this project as specified. The CONTRACTOR shall install temporary connections to the OWNERS supply pipe, including supply/installation of RPZ backflow preventer and meter. Any additional water, if necessary, shall be provided at CONTRACTOR'S expense.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. This section will be attached to a bid item that includes supplying and testing for quality assurance quality control.

4.02 PAYMENT

A. The bid items include all components of the work required for the completion of the job in every respect except as may be otherwise provided in these specifications. CONTRACTOR shall include the furnishing of all materials and labor, including any incidental labor, in its bid prices.

END OF SECTION

Exhibit B

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Exhibit B

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Adjust list below to suit Project.
2. Inspection procedures.
3. Project Record Documents.
4. Operation and maintenance manuals.
5. Warranties.
6. Instruction of OWNER'S personnel.
7. Final cleaning.

B. See Section 01 29 00 "Price and Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.

C. See Section 01 32 33 "Construction Photographs" for submitting Final Completion construction photographs and negatives.

D. See Divisions 02 through 48 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.02 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Delete items below not applicable or revise to suit Project.
2. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
3. Advise OWNER of pending insurance changeover requirements.
4. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
5. Obtain and submit releases permitting OWNER unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

6. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.

7. Deliver tools, spare parts, extra materials, and similar items to location designated by OWNER. Label with manufacturer's name and model number where applicable.

8. Coordinate first subparagraph below with Division 8 door hardware Sections. Revise if Owner makes final changeover or if key-control system manufacturer delivers keys directly to Owner.

9. Make final changeover of permanent locks and deliver keys to OWNER. Advise OWNER'S personnel of changeover in security provisions.

10. Complete startup testing of systems.

11. Submit test/adjust/balance records.

12. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

13. Complete final cleaning requirements, including touchup painting.

14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, ENGINEER will either proceed with inspection or notify CONTRACTOR of unfulfilled requirements. ENGINEER will prepare the Certificate of Substantial Completion after inspection or will notify CONTRACTOR of items, either on CONTRACTOR'S list or additional items identified by ENGINEER, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for Final Completion.

1.03 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Revise subparagraphs below to match the Supplementary Conditions.

2. Submit a final Application for Payment according to Section 01 29 00 "Price and Payment Procedures."

3. Submit certified copy of ENGINEER'S Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by ENGINEER. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

4. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

5. Submit pest-control final inspection report and warranty.

6. Instruct OWNER'S personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, ENGINEER will either proceed with inspection or notify CONTRACTOR of unfulfilled requirements. ENGINEER will prepare a final Certificate for Payment after inspection or will notify CONTRACTOR of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.04 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for ENGINEER'S reference during normal working hours.

B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.

b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

3. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.

4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications, if contract modifications were made. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

3. Note related Change Orders and Record Drawings, where applicable.

D. Miscellaneous Record Submittals: ssemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.05 OPERATION AND MAINTENANCE MANUALS

A. See Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.06 WARRANTIES

A. See Section 00 61 00 "Warranties and Bonds" for warranty requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Below is a sample list of final cleaning requirements. Revise to suit Project.

b. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

c. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

d. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

e. Remove tools, construction equipment, machinery, and surplus material from Project site.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

h. Sweep concrete floors broom-clean in unoccupied spaces.

i. Remove labels that are not permanent.

j. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

k. Revise six subparagraphs below to suit Project. Check for conflict or duplication with provisions in other Sections, particularly Divisions 15 and 16.

l. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

m. Replace parts subject to unusual operating conditions.

n. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

o. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on OWNER'S property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

Exhibit B

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Exhibit B

SECTION 03 60 00

GROUT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section specifies requirements for nonmetallic non-shrink grout for leveling column base plates, steel beams bearing on concrete, machinery and other equipment, for anchoring handrail posts into sleeves embedded in concrete, and at all other locations shown or reasonably implied by the drawings.

1.02 RELATED WORK

A. Review DIVISION 05 - METALS and the drawings for non-shrink grout requirements.

B. Review DIVISION 11 - EQUIPMENT and the drawings for non-shrink grout requirements under machinery and equipment baseplates.

1.03 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1. ASTM C 309 - Liquid Membrane-Forming Compounds for Curing Concrete.

2. ASTM C 33 - Standard Specifications for Concrete Aggregates.

3. ASTM C 1107/C 1107M – Packaged Dry, Hydraulic-Cement Grout (nonshrink)

1.04 SUBMITTALS

A. Submit the following information on proposed products for approval by the ENGINEER before delivery to the project.

1. Manufacturer's technical literature including manufacturer's specifications for mixing and placing of the grout.

2. Test results of test performed by a certified independent testing laboratory showing conformance to the following:

a. ASTM C 1107/C 1107M

b. The requirements of this specification.

B. Number of Copies: Submit six (6) copies of each submittal, unless otherwise indicated. ENGINEER will return two (2) copies.

1.05 MANUFACTURER'S ASSISTANCE

A. Manufacturers of proprietary products shall make available, at no additional cost to the OWNER and upon seventy-two (72) hours notification, the service of a qualified, full time employee to aid in assuring proper use of the product under job conditions.

1.06 DELIVERY AND STORAGE

A. Non-shrink grout shall be delivered to the project in unopened containers and shall bear intact manufacturer's labels.

B. Store all non-shrink grout material in dry shelter and protect from moisture.

C. Containers that are torn or damaged such that the non-shrink grout material has been exposed to the elements shall be discarded.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Non-shrink grout shall be a pre-blended factory-packaged material manufactured, under rigid quality control, specifically for use in transferring heavy loads. The non-shrink grout shall conform to the following requirements:

1. Grout shall contain nonmetallic natural aggregate and shall be non-staining and non-corrosive.

2. Acceptable products are Gifford-Hill "Supreme," Master Builders' "Masterflow 713," or approved equal.

3. Corps of Engineers CRD C-621.

4. Resist attack by oil and water.

5. Have a minimum initial setting time of approximately one (1) hour at 70°F.

6. Have a minimum compressive strength of 5,000 psi at twenty-eight (28) days.

7. Free of gas-producing or gas-releasing agents.

B. Water used for mixing the grout shall be potable.

C. Clean pea gravel conforming to ASTM C 33 coarse aggregate graded so that at least 90 percent passes a 3/8 in. sieve and 90 percent is retained by a No. 4 sieve.

D. Membrane-Forming Curing Compound: Commercial curing compound conforming to ASTM C 309, which will not permanently discolor the grout.

PART 3 - EXECUTION

3.01 PROCEDURES

A. Installation methods and procedures shall conform to the printed instructions of the grout manufacturer and these specifications. Where there is a conflict between these specifications and the printed instructions of the grout manufacturer, the printed instructions of the grout manufacturer shall take precedence.

3.02 SURFACE PREPARATIONS

A. Remove all defective concrete, laitance, dirt, oil, grease, and other foreign material from concrete surfaces by bush-hammering, chipping, or other similar means, until a sound, clean concrete surface is achieved.

B. Lightly roughen the concrete, but not enough to interfere with the proper placement of grout.

C. Remove foreign materials from all surfaces in contact with grout.

D. Align, level and maintain final positioning of all components to be grouted. Coat shims with a thin film of grease or wax to facilitate removal.

E. Provide relief holes, if required, to avoid trapping air beneath the base plate.

F. Take special precautions during extreme weather conditions according to the manufacturer's written instructions.

G. Saturate all concrete surfaces with clean water for the period of time specified by the manufacturer. Remove excess water and leave none standing.

H. Immediately before grouting clean any contaminated surfaces.

3.03 FORMWORK

A. Build leak-proof forms that are strong and securely anchored and shored to withstand grout pressures. Forms shall be built high enough to provide a "head" of grout where it is required to force grout into difficult locations.

B. Provide enough clearance between the formwork and the area to be grouted to permit proper placement of grout.

3.04 MIXES

A. For less than a 4 in. clearance, or where size or shape of space makes grouting difficult, grout mix shall consist of grout material and water.

B. For greater than 4 in. clearances where coarse aggregate will not obstruct free passage of the grout, the grout may be extended by adding clean pea gravel if allowed or recommended by the grout manufacturer. Follow the manufacturer's recommendation for the maximum amount of pea gravel that may be added.

C. Use the minimum amount of water necessary to produce a flowable grout without causing either segregation or bleeding.

3.05 MIXING

A. Mixing of non-shrink grout shall be in strict conformance to the recommendations of the grout manufacturer.

B. Mix grout as close to the work area as possible and transport the mixture quickly and in a manner that does not permit segregation of materials.

C. After the grout has been mixed, DO NOT add more water for any reason.

3.06 PLACING

A. Place non-shrink grouting material quickly and continuously by the most practical means permissible: pouring, pumping or under gravity pressure. Do not use either pneumatic-pressure or dry packing methods without written permission of the ENGINEER.

B. Follow established concreting procedures observing precautions for hot and cold weather concreting.

C. When practical, apply grout from one side only to avoid entrapping air.

D. Final installation shall be thoroughly compacted and free from air pockets. To facilitate placement, a 1/2 in. to 1 in. chain or metal strap may be pulled back and forth under the equipment during grouting. Remove chain or strap before initial set takes place.

E. Do not vibrate the placed grout mixture or allow it to be placed if the area is being vibrated by nearby equipment, except when approved by the grout manufacturer.

F. Do not remove leveling shims for at least forty-eight (48) hours after grout has been placed. After shims have been removed, fill voids with non-shrink grout.

3.07 CURING

A. Cure grout for three days after placing by keeping wet and covering with curing paper by coating with a concrete membrane-forming curing compound or by other approved method.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT AND PAYMENT

A. The exact dimensions for machinery and equipment bases will depend upon the dimensions of the actual machinery and equipment furnished. No change in the contract price will be allowed if the dimensions are different from those shown on the drawings.

END OF SECTION

Exhibit B

SECTION 31 50 00

EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Trench safety system for the construction of trench excavations.

2. Trench safety system for structural excavations which fall under provisions of State and Federal trench safety laws.

1.02 DEFINITIONS

A. A trench shall be defined as a narrow excavation (in relation to its depth) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet.

B. The trench safety system requirements will apply to larger open excavations if the erection of structures or other installations limits the space between the excavation slope and these installation to dimensions equivalent of a trench as defined.

C. Trench Safety Systems include but are not limited to sloping, sheeting, trench boxes or trench shields, sheet piling, cribbing, bracing, shoring, dewatering or diversion of water to provide adequate drainage.

D. Trench Safety Program is the safety procedures governing the presence and activities of individuals working in and around trench excavations.

1.03 SUBMITTALS

A. Submit in accordance with Section 01 33 00.

B. Submit a safety program specifically for the construction of trench excavation. Design the trench safety program to be in accordance with OSHA 29CFR standards governing the presence and activities of individuals working in and around trench excavations.

C. Construction and shop drawings containing deviations from OSHA standards or special designs shall be sealed by a licensed Engineer retained and paid by CONTRACTOR.

D. Review of the safety program by the City Engineer will only be in regard to compliance with this specification and will not constitute approval by the City Engineer nor relieve CONTRACTOR of obligations under State and Federal trench safety laws.

E. Submit certification that trench safety system will not be subjected to loads exceeding those which the system was designed to withstand according to the available construction and geotechnical information.

1.04 REGULATORY REQUIREMENTS

A. Install and maintain trench safety systems in accordance with the detail specifications set out in the provision of Excavations, Trenching, and Shoring, Federal Occupation Safety and Health Administration (OSHA) Standards, 29CFR, Part 1926, Subpart P, as amended, including Final Rule, published in the Federal Register Vol. 54, No. 209 on Tuesday, October 31, 1989. The sections that are incorporated into these specifications by reference include Sections 1926-650 through 1926-652.

B. A reproduction of the OSHA standards included in "Subpart P - Excavations" from the Federal Register Vol. 54, No. 209 is available upon request to CONTRACTORs bidding on City projects. The City assumes no responsibility for the accuracy of the reproduction. The CONTRACTOR is responsible for obtaining a copy of this section of the Federal Register.

C. Legislation that has been enacted by the Texas Legislature with regard to Trench Safety systems, is hereby incorporated, by reference, into these specifications. Refer to Texas Health and Safety Code Ann., §756.021 (Vernon 1991).

D. Reference materials, if developed for a specific project, will be issued with the Bid Documents, including the following:

1. Section 02 06 10 "Geotechnical Data" for use in design of the trench safety system.

1.05 INDEMNIFICATION

A. CONTRACTOR shall indemnify and hold harmless the OWNER, his employees and agents, from any and all damages, costs (including, without limitation, legal fees, court costs, and the cost of investigation), judgements or claims by anyone for injury or death of persons resulting from the collapse or failure of trenches constructed under this Contract.

B. CONTRACTOR acknowledges and agrees that this indemnity provision provides indemnity for the OWNER in case the OWNER is negligent either by act or omission in providing for trench safety, including, but not limited to safety program and design reviews, inspections, failures to issue stop work orders, and the hiring of the CONTRACTOR.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install and maintain trench safety systems in accordance with provisions of OSHA 29CFR.

B. Install specially designed trench safety systems in accordance with the CONTRACTOR'S trench excavation safety program for the locations and conditions identified in the program.

C. A competent person, as identified in the CONTRACTOR'S Trench Safety Program, shall verify that trench boxes and other premanufactured systems are certified for the actual installation conditions.

3.02 INSPECTION

A. CONTRACTOR, or CONTRACTOR'S independently retained consultant, shall make daily inspections of the trench safety systems to ensure that the installed systems and operations meet OSHA 29CFR and other personnel protection regulations requirements.

B. If evidence of possible cave-ins or slides is apparent, CONTRACTOR shall immediately stop work in the trench and move personnel to safe locations until the necessary precautions have been taken by CONTRACTOR to safeguard personnel entering the trench.

C. Maintain a permanent record of daily inspections.

3.03 FIELD QUALITY CONTROL

A. CONTRACTOR shall verify specific applicability of the selected or specially designed trench safety systems to each field condition encountered on the project.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. This section will be measured by the linear foot along the long axis of the trench where the depth of trench exceeds 5 ft. This measurement includes all required trench protection, including trench ends.

B. No payment will be made under this section for trench safety systems for structural excavations, tunnel shafts, auger pits, or excavation for trenchless installations, and also for any necessary non trenchless installations included in the aforementioned methods of construction unless included as a bid item in Documents 00 41 00 "Bid Form." Include payment for trench safety systems in applicable structural or utility installation sections.

C. Refer to Section 01 29 00 "Price and Payment Procedures" for unit price procedures.

4.02 PAYMENT

A. This price is full compensation for excavation and backfill required for excavation protection; furnishing, placing, and removing shoring, sheeting, or bracing; de-watering or diversion of water; jacking and jack removal; and equipment, labor, materials, tools, and incidentals.

B. Stipulated Price (Lump Sum). If the Contract is a Stipulated Price Contract, payment for work in this Section is included in the total Stipulated Price.

END OF SECTION

Exhibit B

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SECTION 33 05 05

TUNNELING, BORING, AND JACKING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This item shall govern furnishing and installing of pipe by the methods of jacking, boring, or tunneling as indicated on the Drawings outside of TxDOT ROWs, and in conformity with this specification. This item shall also include, but not be limited to, other constructions activities such as excavation, removal of all materials encountered in jacking, boring, or tunneling pipe or box operations, disposal of all material not required in the work, and backfilling.

1.02 SUBMITTALS

A. The submittal requirements for this specification item shall include:

1. Manufacturer's product data,
2. Instructions,
3. Recommendations,
4. Shop drawings identifying proposed jacking, boring, or tunneling method complete in assembled position,
5. Trench Safety Plan including pits, trenches and sheeting or bracing if necessary, and
6. Certifications.

PART 2 - PRODUCTS

2.01 CARRIER PIPE

A. The carrier pipe shall be of the types and sizes shown in the plans and shall conform to the requirements of Section 33 05 31.16 "Water Main Construction."

2.02 CASING PIPE

A. The casing pipe shall be straight, circular in section, uncoated, welded steel pipe.

2.03 GROUT

A. Supply grout as specified in Section 03 60 00 "Grout."

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS

A. **Jacking.** Suitable pits or trenches shall be excavated for the purpose of jacking operations for placing end joints of the pipe. When trenches are cut in the side of embankment, such work shall be securely sheeted and braced. Jacking operations shall in no way interfere with the

operation of railroads, streets, highways, or other facilities and shall not weaken or damage such facilities. Barricades and lights shall be furnished as directed by the Engineer to safeguard traffic and pedestrians.

1. The pipe to be jacked shall be set on guides to support the section of pipe being jacked and to direct it in the proper line and grade. Embankment material shall be excavated just ahead of the pipe and material removed through the pipe, and the pipe forced through the opening thus provided.

2. The excavation for the underside of the pipe, for at least 1/3 of the circumference of the pipe, shall conform to the contour and grade of the pipe. A clearance of not more than 2 inches may be provided for the upper half of the pipe.

3. The distance that the excavation shall extend beyond the end of the pipe shall depend on the character of the material, but it shall not exceed two (2') feet in any case.

4. Generally, the pipe shall be jacked from the downstream end. Permissible lateral or vertical variation in the final position of the pipe from line and grade will be as shown on the plans or as determined by the Engineer.

5. Any pipe that cannot be repaired to its original condition or is damaged in jacking operations shall be removed and replaced at the Contractor's expense. Jacking pits shall be backfilled immediately upon completion of jacking operations.

B. **Excavation.** Excavation for "boring" pits and installation of shoring shall be as outlined under "Jacking". Boring operations may include a pilot hole which shall be bored the entire length of crossing and shall be used as a guide for the larger hole to be bored. Water or drilling fluid may be used to lubricate cuttings. Variation in line and grade shall apply as specified under "Jacking".

C. **Tunneling.** Tunneling may be used when the size of the proposed pipe or the use of a monolithic sewer would make the use of tunneling more satisfactory than "Jacking" or "Boring". The excavation for pits and the installation of shoring shall be as specified under "Jacking".

1. The lining of the tunnel shall be of the material shown in the contract documents.

2. Access holes for grouting annular space shall be spaced a maximum of 10 feet.

D. Joints. Joints for pipe "Jacking", "Boring", or "Tunneling", shall be as shown on the plans, shop drawings, or as per additional pipe manufacturer's recommendations.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Jacking, boring, or tunneling shall be measured by the linear foot of bore or tunnel as measured from face to face of jacking pits. Jacking, boring, or tunneling shall include the casing or liners and the carrier pipe.

4.02 PAYMENT

A. The work performed and materials furnished as specified herein, measured as provided above, shall be paid for at the contract unit price bid per linear foot of jacking, boring or tunneling, which price shall be full compensation for furnishing all materials, carrier pipe, casing spacers, grout, labor, tools, equipment and incidentals necessary to complete the work, including excavation, grouting, backfilling, restoration to original ground conditions, end caps, and disposal of surplus materials.

END OF SECTION

Exhibit B

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Exhibit B

SECTION 33 05 19

DUCTILE IRON PIPE AND FITTINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work to be performed under this section of the specifications shall comprise the furnishing of all labor, equipment, and materials, and in performing all operations necessary in connection with the installation of ductile iron pipe and fittings as shown in the plans, and as specified herein.

B. The CONTRACTOR shall submit for approval, complete and dimensional working drawings of all ductile iron pipeline layouts. Such drawings shall indicate the size, class, and laying dimensions of all pipes, valve fittings, expansion couplings, and specials and the location of all hangers and supports needed for the installation and not specifically indicated for on the plans. The number, size, and length of all bolts required for flanged pipe installations shall be given on the pipe schedule of the working drawings.

C. Ductile iron pipe, fittings, and valves used for the sewer force main shall have an internal coating consisting of Induron Protecto 401 Ceramic Epoxy.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE AND FITTINGS

A. Ductile Iron Pipe of size, class, and joint type shown on the plans will be furnished by the CONTRACTOR. All pipe furnished shall meet USA Standard A21.50, ANSI A 21.50, AWWA C150 (thickness design), or current revision. All Ductile Iron Pipe furnished shall also meet the requirements of federal specification ANSI A 21.51, AWWA C151, or current revision, unless otherwise noted on the plans. Flanged Ductile Iron Pipe shall be furnished with Ductile Iron Flanges and shall conform to ANSI A21.15 and AWWA C115. The ductile iron pipe shall meet the minimum pressure class 250.

B. Fittings shall be ductile iron of compact design and shall meet the requirements of ANSI A21.10, AWWA C153, or current revision. All fittings for above ground service shall be short body flanged fittings with Class 125 flanges. All flanges shall be faced and drilled.

C. All joints shall be made in strict accordance with the manufacturer's specifications.

2.02 LININGS AND COATINGS

A. Ductile Iron Pipe and Fittings shall be cement mortar lined. Exposed pipe and fittings to be painted shall be uncoated as delivered to the job site for prime/finish painting by the CONTRACTOR. Buried pipe and fittings shall be furnished with the manufacturer's standard asphaltic varnish finish.

B. All grit piping and fittings shall be glass lined. Glass lining shall be a smooth, continuous glass coating with an average thickness of 10 mils and a minimum thickness of 8 mils. Surface hardness shall be greater than 5 on the MOHS scale and minimum density of lining shall be 2.5 grams/cc. The lining shall have a weight loss of not more than 3 mils per square inch when tested in a range of 500 degrees F in accordance with US Bureau of Standards, Standard T

Section Thermal Shock Tests and lining shall have a minimum compressive strength of 30,000 psi. Certified test reports shall be furnished to the Engineer. The finished lining shall be free of pin holes, crazing or fish scales. Lining shall be by Ferrock, Permutit, or equal. Lining thickness shall be measured by a Mikrotest Elcometer or equal magnetic thickness gauge. Continuity of lining shall be verified by means of an approved "holiday" detector of low-voltage, wet sponge, transistorized type.

2.03 POLYETHYLENE ENCASEMENT

A. All buried ductile iron or cast-iron pipe, fittings, and valves will be protected with polyethylene encasement in accordance with the latest revision of AWWA C 105 specification and/or ANSI A 21.5. Encasement for non-potable water will be purple in color.

B. In general, the following items will summarize that specification, however, the CONTRACTOR will follow the entire specification as if written herein:

1. The pipe encasement material will be a polyethylene film with a thickness of 8 mils. Either tube or sheet material may be used.

2. The tube will completely encase each section of pipe with at least a 1 ft. overlap at each joint. Overlaps will be secured by the used of adhesive tape, plastic string, or any other material capable of holding the encasement in place until backfilling operations are completed. The encasement shall prevent contact between the pipe and the surrounding bedding and backfill material but is not intended to be a complete air and watertight enclosure.

3. Bell holes must be made at the joints to facilitate installation at the joints. Loose material will be overlapped to make a snug fit and secured with tape or string. Slack material along the barrel of the pipe shall be taken up to make a sung, but not tight, fit and secured at the quarter points of the pipe length.

4. Repairs to any rip, puncture, or other damage to the polyethylene will be made with adhesive tape or with short lengths of tubing cut, wrapped and secured in place prior to backfilling procedure.

5. Backfill of the pipe shall be performed as described in other specification sections described herein or as shown on the plans. The material of backfill shall be free from cinders, refuse, boulders, rocks, stones, or other material that could damage the polyethylene.

6. Pipe encasement for non-potable water lines shall be purple in color.

2.04 EXPANSION COUPLINGS

A. Where the use of expansion couplings is indicated on the plans, they shall be Style 38 Dresser couplings, or approved equal, unless otherwise required.

B. As may be necessary to conform to the dimensions of the couplings, the outside diameter of the plain ends of the ductile iron pipe sections which are to be jointed by a coupling, shall be gauged to proper size for use with the couplings.

2.05 SUPPORTS AND HANGERS

A. The CONTRACTOR shall furnish and install all necessary supports and hangers, indicated on the plans, or required for the proper installation of the ductile iron pipelines in a workmanlike manner.

2.06 FLANGED JOINTS

A. Flanged joints shall be made with bolts, or bolt-studs, with a nut on each end. Bolts, stud-bolts, and nuts shall conform to American Standard Heavy dimensions, semi-finished, with square or hexagonal heads and cold punched hexagonal nuts meeting the requirements of ASME B18.2. Bolt sizes shall be American Standard for the flanges specified. Bolt and nut threads shall conform to ASME B1.1, coarse thread series, Class 2 fit.

B. Gaskets for Class 125 flanges shall be full face with bolt holes punched. Gasket material shall be nylon-reinforced rubber, 1/8 in. minimum thickness.

2.07 GASKET MATERIALS

A. Gaskets furnished for Flanged, Mechanical Joint, of Bell and Spigot Piping for Water, Wastewater, and process Air Service shall be of the materials specified below:

Temperature Minimum				
Service	Joint Type	Rating	Thickness	Material
Water or Wastewater	Flanged	150°F	1/8 in.	Nylon Reinforced Rubber
Water or Wastewater	M.J. or B&S	150°F	-	Styrene- Butadiene

2.08 WALL CASTINGS

A. Mechanical Joint Wall Pipes will be utilized when possible. They shall be made of Ductile Iron, as specified. Fabricated Wall Castings shall have Ductile Iron wall collars and shall be welded on both sides. Screwed-on bells will not be acceptable.

PART 3 - EXECUTION

3.01 HANDLING

A. During loading, transportation, and unloading, care shall be taken to prevent injury to the pipe or fittings. Loading or unloading shall be so handled that the piece being moved is under perfect control at all times. Under no circumstances shall a pipe or large fitting be dropped.

3.02 LAYING AND INSTALLING

A. Proper and suitable tools and equipment for the installation of the pipelines and appurtenant valves and fittings in a safe and workmanlike manner shall be furnished and used on the work.

B. The pipe and fittings shall be thoroughly cleaned immediately before installation and shall be kept clean until final inspection of the project. Special care shall be exercised to prevent the leaving of wood, blocks, cans, tools, or other foreign objects in the pipeline during installation.

C. All costs incidental to the removal of any such foreign object, or objects, from the pipe lien shall be borne by the CONTRACTOR.

3.03 TESTING

A. Pipelines shall be subjected to water test pressure of 150 psi. All such tests shall be conducted to the satisfaction and under the observation of the ENGINEER.

B. All costs incidental to making such tests shall be borne by the CONTRACTOR. Where pipelines are laid in excavation, testing shall precede final backfill.

C. All pipelines shall be watertight under test, or under operating conditions, as a condition of final acceptance of the work.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. This section will be measure in the bid for supplying, installing, and testing per linear foot of ductile iron piping and the tonnage of fitting.

4.02 PAYMENT

A. The bid items include all components of the work, including testing of new ductile iron pipe and fitting, required for the completion of the job in every respect except as may be otherwise provided in these specifications. CONTRACTOR shall include the furnishing of all materials and labor, including any incidental labor, in its bid prices.

END OF SECTION

EXHIBIT C

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

TEMPORARY CONSTRUCTION EASEMENT

STATE OF TEXAS §
§ **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF GUADALUPE §

DATE: _____, **2024**

GRANTOR: _____, a _____

GRANTOR'S MAILING ADDRESS: _____
_____

GRANTEE: **CITY OF SEGUIN, TEXAS**

GRANTEE'S MAILING ADDRESS: 205 N. River Street
Seguin, Texas 78155

CONSIDERATION: Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged.

TEMPORARY EASEMENT PROPERTY:

Being a strip of land containing _____ acres of land (____ sq. ft.), being more particularly described on Exhibit A, attached hereto and by this reference made a part hereof.

CONVEYANCE:

That, GRANTOR does hereby grant and convey to GRANTEE and its, successors and assigns a thirty (30) foot wide temporary construction easement for any and all things necessary for the installation and construction of multiple wastewater and reuse water transmission lines, together with service connections, a cathodic protection system, SCADA (Supervisory Control and Data Acquisition) connections, and above-ground manhole covers, vehicular access, fiber optic lines, communication lines, electrical lines, water lines, and all other necessary or desirable above-ground and below-ground laterals and appurtenances thereto, including but not limited to lift stations and fencing, together with the right of ingress and egress in, through, upon, over, under

EXHIBIT C

and across said right of way for the purpose of constructing, reconstructing, inspecting, maintaining, and removing said line(s) and related improvements within the Easement Property, such easement being in, upon, over, under and across the Temporary Easement Property.

TO HAVE AND TO HOLD the Temporary Construction Easement and rights unto the said GRANTEE, its successors and assigns, beginning upon the start of construction on the Temporary Construction Easement Property and terminating after a [redacted] month period, at which time this Temporary Construction Easement shall expire.

GRANTEE expressly agrees that it will remove from the Temporary Easement Property all surplus materials upon the completion of work related to this Temporary Easement and will cause the land to be left as nearly as is practicable in the condition as it existed prior to the use thereof by GRANTEE.

GRANTEE shall have the right to remove from said Temporary Easement Property all trees and other vegetation in whole or in parts thereof which may interfere with exercise of the rights granted hereunder; GRANTEE shall not damage, destroy or remove any trees within the Temporary Easement Property with a trunk diameter greater than four inches (4") without the approval of GRANTOR.

GRANTEE, without waiving its governmental immunity, agrees to maintain adequate intergovernmental risk management fund coverage and shall require its contractor(s) to maintain adequate insurance coverage during the term of this Temporary Construction Easement and to be responsible for any damage or injury resulting from GRANTEE's or its contractor's activities on the Temporary Easement Property. .

GRANTOR does hereby bind itself, its heirs, legal representatives, successors and assigns to warrant and forever defend all and singular the above-described temporary easement and rights unto GRANTEE, its successors and assigns, against every person whomsoever lawfully claiming, or to claim, the same or any part thereof by through or under GRANTOR.

[Signature on following page]

EXHIBIT C

Executed effective this _____day of _____, 2024.

GRANTOR:

_____, a

_____

By: _____

Name: _____

Title: _____

Acknowledgement

STATE OF _____ §

§

COUNTY OF _____ §

This instrument was acknowledged before me on the _____ day of _____, 2024 by _____, _____ of _____, the _____ of _____, a _____, on behalf of said limited liability company.

Notary Public, State of _____

EXHIBIT C

Exhibit A

Temporary Easement Property

LOWDEN EXCAVATING

24in Water Transmission Main
Rev 1 - 2.7.24
Rev 2 - 3.5.24
Rev 3 - 3.8.24
Rev 4 - 4.4.24

Items	Quantities	Units	Unit Price	Total Item Price
Mobilization & Survey	1	ls	$29,150.00	$29,150.00
Erosion Controls & Reveg	1	ls	$8,612.00	$8,612.00
24" Ductile Transmission Line	1091	lf	$304.55	$332,264.05
Ductile Fittings	1	ls	$11,030.00	$11,030.00
42" Steel Casing - Open Cut	25	lf	$650.00	$16,250.00
42" Steel Casing - Bore(s)	95	lf	$1,410.55	$134,002.25
Tie In	2	ea	$3,050.00	$6,100.00
Trench Protection	1091	lf	$10.05	$10,964.55
Clean & Test	1091	lf	$22.10	$24,111.10
Traffic Control	1	ls	$11,765.00	$11,765.00
Remove & Replace Signs	3	ea	$1,170.00	$3,510.00
24in Water Trans Main Total				**$587,758.95**

Exhibit D

Exclusions:

Price does not include tax on materials
Price does not include materials lab testing
Price does not include rock trenching or excavation
Price does not include vegetative watering
Price does not include replacing unidentified underground utilities
Price does not include relocation of existing utilities
Price does not include any wastewater utility items / work
Price does not include power pole bracing
Price does not include electrical / dry utilities
Price does not include bonds, permits & fees
(cont. next pg.)

fax: 512 847-3008

3310 Yarrington Road
San Marcos Tx 78666

office: 512 842-1307

Price does not include the slick bore (page 27) due to hmac driveway not existing - per phil m. engr.
Price does not include night work
Price does not include work on AC Pipe or Asbestos abatement
Any other item not specifically listed above

Notes:

Proposal is based on plans dated: 11/23 TRC based on information provided from 4/3/24 P Mullan PE clarification email
A bid form was not provided for the project, items not specifically listed may not be inlcuded and may require change orders
Price reflects work between Stations 96+86.02 and 107+77.26. per P Mullan PE
Lowden not responsible for damage to anything or item related to the exisitng structures
Traffic control plans were not included, we have standard job signage and bore pit protection included in our item.
Any additional traffic control will require a change order.
Additional erosion controls not shown on the approved erosion control plans, will be an added expense to the owner.
Any change to the approved plans allows Lowden the oppurtunity to include additional time, revise existing item pricing or to price new items
If force majeure, fuel sir-charges or material price increases are applied on any item(s), additional costs will be passed along to owner.
This quote is valid for 30 days from the date sent.

Respectfully Submitted By
Coy Lowden
Lowden Excavating

Exhibit D

fax: 512 847-3008
3310 Yarrington Road
San Marcos Tx 78666
office: 512 842-1307

EXHIBIT E
(Revised 5/23/23)

INSURANCE

SECTION A. Prior to the approval of this contract by the City, CONTRACTOR shall furnish a completed Insurance Certificate to the Purchasing office. The certificate shall be completed by an agent authorized to bind the named underwriter(s) to the coverages, limits, and termination provisions shown thereon, and shall furnish and contain all required information referenced or indicated thereon. CITY SHALL HAVE NO DUTY TO PAY OR PERFORM UNDER THIS CONTRACT UNTIL SUCH CERTIFICATE IS RECEIVED BY THE CITY OF SEGUIN'S PURCHASING DEPARTMENT, and no officer or employee of the City shall have authority to waive this requirement.

INSURANCE COVERAGE REQUIRED

SECTION B. CITY reserves the right to review the insurance requirements of this section during the effective period of the contract and to adjust insurance coverages and their limits when deemed necessary and prudent by CITY, based upon changes in statutory law, court decisions, or the claims history of the industry as well as the CONTRACTOR.

SECTION C. Subject to CONTRACTOR'S right to maintain reasonable deductibles in such amounts as are approved by CITY, CONTRACTOR shall obtain and maintain in full force and effect for the duration of this contract, and any extension hereof, at CONTRACTOR'S sole expense, insurance coverage written by companies approved by the State of Texas and acceptable to CITY, in the following type(s) and amount(s):

	TYPE	AMOUNT
1.	**Workers' Compensation** and **Employer's Liability**	Statutory
	NOTE: For building or construction projects, and services provided at City-owned facilities, the successful Contractor shall meet the minimum requirements defined in the Texas Workers' Compensation Commission Rule 28 TAC §110.110 which follows this insurance attachment.	
2.	**Commercial General (public) Liability** including coverage for the following:	
	a. Premises operations	$1,000,000 per occurrence
	b. Independent contractors	$2,000,000 aggregate
	c. Products/completed operations	
	d. Personal injury	
	e. Advertising injury	
	f. Contractual liability	
	g. Medical payments	
	h. **Professional liability**	
	i. Underground hazard*	
	j. Explosion and collapse hazard*	
	k. Liquor liability*	
	l. Fire legal liability*	
	m. City's property in Contractor's* care, custody, or control	
	n. Asbestos specific liability*	
	* **Not required for this contract**	
3.	**Comprehensive Automobile Liability** insurance, including coverage for loading and unloading hazards, for:	$1,000,000 per occurrence

a. Owned/leased vehicles
b. Non-owned vehicles
c. Hired vehicles

4.	**Errors and Omissions** insurance policy (when applicable)	$1,000,000 per occurrence or claim $2,000,000 aggregate for the willful or negligent acts or omissions of any no less than officers, employees or agents thereof
5.	**Cyber** (when applicable)	$2,000,000

ADDITIONAL POLICY ENDORSEMENTS

CITY shall be entitled, upon request, and without expense, to receive copies of the policies and all endorsements thereto and may make any reasonable request for deletion, revision, or modification of particular policy terms, conditions, limitations, or exclusions (except where policy provisions are established by law or regulation binding upon either of the parties hereto or the underwriter of any of such policies). Upon such request by CITY, CONTRACTOR shall exercise reasonable efforts to accomplish such changes in policy coverages, and shall pay the cost thereof.

REQUIRED PROVISIONS

CONTRACTOR agrees with respect to the above required insurance, all insurance contracts and certificate(s) of insurance will contain and state, in writing, on the certificate or its attachment, the following required provisions.

a. Name the City of Seguin and its officers, employees, and elected representatives as an Additional Insured(s), (as the interest of each insured may appear) to all applicable coverage.

b. Provide for 30 days notice to City for cancellation, non-renewal, or material change.

c. Provide for notice to City at the address shown below by registered mail.

d. CONTRACTOR agrees to waive subrogation against the City of Seguin, its officers, employees, and elected representatives for injuries, including death, property damage, or any other loss to the extent same may be covered by the proceeds of insurance.

e. Provide that all provisions of this agreement concerning liability, duty, and standard of care together shall be underwritten by contractual liability coverage sufficient to include such obligations within applicable policies.

f. For coverages that are **only** available with claims made policies, the required period of coverage will be determined by the following formula: Continuous coverage for the life of the contract, plus one year (to provide coverage for the warranty period) and an extended discovery period for a minimum of five years which shall begin at the end of the warranty period.

NOTICES

CONTRACTOR shall notify CITY in the event of any change in coverage and shall give such notices not less than thirty (30) days prior to the change, which notice must be accompanied by a replacement CERTIFICATE OF INSURANCE. All notices shall be given to CITY at the following address:

Purchasing Department
City of Seguin
P.O. Box 591
Seguin, Texas 78156

SECTION D. Approval, disapproval, or failure to act by CITY regarding any insurance supplied by CONTRACTOR shall not relieve CONTRACTOR of full responsibility or liability for damages and accidents as set forth in the contract documents. Neither shall the bankruptcy, insolvency, or denial of liability by the insurance company exonerate CONTRACTOR from liability.

WORKERS COMPENSATION INSURANCE
for
Building or Construction Projects and Services Provided at City-Owned Facilities

TEXAS WORKERS' COMPENSATION COMMISSION RULE 28 § 110.110

****

As required by the Texas Workers' Compensation Rule 28, §110.110, the Contractor shall accept the following definitions and comply with the following provisions:

Workers' Compensation Insurance Coverage

A. Definitions:

1. Certificate of coverage ("certificate")-A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

2. Duration of the project-includes the time from the beginning of the work on the project until the Contractor's/person's work on the project has been completed and accepted by the City of Seguin.

3. Persons providing services on the project ("subcontractor" in Section 406.096) - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent Contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

B. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the Contractor providing services on the project, for the duration of the project.

C. The Contractor must provide a certificate of coverage to the City of Seguin prior to being awarded the contract.

D. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the City of Seguin showing that coverage has been extended.

E. The Contractor shall obtain from each person providing services on a project, and provide to the City of Seguin:

1. A certificate of coverage, prior to that person beginning work on the project, so the City of Seguin will have on file certificates of coverage showing coverage for all persons providing services on the project; and

2. No later than seven (7) days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

F. The Contractor shall retain all required certificates of coverage for the duration of the project and for one (1) year thereafter.

G. The Contractor shall notify the City of Seguin in writing by certified mail or personal delivery, within ten (10) days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

H. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

I. The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

1. Provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;

2. Provide to the Contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project.

3. Provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

4. Obtain from each other person with whom it contracts, and provide to the Contractor:

   a. A certificate of coverage, prior to the other person beginning work on the project; and

   b. A new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

5. Retain all required certificates of coverage on file for the duration of the project and for one (1) year thereafter;

6. Notify the City of Seguin in writing by certified mail or personal delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

7. Contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (7), with the certificates of coverage to be provided to the person for whom they are providing services.

J. By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the City of Seguin that all employees of the Contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

K. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the City of Seguin to declare the contract void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the City of Seguin.

As defined by the Texas Labor Code, Chapter 269, Section 406.096(e), building or construction is defined as:

1. Erecting or preparing to erect a structure, including a building, bridge, roadway, public utility facility, or related appurtenance;

2. Remodeling, extending, repairing, or demolishing a structure; or

3. Otherwise improving real property or an appurtenance to real property through similar activities.

The employment of a maintenance employee who is not engaging in building or construction as the employer's primary business does not constitute engaging in building or construction.

CITY OF SEGUIN
INSURANCE REQUIREMENT AFFIDAVIT

To be Completed By Appropriate Insurance Agent

and submitted with bid proposal.

I, the undersigned Agent/Broker, certify that the insurance requirements contained in this bid document have been reviewed by me with the below identified Contractor. If the below identified Contractor is awarded this contract by the City of Seguin, I will be able to, within ten (10) days after being notified of such award, furnish a valid insurance certificate to the City meeting all of the requirements defined in this bid.

_____ _____

Agent (Signature) Agent (Print)

Name of Agency/Broker: _____

Address of Agent/Broker: _____

City/State/Zip: _____

Agent/Broker Telephone #: (_____) _____

CONTRACTOR'S NAME: _____
(Print or Type)

NOTE TO AGENT/BROKER

If this time requirement is not met, the City has the right to invalidate the bid award and award the contract to the next lowest bidder meeting specifications. Should an awarded bid be invalidated the Contractor may be liable for breach of contract. If you have any questions concerning these requirements, please contact the Purchasing Manager for the City of Seguin at (830) 401-2451

INSURANCE REQUIREMENTS AND INDEMNITY

The Vendor will procure and maintain at its expense insurance with insurance companies authorized to do business in the State of Texas, covering all operations under this Agreement, whether performed by the Vendor or its agents, subcontractors or employees. Before commencing the work the Vendor will furnish to the City an original certificate or certificates in a form satisfactory to the City, showing that Vendor has complied with this paragraph.

The Vendor shall not cause any insurance policy to be cancelled or permit it to lapse, and all insurance policies shall include an endorsement to the effect that the insurance policy shall not be subject to cancellation or to a reduction in the required limits of liability or amounts of insurance until notice has been mailed to the City of Seguin, ATTN: Director of Finance, P.O. Box 591, Seguin, TX 78156-0591. The notice shall state the date when such cancellation or reduction shall be effective. The cancellation date shall not be less than thirty (30) days after such notice.

Commercial general liability insurance will be written with the City as an additional insured and will be endorsed to provide a waiver of the carrier's right of subrogation against the City. The types and amounts of insurance required are set forth below:

TYPE	AMOUNTS
1. Workers' Compensation	Statutory
2. Commercial General Liability Insurance to include coverage for the following: a. Premises/Operations b. Independent Contractors c. Products/Completed Operations d. Personal Injury e. Contractual Liability f. Professional Liability (when applicable)	$1,000,000 per occurrence $2,000,000 aggregate
3. Business Automobile Liability a. Owned/leased vehicles b. Non-owned vehicles c. Hired Vehicles	$1,000,000 per occurrence
4. Errors and Omissions (when applicable)	$1,000,000 per occurrence or claim $2,000,000 aggregate For the willful or negligent acts or omissions of any officers, employees, or agents thereof.
5. Cyber (when applicable)	$2,000,000

The stated limits of insurance are minimum only. They do not limit the Vendor's indemnity obligation, and it will be the Vendor's responsibility to determine what limits are adequate. These limits may be met by basic policy limits or any combination of basic limits and umbrella limits. The City's acceptance of certificates of insurance that do not comply with these requirements in any respect does not release the Vendor from compliance with these requirements.

THE VENDOR WILL INDEMNIFY, HOLD HARMLESS AND DEFEND THE CITY AND ITS EMPLOYEES, AGENTS, OFFICERS, AND SERVANTS FROM ANY AND ALL LAWSUITS, CLAIMS, DEMANDS AND CAUSES OF ACTION OF ANY KIND ARISING FROM THE NEGLIGENT OR INTENTIONAL ACTS ERRORS OR OMISSIONS OF THE VENDOR, ITS OFFICERS, EMPLOYEES OR AGENTS. THIS WILL INCLUDE, BUT NOT BE LIMITED TO, THE AMOUNTS OF JUDGMENTS, PENALTIES, INTEREST, COURT COSTS, REASONABLE LEGAL FEES, AND ALL OTHER EXPENSES INCURRED BY THE CITY ARISING IN FAVOR OF ANY PARTY, INCLUDING THE AMOUNTS OF ANY DAMAGES OR AWARDS RESULTING FROM CLAIMS DEMANDS AND CAUSES OF ACTION FOR PERSONAL INJURIES, DEATH OR DAMAGES TO PROPERTY ALLEGED OR ACTUAL INFRINGEMENT OF PATENTS, COPYRIGHTS, AND TRADEMARKS AND WITHOUT LIMITATION BY ENUMERATION, ALL OTHER CLAIMS, DEMANDS, OR CAUSES OF ACTION OF EVERY CHARACTER OCCURRING, RESULTING, OR ARISING FROM ANY NEGLIGENT OR INTENTIONAL WRONGFUL ACT, ERROR OR OMISSION OF THE VENDOR OR ITS AGENTS OR EMPLOYEES. THIS OBLIGATION BY THE VENDOR WILL NOT BE LIMITED BY REASON OF THE SPECIFICATION OF ANY PARTICULAR INSURANCE COVERAGE REQUIRED UNDER THIS AGREEMENT.