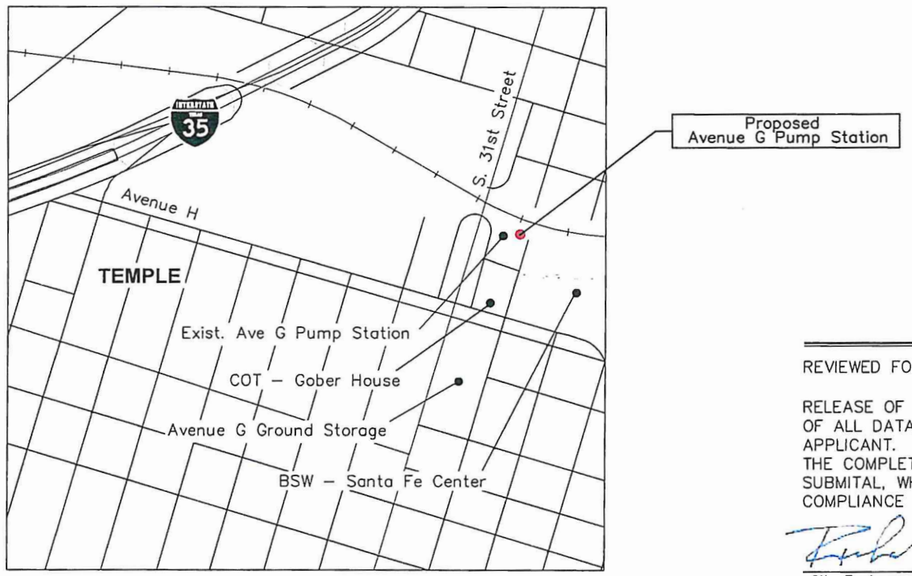
CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS

JULY, 2022

REVISIONS	DATE	DESCRIPTION	SHEET

RELEASED FOR CONSTRUCTION

SHEET INDEX



VICINITY MAP

UTILITY CONTACTS

TEXAS ONE CALL	800-545-6005
TEXAS EXCAVATION SAFETY SYSTEM	800-344-8377
TXU ELECTRIC DELIVERY	512-244-5691
ATMOS ENERGY	866-332-8667
CITY OF TEMPLE, TX	254-298-5611
SPECTRUM	254-776-1141
ASTOUND BROADBAND	254-773-1163
AT&T	800-252-1133
BNSF RAILROAD – ROADMASTER	254-771-4676

LETTING DATE: _____
ORIGINAL BID: _____
CONTRACTOR: _____
COMPLETION DATE: _____

REVIEWED FOR CONSTRUCTION:

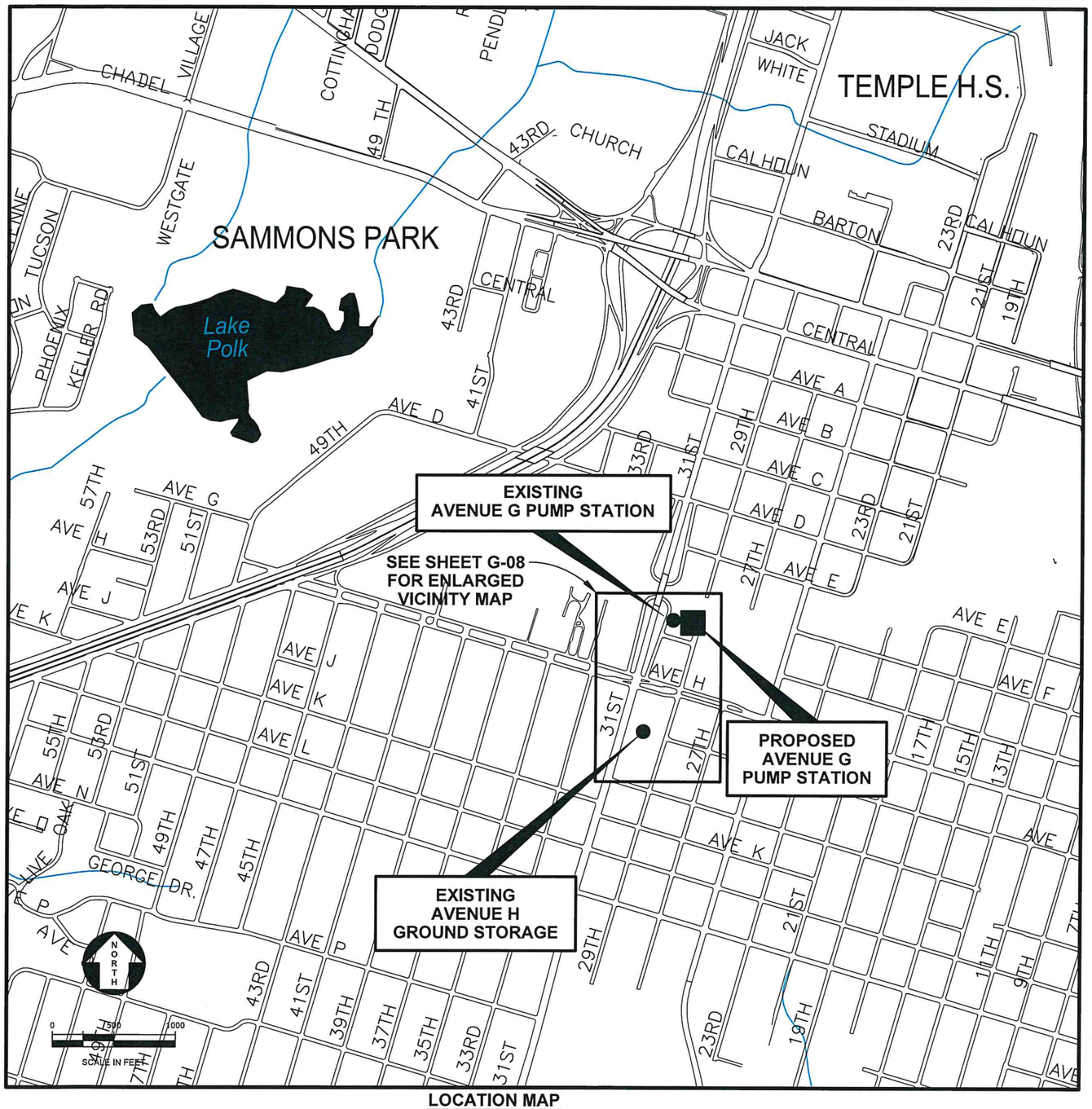
RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION, AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, AND ADEQUACY OF HIS/HER SUBMITAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.

City Engineer — DATE: 07/07/22

STATE OF TEXAS — RICK N. KASBERG — 70163 — REGISTERED PROFESSIONAL ENGINEER

Rick N. Kasberg, P.E. — 7/7/22

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501
Firm Registration No. F-510



LOCATION MAP

INDEX OF SHEETS

NO.	DATE	REVISION	BY

Plot Date: Sep 01, 2022 - 10:16am
Plotted By: dlk

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 11/2/23

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED · PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
GENERAL
TABLE OF CONTENTS

SHEET NO. G-02
OF 10 SHEETS

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\PLANS\G2.dwg

A. BIDDER/CONTRACTOR ELIGIBILITY

1. A NON-MANDATORY PRE-BID CONFERENCE WILL BE HELD PRIOR TO BID OPENING FOR THE PROJECT.

B. GENERAL NOTES

1. ALL CONSTRUCTION FOR THIS PROJECT SHALL CONFORM TO THE REQUIREMENTS OF THE OWNERS DESIGN AND STANDARD DETAILS MANUAL UNLESS EXCEPTED BY THESE CONSTRUCTION PLANS.
2. ALL BARRICADES, SIGNS AND TRAFFIC CONTROL FOR THIS PROJECT SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
3. THE BIDDERS FOR THIS PROJECT SHALL FAMILIARIZE THEMSELVES WITH ALL REQUIREMENTS OF WORKING IN STATE AND CITY RIGHTS-OF-WAY AND EASEMENTS. THE BIDDER SHALL FAMILIARIZE THEMSELVES WITH ALL INSURANCE REQUIREMENTS FOR SAID WORK AND SHALL INCLUDE IN THEIR BIDS, INSURANCE COSTS AND INSURANCE PREMIUMS THAT PROVIDE FOR THE STATE OF TEXAS, THE OWNER AND THE ENGINEER AS ADDITIONAL INSURED UNDER THE CONTRACTOR'S POLICIES.
4. CONTRACTOR SHALL PROVIDE THE OWNER WITH A BARRICADE, SIGNING AND TRAFFIC PLAN WHICH WILL INCLUDE HOW TRAFFIC WILL BE HANDLED DURING CONSTRUCTION. THE BARRICADES, SIGNS AND LIGHTS SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS. THE PLAN SHALL BE PREPARED BY A TEXAS REGISTERED PROFESSIONAL ENGINEER.
5. CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF THREE (3) WORKING DAYS (MONDAY-FRIDAY) IN ADVANCE OF CONSTRUCTION STARTUP, FOLLOWED BY A LETTER OF CONFIRMATION. CONTRACTOR SHALL ALSO GIVE A MINIMUM OF THREE (3) WORKING DAYS (MONDAY-FRIDAY) NOTICE TO ALL PUBLIC UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCEMENT OF WORK.
6. LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS WAS COMPILED FROM RECORD INFORMATION. NO WARRANTY IS IMPLIED AS TO THE ACTUAL LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER IF THERE ARE ANY CONFLICTS BETWEEN PROPOSED AND EXISTING UTILITIES, OR IF THE EXISTING UTILITIES ARE IN ANY WAY DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS, THEN IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER OR OTHER AFFECTED UTILITIES BEFORE PROCEEDING WITH ANY CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESOLVING ALL CONFLICTS AT HIS EXPENSE. THE OWNER WILL CONSIDER ANY CONFLICTS AT SAID LOCATIONS ON A CASE BY CASE BASIS IN ORDER TO DETERMINE IF THE CONTRACTOR SHOULD BE REIMBURSED FOR HIS EXPENSE IN SOLVING SAID CONFLICT.
7. CONTRACTOR SHALL MAKE ALL 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 PREEXISTING CONDITION AT NO ADDITIONAL COST TO THE OWNER.
8. 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.
9. 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. CONTRACTOR TO COOPERATE WITH THE APPLICABLE UTILITY COMPANY IN MAINTAINING ACTIVE SERVICES IN OPERATION.
10. CONTRACTOR SHALL CONTACT THE OWNER FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION. IN ADVANCE OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO OR ALTERED, OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS. THE OWNERS WATER AND WASTEWATER MAINTENANCE RESPONSIBILITY ENDS AT RIGHT-OF-WAY, EASEMENT LINES OR CITY OWNED PROPERTY LINES.
11. CONTRACTOR SHALL REMOVE AND REPLACE 6 INCHES OF TOPSOIL FOR INSTALLATIONS WITHIN NATURAL GROUND.
12. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. IN THE EVENT THAT A FENCE MUST BE REMOVED. THE CONTRACTOR SHALL REPLACE SAID FENCE OR PORTION THEREOF WITH THE SAME TYPE OF FENCING TO A QUALITY OF EQUAL OR BETTER THAN THE ORIGINAL FENCE. THIS WILL NOT BE A SEPARATE PAY ITEM, UNLESS SPECIFICALLY NOTED ON THE CONSTRUCTION DRAWINGS.
13. CONTRACTOR SHALL NOTIFY THE ENGINEER FOR THIS PROJECT FIVE (5) WORKING DAYS PRIOR TO THE NEED FOR CONSTRUCTION CONTROL STAKING. THE ENGINEER WILL PREPARE CUT SHEETS AND PROVIDE THEM TO THE ON-SITE PROJECT REPRESENTATIVE FOR DISTRIBUTION TO THE CONTRACTOR.
14. CONTRACTOR SHALL MAKE AN EXAMINATION OF THE PROJECT SITE AND COMPLETELY FAMILIARIZE HIMSELF WITH THE NATURE AND EXTENT OF THE WORK TO BE ACCOMPLISHED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR ANY WORK MADE NECESSARY BY UNUSUAL CONDITIONS OR OBSTACLES ENCOUNTERED DURING THE PROGRESS OF THE WORK, WHICH CONDITIONS OR OBSTACLES ARE READILY APPARENT UPON A VISIT TO THE SITE. IF THERE ARE ANY QUESTIONS OF THIS REGARD OR IF THERE ARE ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL SITE CONDITIONS THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO THE SUBMISSION OF BIDS.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF HIS MATERIALS AND EQUIPMENT FROM THEFT, VANDALISM, ANIMALS, FIRE, ETC., WHILE SAID MATERIALS AND EQUIPMENT ARE ON THE PROJECT WHETHER STORED OR INSTALLED IN PLACE, UNTIL THE PROJECT HAS BEEN ACCEPTED BY THE OWNER.
16. UPON COMPLETION OF THE PROJECT, THE SITE(S) AS DEFINED HEREIN, SHALL BE CLEANED OF ALL DEBRIS AND LEFT IN A NEAT AND PRESENTABLE CONDITION.
17. IN THOSE CASES WHERE FIXED FEATURES REQUIRE, THE DESIGN SLOPES INDICATED HEREIN AND ON THE CROSS SECTIONS MAY BE MODIFIED IN THE FIELD AS DETERMINED BY THE OWNER.
18. CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT ALL ADJOINING PAVEMENT SECTIONS SHALL BE PROTECTED DURING ALL PHASES OF CONSTRUCTION AND ANY DAMAGES INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
19. WHERE EXISTING PAVEMENT ADJOINS NEW PAVEMENT, THE EXISTING PAVEMENT SHALL BE SAWED TO A NEAT TRANSVERSE LINE TO PERMIT ADEQUATE JOINING.
20. AT TIMES REQUESTED BY THE CONTRACTOR, THE CITY OF TEMPLE STREET DEPARTMENT FORCES WILL REMOVE AND/OR RELOCATE TRAFFIC SIGNS. FIVE (5) DAYS NOTICE WILL BE REQUIRED.
21. EXISTING PAVING, BUILDINGS AND OTHER ITEMS SHOWN ON THE PLANS ARE NOT SPECIFICALLY RELATED TO THE WORK OF THE CONTRACTOR AND IS FOR INFORMATION ONLY.
22. THE PROCUREMENT AND TRANSPORTATION OF WATER REQUIRED FOR INCLUSION IN THE PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR.
23. CONTRACTOR SHALL MAINTAIN ACCESS TO PUBLIC AND PRIVATE FACILITIES AT ALL TIMES AND IN ALL WEATHER CONDITIONS DURING CONSTRUCTION.
24. CONTRACTOR SHALL CONTROL DUST CAUSED BY THE WORK AND COMPLY WITH POLLUTION CONTROL REGULATIONS OF GOVERNING AUTHORITIES.
25. CONTRACTOR SHALL REMOVE BUILT UP MATERIAL ON ADJACENT PUBLIC ROADWAYS RESULTING FROM HIS WORK. CLEANING TO BE AT LEAST ONCE A DAY.
26. CONTRACTOR SHALL NOT STOCKPILE MATERIAL WITHIN THE 100 YEAR FLOOD PLAIN.
27. ANY EXISTING PAVEMENT, CURBS, AND/OR SIDEWALK DAMAGED OR REMOVED BY THE CONTRACTOR THAT ARE NOT A PART OF THIS CONTRACT ARE TO BE REPAIRED BY THE CONTRACTOR TO AT LEAST THE PREEXISTING CONDITION AT HIS EXPENSE BEFORE ACCEPTANCE OF THE WORK.
28. MAKE CONNECTION BETWEEN NEW AND EXISTING ASPHALT STREETS BY REMOVING EXISTING STREET FROM THE END OF EXISTING PAVEMENT UNTIL FULL DEPTH BASE AND HMAC ARE ENCOUNTERED AND HMAC APPEARS TO BE IN SOUND CONDITION. PROVIDE EXPANSION JOINTS AND DOWELS WHERE CONNECTING EXISTING CURB TO NEW CONSTRUCTION.

C. CONSTRUCTION LAYOUT/PROJECT COORDINATION

1. THE OWNER/ENGINEER WILL PROVIDE INITIAL STAKING OF SURVEY CONTROL POINTS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SURVEYING FOR CONSTRUCTION STAKING OF IMPROVEMENTS.
2. SURVEY CONTROL POINTS PROVIDED BY THE ENGINEER THAT ARE DESTROYED BY THE CONTRACTOR WILL BE REPLACED BY THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR. SURVEY CREW RATES WILL BE CHARGED AT A RATE OF $150.00/HOUR.
3. CONTRACTOR SHALL LOCATE, PROTECT AND MAINTAIN BENCHMARKS, MONUMENTS AND CONTROL POINTS. RE-ESTABLISHMENT OF DISTURBED OR DESTROYED ITEMS SHALL BE ACCOMPLISHED BY A TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR AT NO COST TO THE OWNER.
4. PRE-CONSTRUCTION CONFERENCE
   A. PRIOR TO BEGINNING WORK ON THE PROJECT AND SOON AFTER THE AWARD OF CONTRACT, A CONFERENCE WILL BE HELD AMONG THE REPRESENTATIVES OF THE OWNER, THE ENGINEER, THE CONTRACTOR AND ANY SUBCONTRACTOR THAT WILL BE INVOLVED IN THE WORK. AT THAT TIME THE CONTRACTOR SHALL SUBMIT CHARTS OR BRIEFS, OUTLINING THE MANNER OF EXECUTION OF THE WORK THAT IS INTENDED IN ORDER TO COMPLETE THE SPECIFIED WORK WITHIN THE ALLOTTED TIME. THIS CONFERENCE WILL MORE COMPLETELY ESTABLISH THE SEQUENCE OF WORK TO BE FOLLOWED AND ESTABLISH THE ESTIMATED PROGRESS SCHEDULE FOR COMPLETION OF THE VARIOUS TASKS.
   B. IN ADDITION, AT THIS CONFERENCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING THE ENGINEER WITH ALL OF THE FOLLOWING, AS SPECIFIED HEREIN OR AS DIRECTED BY THE ENGINEER:
      i. SAMPLES OF ALL MATERIALS TO BE USED ON THE PROJECT WITH IDENTIFICATION AS TO PRODUCT NAME; NAME, LOCATION, PHONE NUMBER (INCLUDING AREA CODE) AND MAILING ADDRESS OF PRODUCT SOURCE AND MANUFACTURER, IF DIFFERENT FROM SOURCE; CONTENT OF PRODUCT; AMOUNT OF EACH INGREDIENT IN THE PRODUCT, AND MANUFACTURER'S DIRECTIONS AS TO USE AND APPLICATION OF THE PRODUCT, IF APPLICABLE.
      ii. MANUFACTURER'S LITERATURE OF ALL MATERIALS AND EQUIPMENT TO BE INSTALLED ON THE PROJECT.
5. THE PLANS FOR THIS PROJECT SHOW PROPOSED ELEVATIONS, SLOPES AND DIMENSIONS THAT ARE INTENDED FOR ACTUAL PLACEMENT. HOWEVER, THERE MAY BE SOME INSTANCES WHERE EXISTING CONDITIONS MAKE IT IMPRACTICAL TO ACHIEVE THE IDEAL. IN THOSE INSTANCES, THE OWNER WILL ASSIST THE CONTRACTOR IN MAKING PROPER FIELD CHANGES TO BETTER ACCOUNT FOR UNFORESEEN FIELD CONDITIONS.
6. THE ENGINEER FOR THE PROJECT WILL MARK THE LIMITS OF CONSTRUCTION PRIOR TO COMMENCEMENT OF THE PROJECT. PRIVATE PROPERTY SHALL BE OFF LIMITS UNLESS WRITTEN PERMISSION IS GIVEN TO THE CONTRACTOR BY THE OWNER. THE OWNER WILL NOT BE RESPONSIBLE FOR ANY CONTRACTOR OPERATIONS OFF OF THE PROJECT SITE.

D. TESTING AND SUBMITTALS

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING MATERIAL SAMPLES AS WELL AS ANY MANUFACTURERS LITERATURE OF MATERIALS USED ON THIS PROJECT AS REQUIRED BY THE ENGINEER. ANY COSTS ASSOCIATED WITH ANY SAMPLING AND TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THESE COSTS SHALL BE CONSIDERED AS INCIDENTAL AND THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADDITIONAL COMPENSATION.
2. CONTRACTOR SHALL COORDINATE ALL MATERIALS TESTING WITH THE OWNERS CONSTRUCTION REPRESENTATIVE, INCLUDING SOIL DENSITY TESTS AND RELATED SOILS ANALYSIS. TESTS TO BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY UNDER CONTRACT WITH THE OWNER, AT THE FREQUENCY, TIME AND LOCATION AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS. A COPY OF THE TEST RESULTS SHALL BE FORWARDED TO THE OWNER, THE OWNERS REPRESENTATIVE, AND THE CONTRACTOR. TESTS WHICH SHOW UNSATISFACTORY RESULTS SHALL BE REPEATED AT THE EXPENSE OF THE CONTRACTOR SUBSEQUENT TO THE CONTRACTOR'S REMEDIAL ACTIVITIES.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR AND PAY FOR ALL CHARGES OF TESTING LABORATORIES FOR SERVICES IN CONNECTION WITH INITIAL TESTS MADE ON ALL IMPORTED MATERIALS TO THE PROJECT SITES INCLUDING BUT NOT LIMITED TO EMBEDMENT MATERIALS, FILL MATERIAL, BACKFILL MATERIAL, SELECT MATERIAL, CRUSHED LIMESTONE BASE, SUBBASE, CONCRETE, STEEL, WOOD FORMS, LIQUID ASPHALT, AGGREGATE, WATER, CEMENT, CURING COMPOUND, GUARD RAIL, HOT MIX, ETC.
   THE TESTS FOR WHICH THE CONTRACTOR WILL TYPICALLY BE RESPONSIBLE ARE ATTERBERG LIMITS, SIEVE ANALYSIS, PLASTICITY INDICES, MIX DESIGN, CALIFORNIA BEARING RATIOS, TRIAXIAL TESTING, PROCTORS (MOISTURE DENSITY CURVES) AND ALL TESTS REQUIRED BY THE SPECIFICATIONS THAT PROVE THE MATERIAL BROUGHT TO THE PROJECT SITES MEETS OR EXCEEDS THE SPECIFICATIONS AND CONTRACT DOCUMENTS. THE OWNER WILL PAY ALL THE CHARGES OF TESTING LABORATORIES FOR SERVICES IN CONNECTION WITH IN PLACE FIELD DENSITIES, CONCRETE CYLINDERS TESTING, HMAC DENSITY TESTS AND ANY IN PLACE TEST REQUIRED FOR QUALITY ASSURANCE. RETESTING AFTER FAILURE OF INPLACE TESTS SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

E. CONCRETE FOR CONSTRUCTION

1. SEE GENERAL NOTES IN STRUCTURAL SHEETS.

F. JOB SITE SAFETY NOTES

1. ALL CONSTRUCTION OPERATIONS FOR THIS PROJECT SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). COPIES OF THE OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE; INFORMATION AND RELATED REFERENCE MATERIALS MAY BE OBTAINED FROM OSHA: 903 SAN JACINTO; AUSTIN, TEXAS.
2. THESE PLANS, PREPARED BY KASBERG, PATRICK & ASSOCIATES, LP, DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR HIS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF KASBERG, PATRICK & ASSOCIATES, LP, REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THE WORK.
3. CONTRACTOR SHALL PROVIDE A TRENCH SAFETY PLAN TO THE OWNER IF APPLICABLE AS REQUIRED BY THE LAWS OF THE STATE OF TEXAS. IMPLEMENTATION OF THE SUBMITTED TRENCH SAFETY PLAN SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ALL JOB SITE SAFETY, FOR MANAGEMENT OF JOB SITE PERSONNEL, FOR SUPERVISION OF THE USE OF JOB SITE EQUIPMENT AND FOR DIRECTION OF ALL CONSTRUCTION PROCEDURES, METHODS AND ELEMENTS REQUIRED TO COMPLETE THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
5. BLASTING IS NOT PERMITTED ON THIS PROJECT.
6. IN ADDITION TO OTHER SAFETY REQUIREMENTS, ALL TRUCKS USED FOR HAULING MATERIAL AND/OR EQUIPMENT TO AND/OR FROM THIS PROJECT SHALL BE EQUIPPED WITH AN AUDIBLE BACKUP WARNING DEVICE THAT IS IN GOOD OPERATING CONDITION.

G. ENVIRONMENTAL NOTES

1. CONTRACTOR SHALL PROVIDE AND MAINTAIN SANITARY FACILITIES ON THIS PROJECT FOR EMPLOYEES.
2. CONTRACTOR SHALL NOT PLACE ASPHALT PRODUCTS ON THE GROUND WITHIN 48 HOURS OF FORECASTED RAIN.
3. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS REGARDING EXCESS AND WASTE MATERIAL, INCLUDING METHODS OF HANDLING AND DISPOSAL.
4. CONTRACTOR SHALL LOCATE MATERIAL STORAGE AREAS AWAY FROM STORM WATER CONVEYANCE SYSTEMS. CONTRACTOR SHALL PROVIDE PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS AND OTHER POTENTIALLY TOXIC MATERIALS.
5. NO BURNING IS ALLOWED WITHOUT PRIOR WRITTEN APPROVAL FROM APPLICABLE GOVERNMENT AGENCIES AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR MAY HAUL CLEARED VEGETATION TO AN ACCEPTABLE OFF-SITE LOCATION WITH WRITTEN APPROVAL BY THE OWNER'S REPRESENTATIVE. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL DESIGNATE TO THE OWNER'S REPRESENTATIVE WHICH METHOD WILL BE USED FOR DISPOSAL OF CLEARED VEGETATION.
6. FUEL STORAGE IS NOT ALLOWED ON THIS PROJECT.
7. CONTRACTOR SHALL ADVISE OWNER IMMEDIATELY, VERBALLY AND IN WRITING, OF ANY FUEL OR TOXIC MATERIAL SPILLS ONTO THE PROJECT CONSTRUCTION AREA AND THE ACTIONS TO BE TAKEN TO REMEDY THE PROBLEM.
8. CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF HIS FUELS, MATERIALS AND CONTAMINATED EXCAVATIONS IN A LEGALLY APPROVED MANNER.
9. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE ENVIRONMENTAL LAWS.
10. IN THE EVENT THAT SITE GRADING AND/OR EXCAVATION REVEALS WHAT MIGHT BE HAZARDOUS MATERIALS, ALL CONSTRUCTION OPERATIONS SHALL CEASE. THE FIRE DEPARTMENT, FIRE CHIEF AND THE ENGINEER SHALL BE CALLED TO THE SITE TO EVALUATE THE SITUATION. IF REQUIRED, THE OWNER WILL AUTHORIZE THE HAZARDOUS MATERIALS RESPONSE COMPANY WHICH IS UNDER CONTRACT WITH THE OWNER TO BEGIN REMEDIATION OF THE SITUATION. AT THAT SAME TIME, THE OWNER WILL DETERMINE WHAT CONSTRUCTION ACTIVITIES MAY CONTINUE THAT WOULD NOT ENDANGER CONSTRUCTION WORKERS OR CITIZENS.

H. PAVEMENT STRUCTURE SPECIFICATIONS / NOTES

1. NATURAL SUBGRADE THAT IS DISTURBED SHALL BE COMPACTED TO AT LEAST 95% OF TEX-113-E MAXIMUM DRY DENSITY AT A MOISTURE CONTENT RANGE OF -1.0% TO +2.0% OF OPTIMUM MOISTURE CONTENT.

I. BID SCHEDULE NOTES

1. THE BID SCHEDULE CONTAINS A BID ITEM FOR PAYMENT TO THE CONTRACTOR FOR PROVIDING RECORD DRAWINGS (AS-BUILTS) FOR THIS PROJECT. FINAL RETAINAGE FOR THE PROJECT WILL NOT BE RELEASED BY THE OWNER UNTIL THE RECORD DRAWINGS ARE DELIVERED TO THE ENGINEER IN AN ACCEPTABLE, LEGIBLE CONDITION.

J. WASTEWATER NOTES

1. ALL WASTEWATER PIPE SHALL BE SDR 26 WITH PIPE STIFFNESS OF 115 PSI, UNLESS OTHERWISE NOTED.
2. ALL WASTEWATER PIPE SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, CHAPTER 317.
3. ALL TESTING SHALL BE IN COMPLIANCE WITH CURRENT TCEQ REGULATIONS, AND TECHNICAL SPECIFICATIONS.

K. WATER LINE NOTES

1. ALL TESTING SHALL BE IN COMPLIANCE WITH CURRENT TCEQ REGULATIONS, AND TECHNICAL SPECIFICATIONS.
2. ALL WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT TCEQ REGULATIONS, CHAPTER 290.
3. ALL FIRE HYDRANTS TO BE CITY OF TEMPLE STANDARD FIRE HYDRANT TYPE B, UNLESS OTHERWISE NOTED.
4. PIPE MATERIAL FOR 3" AND SMALLER WATER LINES SHALL BE DR-21 PVC, CLASS 200. PIPE MATERIAL FOR 4-INCH TO 12-INCH WATER LINES SHALL BE PVC, AWWA C900, CLASS 150, DR-18 OR CLASS 250 DUCTILE IRON PIPE. PIPE MATERIAL FOR 14-INCH AND LARGER WATER LINES SHALL BE PVC, AWWA C905, CLASS 150, DR-18 OR CLASS 250 DUCTILE IRON PIPE.
5. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT A PLAN FOR TIE-INS AND FLUSHING FOR APPROVAL BY OWNER. SCHEDULE SHALL BE CONFIRMED WITH THE CITY 48 HOURS PRIOR TO ACTIVITY.

L. PROJECT DOCUMENTATION

1. ALL BOUNDARY AND TOPOGRAPHIC SURVEY SERVICES FOR THIS PROJECT WERE PROVIDED BY ALL COUNTY SURVEYING, INC. OF TEMPLE, TEXAS.

M. BNSF RAILROAD NOTES

1. CONTRACTOR SHALL NOTIFY THE OWNER/ENGINEER AT LEAST FIFTEEN (15) BUSINESS DAYS PRIOR TO ENTERING BNSF RR ROW. THE OWNER WILL NOTIFY BNSF ROADMASTER, JACOB COOK AT JACOB.COOK@BNSF.COM TELEPHONE 254-771-4676, AT LEAST TEN (10) BUSINESS DAYS PRIOR TO THE CONTRACTORS SCHEDULED DATE FOR ENTERING THE BNSF RR ROW. IN THE EVENT OF EMERGENCY, THE OWNER SHALL NOTIFY LICENSOR OF LICENSEE'S ENTRY ONTO THE PREMISES AT THE TELEPHONE NUMBER ABOVE AS SOON AS PRACTICABLE AND PROMPTLY THEREAFTER FOLLOW UP WITH WRITTEN NOTICE OF SUCH ENTRY.
2. THE OWNER WILL PROVIDE THE CONTRACTOR WITH A COPY OF THE BNSF PERMITS (TEMPORARY PERMIT AND GENERAL LICENSE PERMIT) AT THE PRE-CONSTRUCTION CONFERENCE. THE CONTRACTOR'S ON-SITE SUPERVISORS SHALL RETAIN/MAINTAIN A FULLY EXECUTED COPY OF THESE PERMITS AT ALL TIMES WHILE WORKING WITHIN BNSF RR ROW.

NO.	DATE	REVISION	BY

Plot Date: Jun 14, 2022 - 11:20am
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY BVB
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
GENERAL CONSTRUCTION NOTES

SHEET NO. G-03
OF 10 SHEETS

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TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. At a minimum, construction for public water systems must always meet TCEQ's "Rules and Regulations for Public Water Systems."

2. All newly installed pipes and related products must conform to American National Standards Institute (ANSI)/NSF International Standard 61 and must be certified by an organization accredited by ANSI [§290.44(a)(1)].

3. Plastic pipe for use in public water systems must bear the NSF International Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less [§290.44(a)(2)].

4. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply [§290.44(a)(3)].

5. All water line crossings of wastewater mains shall be perpendicular [§290.44(e)(4)(B)].

6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface [§290.44(a)(4)].

7. The maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures is 0.25 percent [§290.44(b)].

8. The contractor shall install appropriate air release devices with vent openings to the atmosphere covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent [§290.44(d)(1)].

9. The contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation [§290.44(f)(1)].

10. When waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the waterline shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested [§290.44(f)(2)].

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

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

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

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

      Where:
      - L = the quantity of makeup water in gallons per hour,
      - S = the length of the pipe section being tested, in feet,
      - D = the nominal diameter of the pipe in inches, and
      - P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

12. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet §290.44(e)(1)-(4).

13. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant [§290.44(e)(5)].

14. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction [§290.44(e)(6)].

15. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line [§290.44(e)(7)].

16. Waterlines shall not be installed closer than ten feet to septic tank drainfields [§290.44(e)(8)].

17. The contractor shall disinfect the new waterlines in accordance with AWWA Standard C-651-14 or most recent, then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer [§290.44(f)(3)].

18. Dechlorination of disinfecting water shall be in strict accordance with current AWWA Standard C655-09 or most recent.

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NO.	DATE	REVISION	BY

Plot Date: Jun 14, 2022 - 11:19am
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

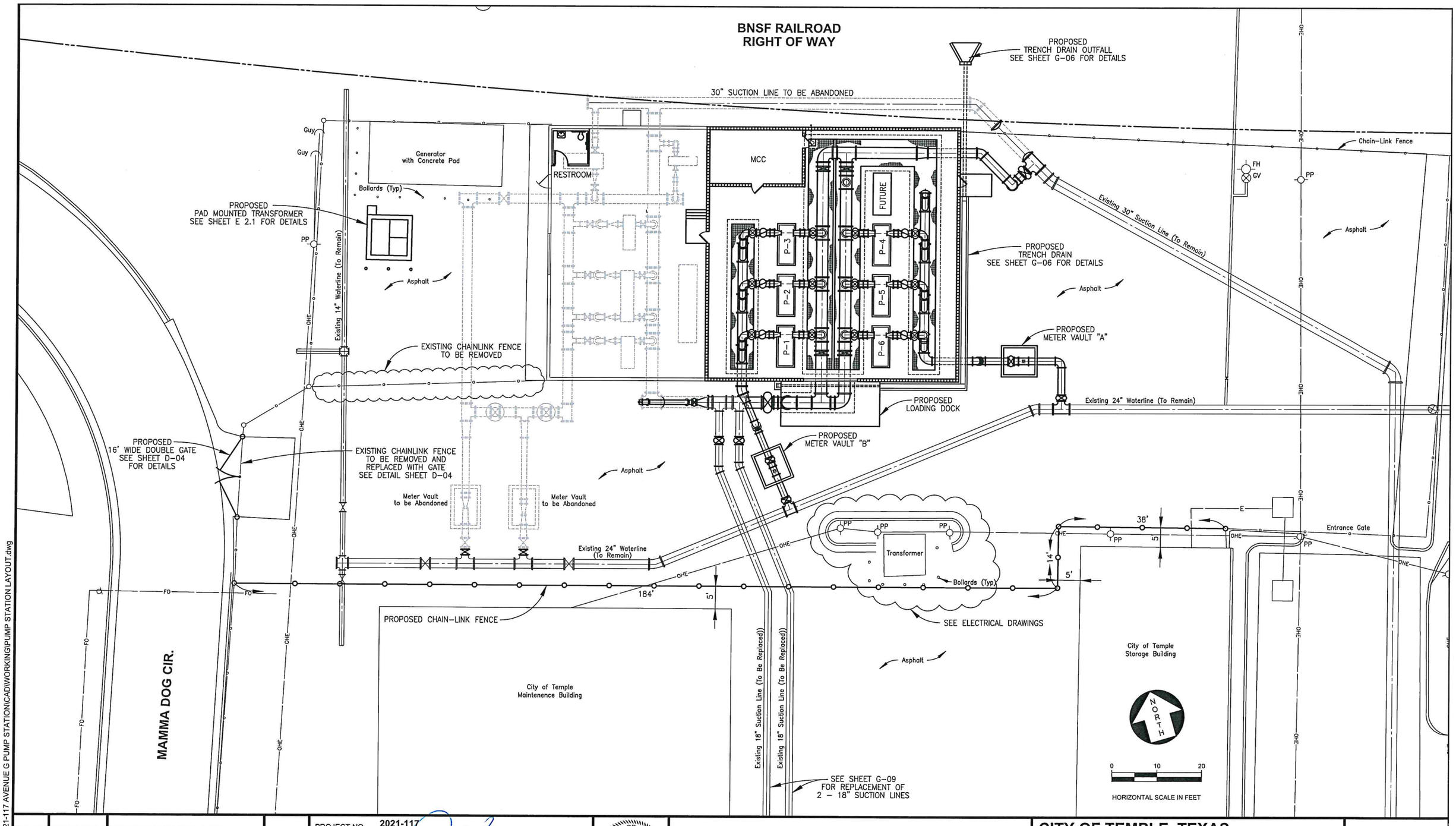
KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS

GENERAL
TCEQ WATER GENERAL CONSTRUCTION NOTES

SHEET NO. G-04
OF 10 SHEETS



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NO.	DATE	REVISION	BY

Plot Date: Aug 30, 2022 - 6:42pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED
PROFESSIONAL ENGINEER

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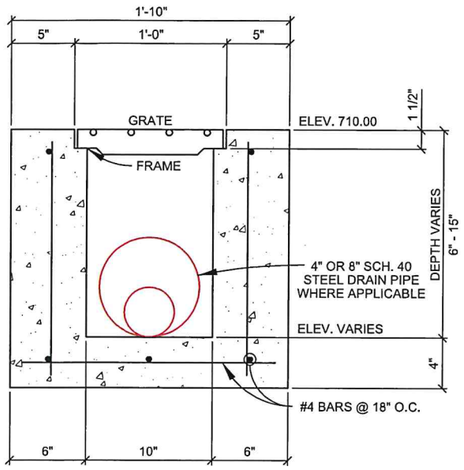
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS
PUMP STATION
PUMP STATION LAYOUT

SHEET NO. G-05
OF 10 SHEETS



TRENCH DRAIN CHANNEL DETAIL

CONCRETE FOR TRENCH DRAIN CHANNEL SHALL BE 3500 P.S.I.

BNSF RAILROAD RIGHT-OF-WAY
(SEE NOTE 3 & 4)

RAILROAD TEMPORARY
OCCUPANCY SPACE FOR
PROPOSED BUILDING

8" DRAIN LINE
WITH CONC. HEADWALL
WITH FLARED WINGS
F.L. ELEV. 708.65
SEE SHEET D-07

Chain-Link Fence

Generator
with Concrete Pad
709.0

Bollards (Typ)

PROPOSED
PAD MOUNTED
TRANSFORMER

Asphalt

Existing
Pump Station
F.F. Elev. 708.8

PROPOSED
PUMP STATION
F.F. ELEV. 710.50

30 L.F. - 8" SCH. 40
STEEL DRAIN PIPE
SLOPE = -0.50%

5' X 7'
CONCRETE RAMP

TRENCH DRAIN
F.L. ELEV. 708.80

EP

TRANSFORMER

FH
GV
PP

710
711
712
711.0
712.0
713.0
709.0

PROPOSED
TRENCH DRAIN CHANNEL
SEE DETAIL THIS SHEET

PROPOSED
METER VAULT "A"

22 L.F. - 4" SCH. 40
STEEL DRAIN PIPE

TRENCH DRAIN
F.L. ELEV. 709.50

TRENCH DRAIN
F.L. ELEV. 709.40

TRENCH DRAIN
F.L. ELEV. 709.20

PROPOSED
LOADING DOCK
F.F. ELEV. 710.50

Existing
Chainlink Fence
TO BE REMOVED

Asphalt

PROPOSED
METER VAULT "B"

EXISTING CURB & GUTTER,
POWER POLES, TRANSFORMER &
BOLLARDS TO BE REMOVED

Transformer

Bollards (Typ)

Shed

OHE

FO

MAMMA DOG CIR.

NOTES:

1. TRENCH DRAIN GRATE SHALL BE SERIES 6842 AS MANUFACTURED BY U.S. FOUNDRY & MANUFACTURING CORP. OR APPROVED EQUAL. GRATE AND FRAME SHALL BE GALVANIZED. END PLATES SHALL BE FURNISHED AND INSTALLED AT ALL LOCATIONS DENOTED WITH "EP" FOR A TOTAL OF 4 END PLATES.
2. CONCRETE FOR TRENCH DRAIN CHANNEL SHALL BE 3500 P.S.I., REINFORCING SHALL BE #4 BARS AT 18" ON CENTER.
3. CONTRACTOR SHALL NOTIFY THE OWNER/ENGINEER AT LEAST FIFTEEN (15) BUSINESS DAYS PRIOR TO ENTERING BNSF RR ROW. THE OWNER WILL NOTIFY BNSF ROADMASTER, JACOB COOK AT JACOB.COOK@BNSF.COM, TELEPHONE 254-771-4676, AT LEAST TEN (10) BUSINESS DAYS PRIOR TO THE CONTRACTORS SCHEDULED DATE FOR ENTERING THE BNSF RR ROW. IN THE EVENT OF EMERGENCY, THE OWNER SHALL NOTIFY LICENSOR OF LICENSEE'S ENTRY ONTO THE PREMISES AT THE TELEPHONE NUMBER ABOVE AS SOON AS PRACTICABLE AND PROMPTLY THEREAFTER FOLLOW UP WITH WRITTEN NOTICE OF SUCH ENTRY.
4. THE OWNER WILL PROVIDE THE CONTRACTOR WITH A COPY OF THE BNSF PERMITS (TEMPORARY OCCUPANCY PERMIT AND GENERAL LICENSE PERMIT) AT THE PRE-CONSTRUCTION CONFERENCE. THE CONTRACTOR'S ON-SITE SUPERVISORS SHALL RETAIN/MAINTAIN A FULLY EXECUTED COPY OF THESE PERMITS AT ALL TIMES WHILE WORKING WITHIN BNSF RR ROW.

NORTH

0 10 20

HORIZONTAL SCALE IN FEET

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\PUMP STATION GRADING.dwg

NO.	DATE	REVISION	BY

Plot Date:
Aug 30, 2022 - 6:46pm
Plotted By:
DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED
PROFESSIONAL ENGINEER

KPA

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CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS

PUMP STATION
PUMP STATION GRADING

SHEET NO. G-06
OF 10 SHEETS

NOTES:

1. CONTRACTOR SHALL NOTIFY THE OWNER/ENGINEER AT LEAST FIFTEEN (15) BUSINESS DAYS PRIOR TO ENTERING BNSF RR ROW. THE OWNER WILL NOTIFY BNSF ROADMASTER, JACOB COOK AT JACOB.COOK@BNSF.COM, TELEPHONE 254-771-4676, AT LEAST TEN (10) BUSINESS DAYS PRIOR TO THE CONTRACTORS SCHEDULED DATE FOR ENTERING THE BNSF RR ROW. IN THE EVENT OF EMERGENCY, THE OWNER SHALL NOTIFY LICENSOR OF LICENSEE'S ENTRY ONTO THE PREMISES AT THE TELEPHONE NUMBER ABOVE AS SOON AS PRACTICABLE AND PROMPTLY THEREAFTER FOLLOW UP WITH WRITTEN NOTICE OF SUCH ENTRY.
2. THE OWNER WILL PROVIDE THE CONTRACTOR WITH A COPY OF THE BNSF PERMITS (TEMPORARY OCCUPANCY PERMIT AND GENERAL LICENSE PERMIT) AT THE PRE-CONSTRUCTION CONFERENCE. THE CONTRACTOR'S ON-SITE SUPERVISORS SHALL RETAIN/MAINTAIN A FULLY EXECUTED COPY OF THESE PERMITS AT ALL TIMES WHILE WORKING WITHIN BNSF RR ROW.

NORTH

BNSF RIGHT-OF-WAY

Existing 12" Waterline

Existing 8" Wastewater Line

8" WW

12" W

BNSF RAILROAD RIGHT-OF-WAY

MILE MARKER
219+0845 FEET
TRACK MARKER 11565+47

15" WW

Existing 15" Wastewater Line

Manhole

BNSF RIGHT-OF-WAY

90°

25'

14.8'

RAILROAD TEMPORARY OCCUPANCY SPACE FOR PROPOSED BUILDING (BNSF APPLICATION 22W-13244)

76.80'

7.15'

GROUND ROD (TYP)

UG

8" DRAIN LINE WITH CONC. HEADWALL WITH FLARED WINGS & ENERGY DISSIPATERS F.L. ELEV. 708.65

8" DRAIN LINE F.L. ELEV. 708.80

5.60'

10'

1.40'

PROPOSED AVENUE G PUMP STATION EXPANSION

PROPOSED TRENCH DRAIN

EXISTING TRENCH DRAIN TO BE REMOVED

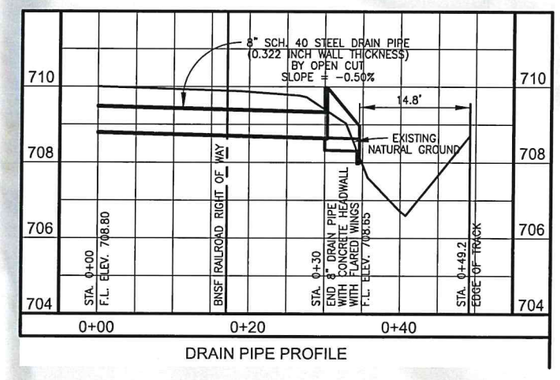
6" WW

Existing 6" Wastewater Line

OHE

31st STREET

MAMA DOG CIR.



DRAIN PIPE PROFILE

0 10 20

HORIZONTAL SCALE IN FEET

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\BNSF RR PERMIT.dwg

NO.	DATE	REVISION	BY

Plot Date: Aug 09, 2022 - 12:34pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED PROFESSIONAL ENGINEER

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KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS

BNSF RAILROAD PERMIT CONDITIONS

SHEET NO. G-07
OF 10 SHEETS

LEGEND

30" BFV/18" GV ⊗ BUTTERFLY VALVE/GATE VALVE FOR SHUT-OFF OF SUCTION LINES

NOTE:

1. CONNECTION TO EXISTING 18" AND 30" SUCTION LINES PROPOSED NEAR THE NEW PUMP STATION WILL REQUIRE THESE LINES TO BE ISOLATED AND DEWATERED. ISOLATION OF THESE LINES WILL REQUIRE THE EXISTING PUMP STATION TO BE OFFLINE DURING THIS WORK. THEREFORE, THIS WORK MUST BE CONDUCTED DURING LOW WATER DEMAND PERIODS. SEE SHEET P-16 FOR MORE DETAILS CONCERNING SEQUENCE OF CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER/ENGINEER AT LEAST TEN (10) BUSINESS DAYS PRIOR TO BEGINNING THIS WORK. THE CITY OF TEMPLE WATER DEPT. STAFF WILL EXERCISE ALL VALVES REQUIRED TO ISOLATE THE SUCTION LINES. THE CONTRACTOR SHALL FURNISH ALL NECESSARY DEWATERING EQUIPMENT REQUIRED TO ALLOW FOR THE CONNECTION OF THE PROPOSED 18" DIP SUCTION LINES TO THE PROPOSED 30" X 18" DIP TEES SHOWN ON SHEET G-09 AND INSTALLATION OF PLUGS/CAPS AS PROPOSED FOR THE EXISTING 30" C-301 PRESTRESSED CONCRETE PIPE SHOWN ON SHEET P-07. THE PROPOSED WET TAP AND GATE VALVE FOR CONNECTING THE PROPOSED 24" DIP SUCTION LINE TO THE EXISTING 30" C-301 SUCTION LINE SHOWN ON SHEET P-07 SHALL BE PERFORMED BY CERTIFIED TECHNICIANS WITH THOMPSON PIPE. CONTRACTOR SHALL FIELD LOCATE ALL EXISTING SUCTION AND DISCHARGE LINES PRIOR TO BEGINNING CONSTRUCTION ON THIS PROJECT. CONTRACTOR SHALL SUBMIT CONSTRUCTION SEQUENCE PLAN FOR ALL CONNECTIONS TO EXISTING PIPING INCLUDING ANTICIPATED DURATION OF TIME REQUIRED TO COMPLETE CONNECTIONS.

31st St.

EXISTING AVENUE H GROUND STORAGE #1

EXISTING AVENUE H GROUND STORAGE #2

CITY OF TEMPLE

30" BFV

18" GV

30" BFV

18" GV

12" GV

Avenue H

Avenue H

Mama Dog Cir.

31st St.

GOBER HOUSE

EXISTING 18" SUCTION LINE IN THIS AREA TO BE REPLACED (SEE SHEET G-09)

EXISTING AVENUE G PUMP STATION

29th St.

RICHARD THOMPSON

LORRAINE BYNUM

Avenue I

CORNERSTONE CHRISTIAN FELLOWSHIP OF TEMPLE

FRANK JR & CAROL HAJDA

Jack Baskin St.

Avenue G

NEW AVENUE G PUMP STATION

SCOTT & WHITE MEMORIAL HOSPITAL

27th St.

SANTA FE HOSPITAL

0 50 100

SCALE IN FEET

NO.	DATE	REVISION	BY
1	9-16-2022	ADDENDUM NO. 1	RNK

Plot Date: Sep 16, 2022 - 11:33am
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 9/16/23

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED PROFESSIONAL ENGINEER

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CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS

AVE. H GROUND STORAGE & PUMP STATION VICINITY MAP

SHEET NO. G-08
OF 10 SHEETS

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\G-08.dwg

W. AVENUE G

CITY OF TEMPLE
MAINTENANCE BUILDING

EXISTING CONCRETE PAVING TO BE REMOVED AND REPLACED WITH NEW ASPHALT AFTER COMPLETION OF NEW 18" SUCTION LINES

STA. 0+50
BEGIN REMOVAL & REPLACEMENT
2 – 18" CIP SUCTION LINES
SEE NOTES THIS SHEET

EXISTING WEST 18" CIP SUCTION LINE

EXISTING EAST 18" CIP SUCTION LINE

EXISTING CONCRETE PAD TO BE REMOVED

EXISTING PRE-CAST VAULT TO BE REMOVED & SALVAGED

EXISTING 5 – PIPE BOLLARDS TO BE REMOVED

EXISTING 24" CIP DISCHARGE LINE

STA. 2+15
2 – 18" GATE VALVES

STA. 2+23.70
END REMOVAL & REPLACEMENT
2 – 18" CIP SUCTION LINES
CONNECT TO PROPOSED
2 – 30" X 18" TEES

EXISTING AVENUE G PUMP STATION

NEW AVENUE G PUMP STATION

Transformer

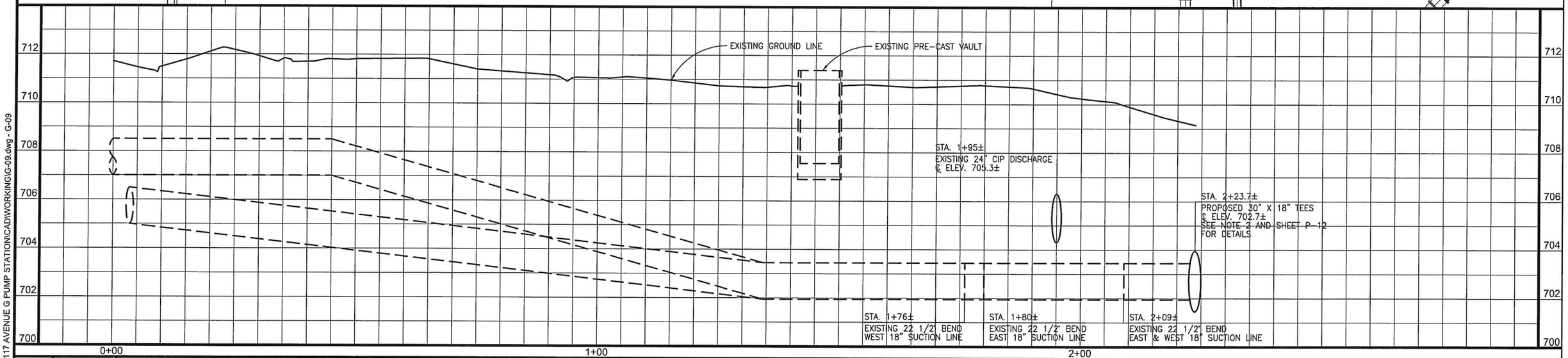
0+00 1+00 2+00 2+09.15 1+34.18 1+78.89

NOTES:

1. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF THE TWO (2) – EXISTING 18" CIP SUCTION LINES. BOTH SUCTION LINES SHALL BE REMOVED TO THE EXTENTS SHOWN AND REPLACED WITH NEW 18" DIP CLASS 200 PIPE. CONNECTIONS TO THE EXISTING 18" CIP SHALL BE MADE WITH SOLID SLEEVES (FOUR (4) TOTAL). CONTRACTOR SHALL FURNISH THE NECESSARY VERTICAL AND HORIZONTAL BENDS TO AVOID CONFLICT AT THE CROSSING OF THE EXISTING 24" CIP DISCHARGE LINE. CONTRACTOR SHALL BASE THEIR BID ON FURNISHING AND INSTALLING THE FOLLOWING:
   - 4 – 18" SOLID SLEEVES FOR CONNECTION TO EXISTING 18" CIP
   - 4 – 45° MJ BENDS
   - 4 – 22 1/2° MJ BENDS
   - 2 – 18" MJ GATE VALVES NEAR STA. 2+15
   - 350 L.F. – 18" DIP CLASS 200 PIPE
   - SEE SECTION K–K ON SHEET P–12 FOR CONTINUATION OF 18" DIP SUCTION LINES REMOVAL AND REPLACEMENT.
2. THE NEW PUMP STATION MUST BE IN FULL OPERATION AND ACCEPTED BY THE OWNER PRIOR TO BEGINNING WORK ON REMOVING AND REPLACING THE TWO (2) EXISTING 18" CIP SUCTION LINES. SEE SHEET P–16 FOR SEQUENCE OF CONSTRUCTION.

0 10 20
HORIZONTAL GRAPHIC SCALE IN FEET

0 2 4
VERTICAL GRAPHIC SCALE IN FEET



NO.	DATE	REVISION	BY

Plot Date: Aug 09, 2022 - 12:42pm
Plotted By: DKRUMNOW

PROJECT NO. 2021 - 145
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED PROFESSIONAL ENGINEER

KPA
KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS

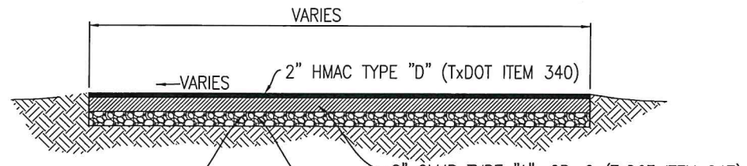
REMOVAL AND REPLACEMENT OF 2 - 18" CIP SUCTION LINES

SHEET NO. G-09
OF 10

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CADWORKING\G-09.dwg - G-09

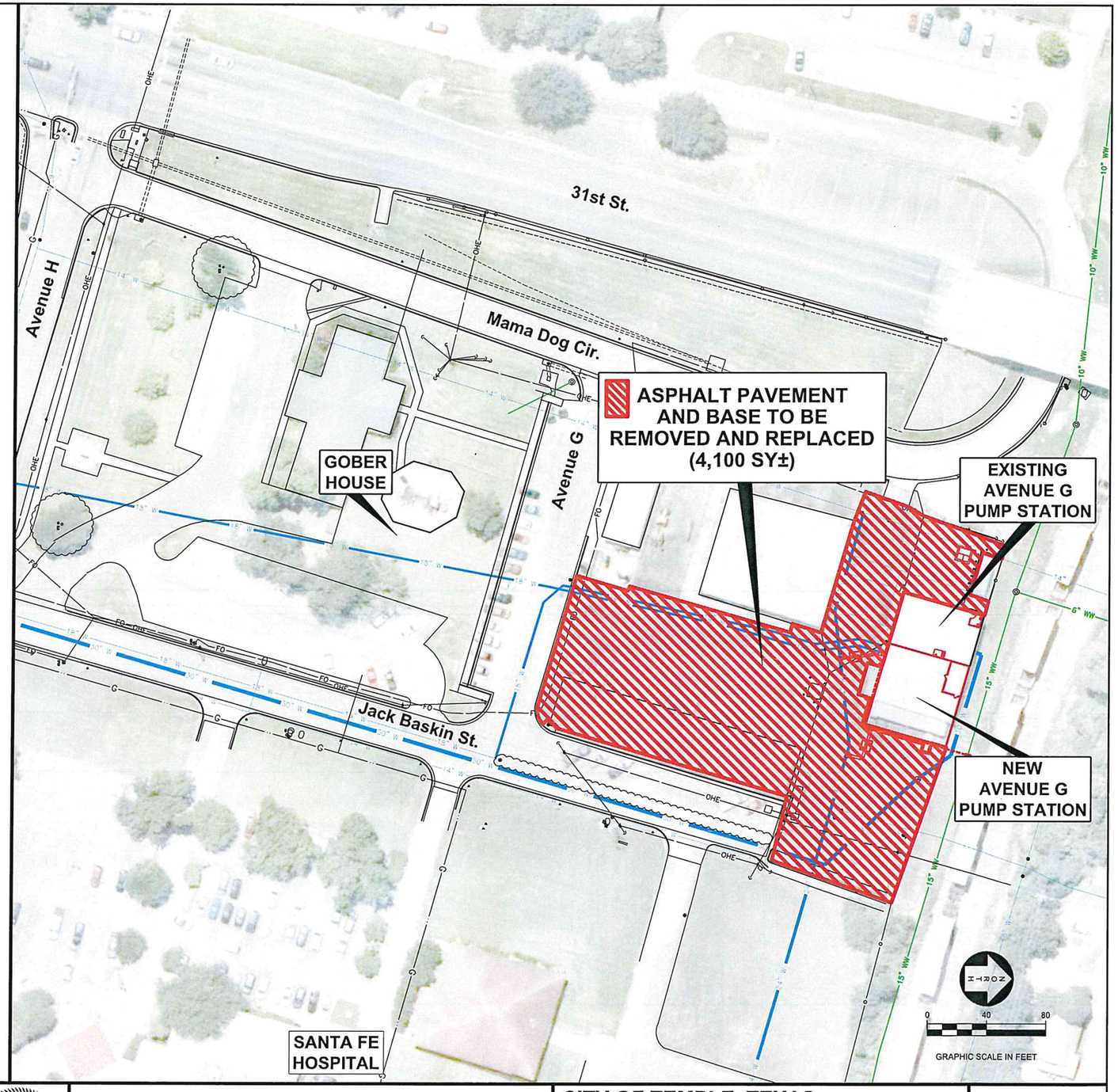
NOTES:

1. BACKFILL ABOVE THE TOP OF BEDDING MATERIAL FOR PIPE TRENCHES WITHIN THE PROPOSED AREA FOR ASPHALT REPLACEMENT SHALL BE FLEXIBLE BASE COMPACTED AS SPECIFIED IN THE ASPHALT SECTION DETAIL SHOWN ON THIS SHEET.
2. BACKFILL OF ALL EXCAVATIONS ASSOCIATED WITH DEMO OF THE EXISTING CURB AND GUTTER, CONCRETE SLAB, CONCRETE VAULTS, AND INSTALLATION OF ELECTRICAL CONDUITS SHALL BE FLEXIBLE BASE COMPACTED AS SPECIFIED IN THE ASPHALT SECTION DETAIL SHOWN ON THIS SHEET.
3. CRUSHED LIMESTONE BASE (CLB) – BASE MATERIAL SHOULD BE COMPOSED OF CRUSHED LIMESTONE MEETING THE REQUIREMENTS OF TXDOT ITEM 247, TYPE A, GRADE 1 (OR FAA ITEM P–209). THE BASE SHOULD BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED MOISTURE/DENSITY RELATION (ASTM D 1557) AT –3 TO +3 PERCENT OF OPTIMUM MOISTURE CONTENT. (ASAN OPTION, COMPACTION TO AT LEAST 100 PERCENT OF THE TEX–113–E MAXIMUM DRY DENSITY MAY BE CONSIDERED.) EACH LIFT OF BASE SHOULD BE THOROUGHLY PROOFROLLED JUST PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS AND/OR ASPHALT. PARTICULAR ATTENTION SHOULD BE PAID TO AREAS ALONG CURBS AND ADJACENT TO LANDSCAPE ISLANDS AND STORM DRAIN INLETS. PLACEMENT OF THE BASE MATERIAL SHOULD ENTEND AT LEAST 1–FOOT BEHIND ASPHALT.
4. MOISTURE CONDITIONED SUBGRADE – THE SOIL SUBGRADE SHOULD BE SCARIFIED TO A DEPTH OF 6–INCHES, MOISTURE CONDITIONED, AND RECOMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. THE STRATUM I DARK BROWN SOILS SHOULD BE MOISTURE CONDITIONED TO BETWEEN OPTIMUM AND +4 PERCENT OF OPTIMUM MOISTURE. STRATUM II TAN SOILS SHOULD BE MOISTURE CONDITIONED TO BETWEEN –3 AND +3 PERCENT OF OPTIMUM . CARE SHOULD BE TAKEN SUCH THAT THE SUBGRADE DOES NOT DRY OUT OR BECOME SATURATED PRIOR TO PAVEMENT CONSTRUCTION. THE PAVEMENT SUBGRADE SHOULD BE THOROUGHLY PROOFROLLED WITH A RUBBER–TIRED VEHICLE (FULLY LOADED WATER OR DUMP TRUCK) IMMEDIATLY PRIOR PLACEMENT OF CEMENT TREATED BASE MATERIAL OR CRUSHED LIMESTONE BASE MATERIAL. PARTICULAR ATTENTION SHOULD BE PAID TO AREAS ALONG CURBS AND ADJACENT TO LANDSCAPE ISALNDS AND STORM DRAIN INLETS. PLACEMENT OF THE MOISTURE CONDITIONED SUBGRADE SHOULD EXTEND AT LEAST 12 INCHES BEHIND CURBS.
5. CONTRACTOR SHALL CONTROL DUST CAUSED BY THE WORK AND COMPLY WITH POLLUTION CONTROL REGULATIONS OF GOVERNING AUTHORITIES.
6. CONTRACTOR SHALL REMOVE BUILT UP MATERIAL ON ADJACENT PUBLIC ROADWAYS RESULTING FROM HIS WORK. CLEANING TO BE AT LEAST ONCE A DAY.
7. ANY EXISTING PAVEMENT, CURBS, AND/OR SIDEWALK DAMAGED OR REMOVED BY THE CONTRACTOR THAT ARE NOT A PART OF THIS CONTRACT ARE TO BE REPAIRED BY THE CONTRACTOR TO AT LEAST THE PREEXISTING CONDITION AT HIS EXPENSE BEFORE ACCEPTANCE OF THE WORK.
8. MAKE CONNECTION BETWEEN NEW AND EXISTING ASPHALT STREETS BY REMOVING EXISTING STREET FROM THE END OF EXISTING PAVEMENT UNTIL FULL DEPTH BASE AND HMAC ARE ENCOUNTERED AND HMAC APPEARS TO BE IN SOUND CONDITION.



TYPICAL ROADWAY - SECTION

NOT TO SCALE



NO.	DATE	REVISION	BY

Plot Date: Aug 30, 2022 - 6:17pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS

SITE ASPHALT PAVING IMPROVEMENTS

SHEET NO. G-10
OF 10 SHEETS

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\G-10.dwg

NOTES:

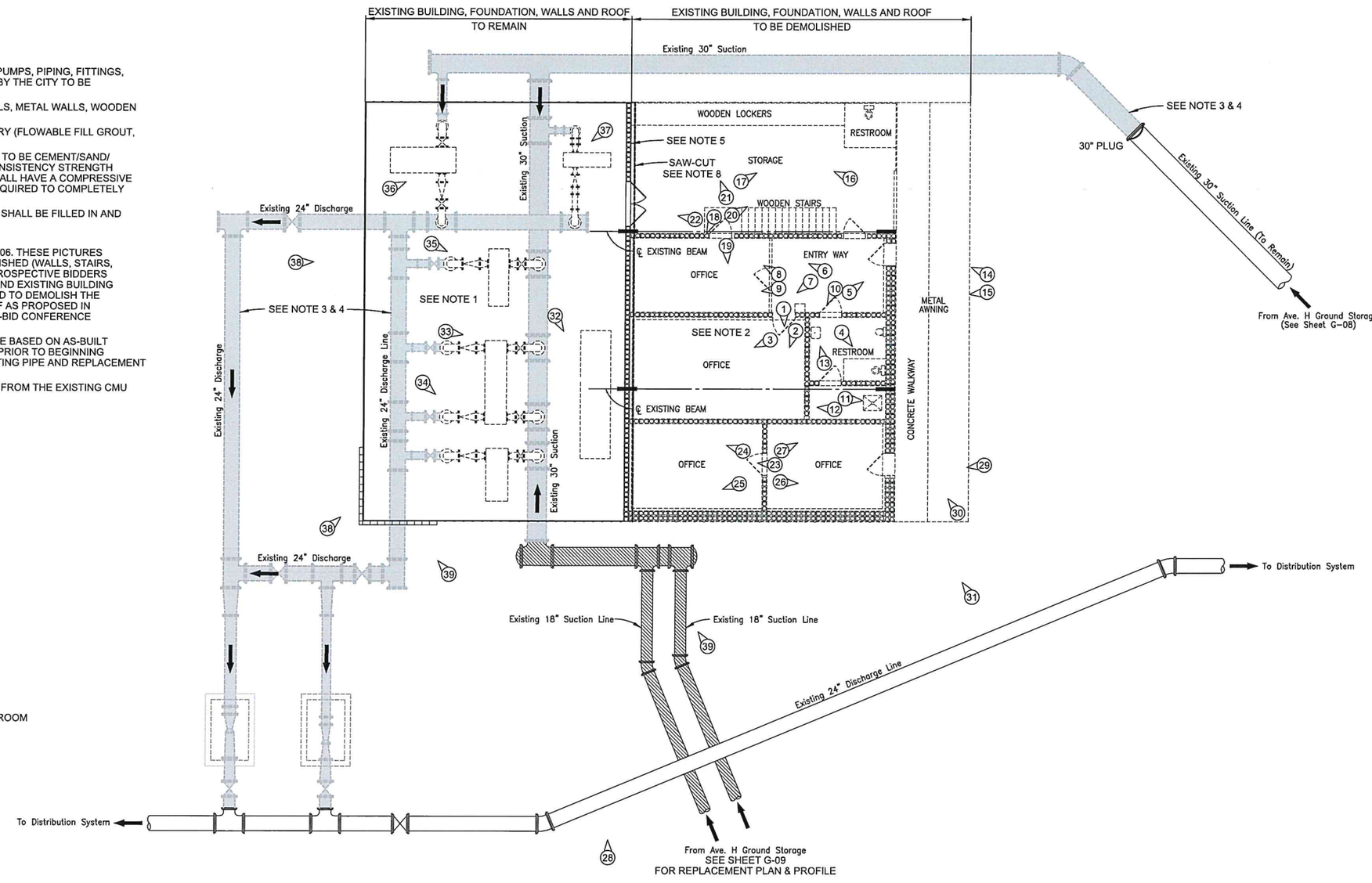
1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ABOVE GROUND PUMPS, PIPING, FITTINGS, VALVES, CONTROL PANELS AND CONCRETE PADS UNLESS DIRECTED BY THE CITY TO BE SALVAGED AND DELIVERED TO THE CITY.
2. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL OFFICE CMU WALLS, METAL WALLS, WOODEN STAIRS AND METAL AWNING.
3. ALL ABANDONED UNDERGROUND PIPING SHALL BE FILLED WITH SLURRY (FLOWABLE FILL GROUT, 2500 PSI) AND CAPPED.
4. AS SHOWN ON THIS DRAWING, SLURRY OR FLOWABLE FILL (GROUT) IS TO BE CEMENT/SAND/WATER MIXTURE AS APPROVED BY THE ENGINEER. IT WILL HAVE A CONSISTENCY STRENGTH SUCH THAT IT WILL FLOW IN AND COMPLETELY FILL ALL VOIDS AND SHALL HAVE A COMPRESSIVE OF 2500 PSI AT 28 DAYS. MANUAL PRESSURE UP TO 100 PSI MAY BE REQUIRED TO COMPLETELY ACCOMPLISH THE PIPE FILLING PROCEDURE.
5. THE EXISTING CMU WALL SHALL REMAIN IN PLACE AND DOUBLE DOOR SHALL BE FILLED IN AND RELOCATED.
6. (1) THIS SYMBOL DENOTES PICTURES SHOWN ON SHEET P-02 THRU P-06. THESE PICTURES DEPICT THE GENERAL SCOPE OF EXISTING CONDITIONS TO BE DEMOLISHED (WALLS, STAIRS, CEILINGS, ATTIC, DOORS, PLUMBING FIXTURES AND WINDOWS; ETC. PROSPECTIVE BIDDERS SHALL MAKE A CAREFUL AND THOROUGH EXAMINATION OF THE SITE AND EXISTING BUILDING INTERIOR CONDITIONS TO DETERMINE THE SCOPE OF WORK REQUIRED TO DEMOLISH THE PORTIONS OF THE EXISTING BUILDING FOUNDATION, WALLS AND ROOF AS PROPOSED IN THESE PLANS. A SITE VISIT WILL BE CONDUCTED AS PART OF THE PRE-BID CONFERENCE TO ALLOW BIDDERS ACCESS TO THE SITE AND BUILDING INTERIOR.
7. THE EXISTING UNDERGROUND PIPING SIZES AND MATERIAL TYPE WERE BASED ON AS-BUILT PLANS. CONTRACTOR SHALL FIELD VERIFY PIPE SIZES AND MATERIAL PRIOR TO BEGINNING CONSTRUCTION RELATED TO ABANDONMENT, CONNECTIONS TO EXISTING PIPE AND REPLACEMENT OF TWO (2) 18" SUCTION LINES.
8. CONTRACTOR SHALL SAW-CUT EXISTING FOUNDATION SIX INCHES (6") FROM THE EXISTING CMU WALL. REFER TO DETAIL 4 ON STRUCTURAL SHEET S4.4

LEGEND:

UNDERGROUND PIPING TO BE ABANDONED AND SLURRY FILLED

EXISTING 18"/30" SUCTION LINES TO BE REMOVED AND REPLACED SEE SHEET G-09 FOR DETAILS

SCAN QR CODE TO VIEW 3-D IMAGE OF EXISTING PUMP ROOM



EXISTING PUMP STATION LAYOUT

NORTH

0 4 8 16

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NO.	DATE	REVISION	BY

Plot Date: Jul 13, 2022 - 4:04pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/13/22

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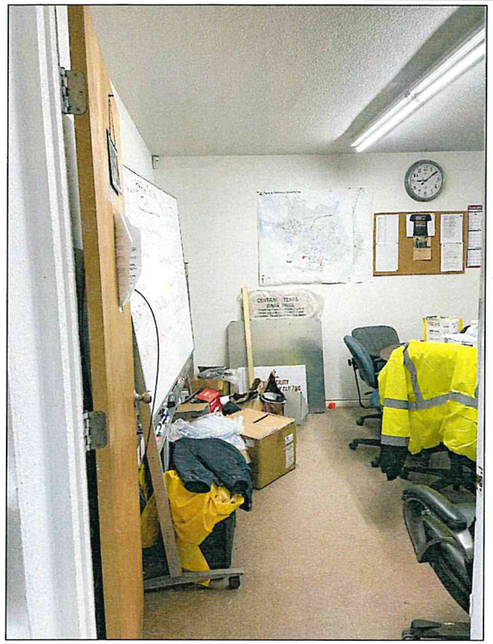
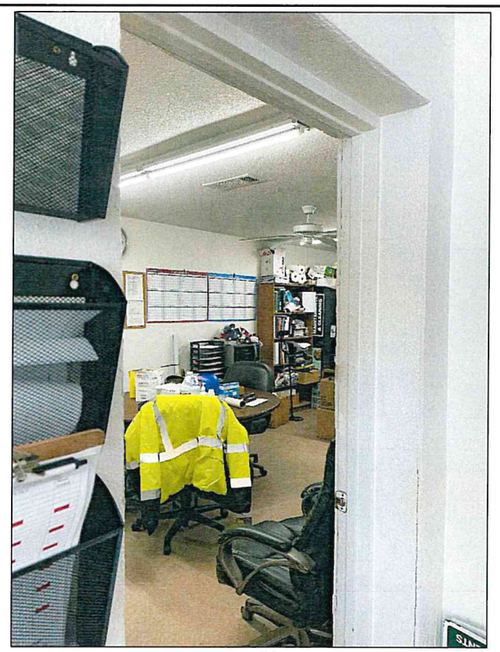
CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
PUMP STATION DEMOLITION
DEMO PLAN

SHEET NO. P-01
OF 16 SHEETS



PICTURE 1



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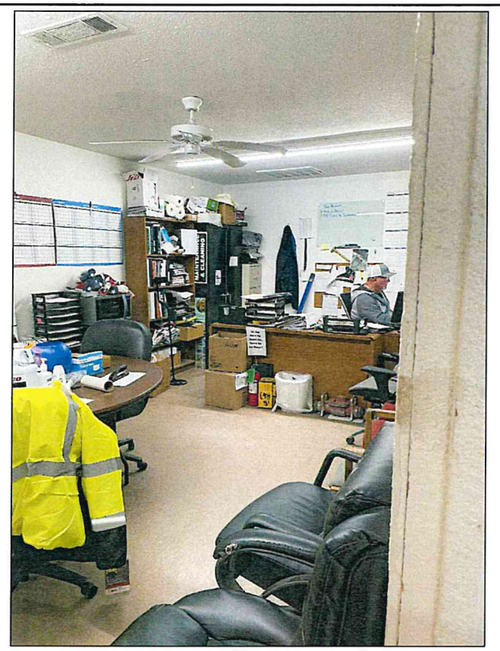

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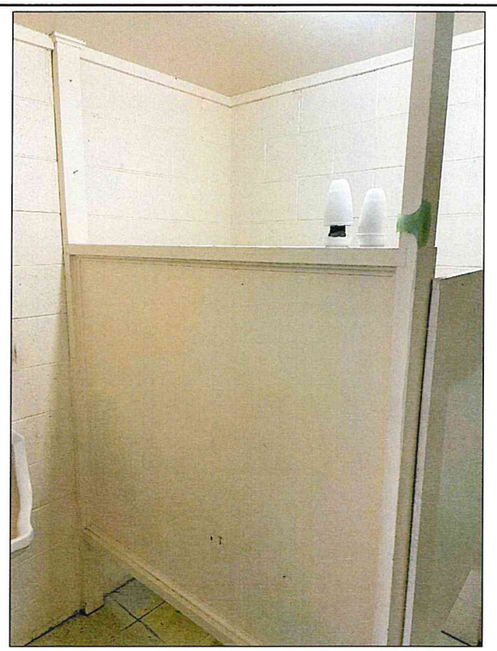
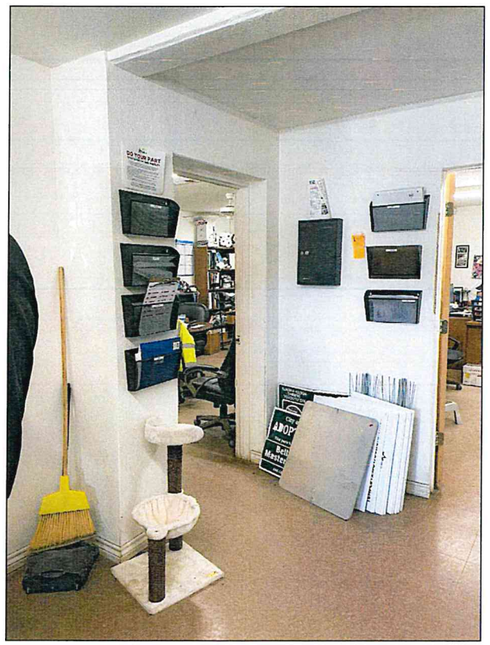


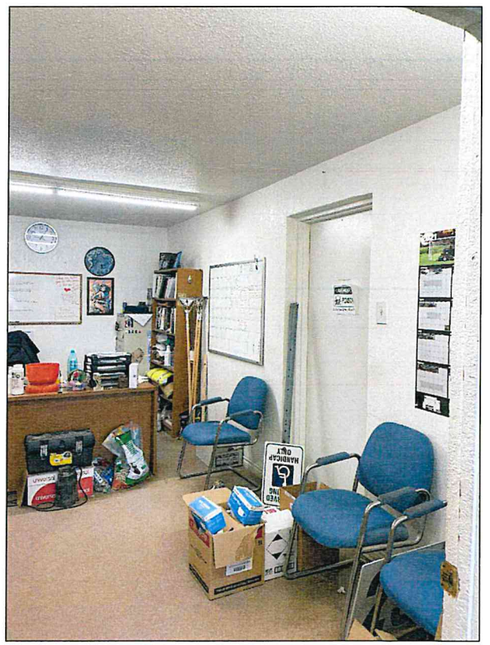
PICTURE 4

PICTURE 5

PICTURE 6



PICTURE 7



PICTURE 8

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NO.	DATE	REVISION	BY

Plot Date: Apr 12, 2022 - 8:35pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

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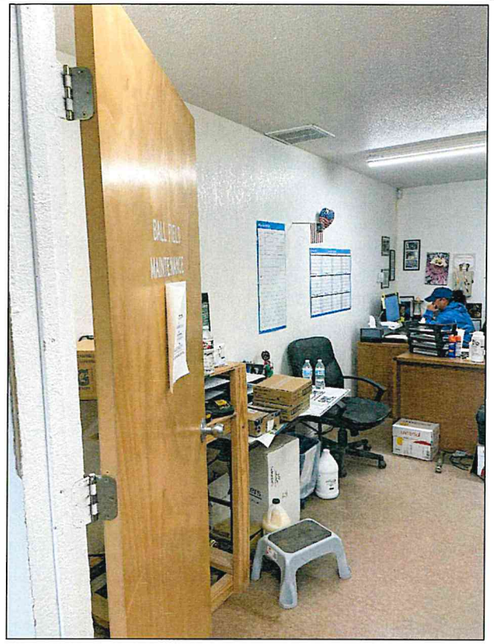
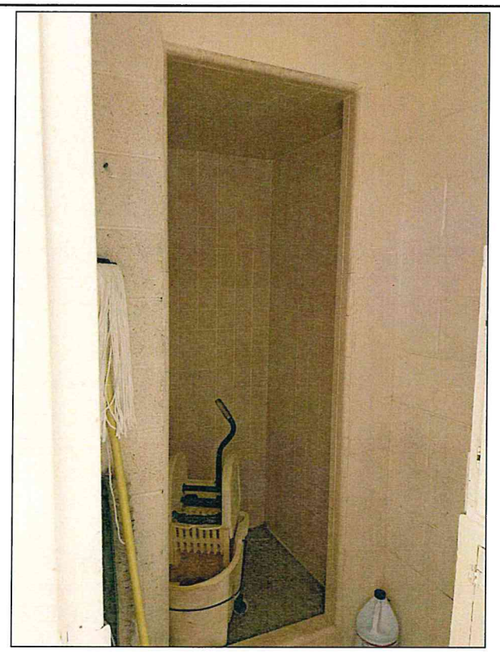
PUMP STATION DEMOLITION
DEMO PICTURES

SHEET NO. P-02
OF 16 SHEETS



PICTURE 9

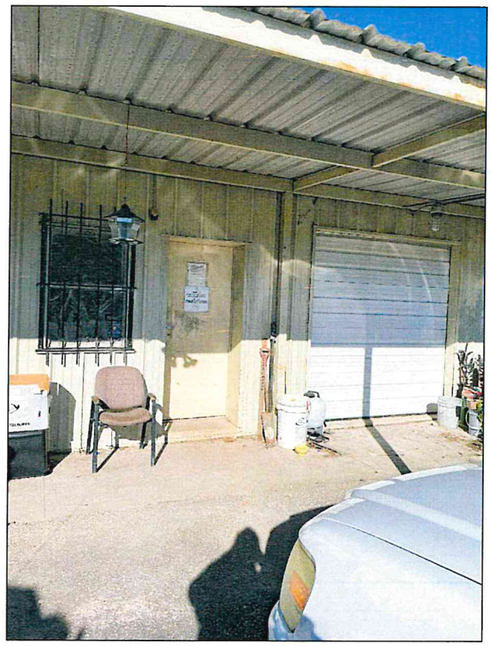
PICTURE 10



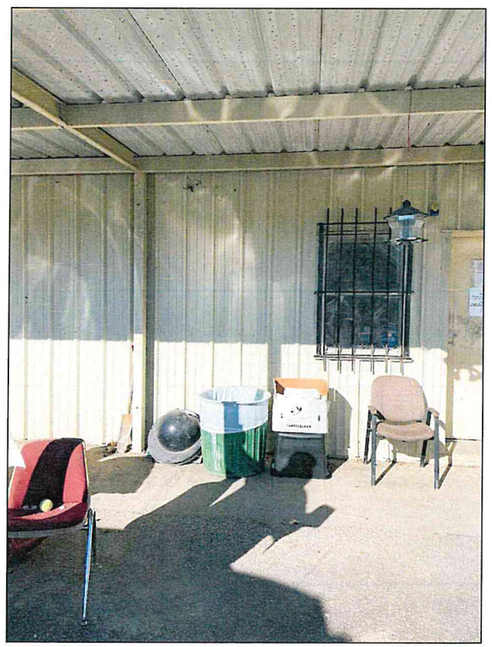
PICTURE 11

PICTURE 12

PICTURE 13



PICTURE 14



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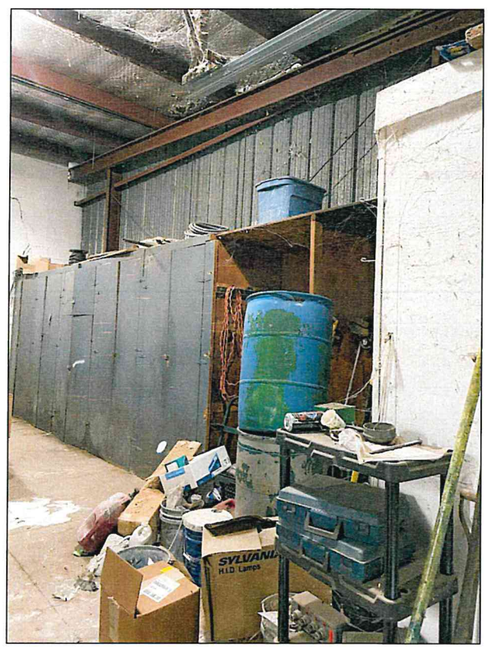

PICTURE 16

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NO.	DATE	REVISION	BY

Plot Date: Apr 12, 2022 - 8:36pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

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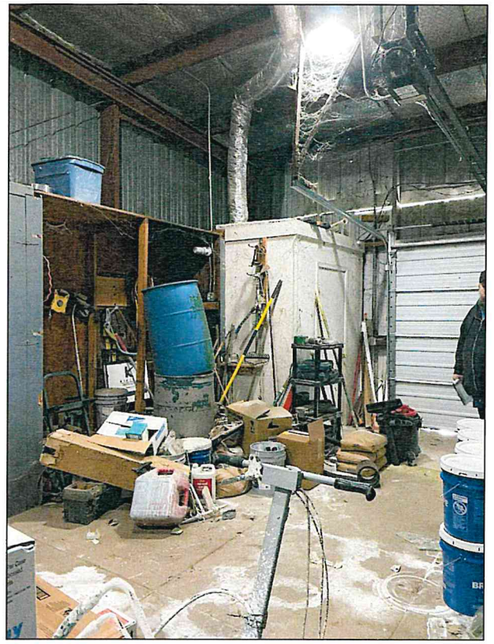
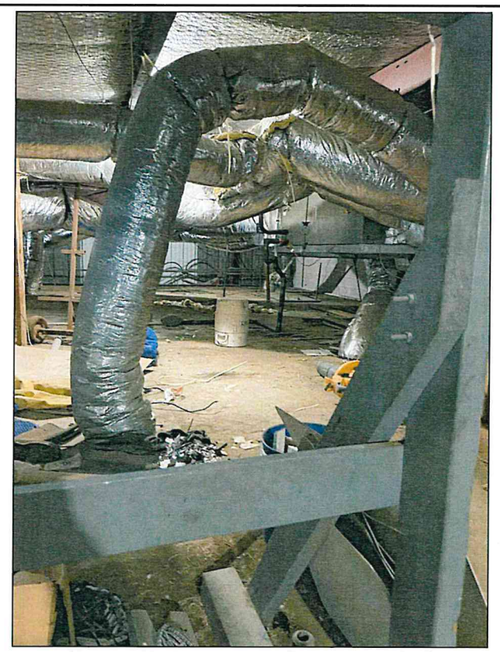
PUMP STATION DEMOLITION DEMO PICTURES

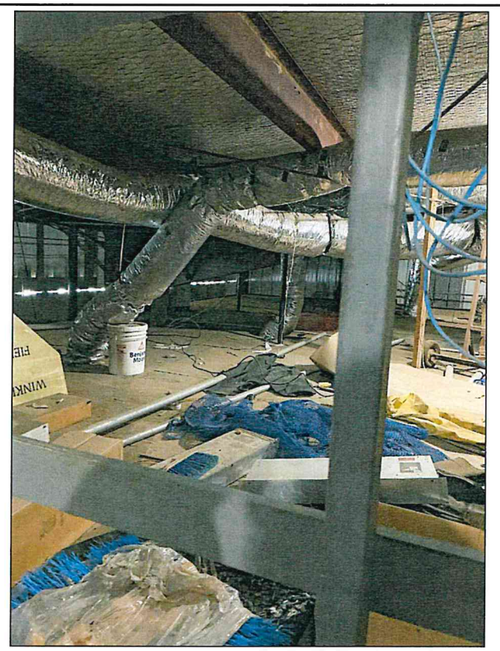
SHEET NO. P-03
OF 16 SHEETS



PICTURE 17



PICTURE 18 (AT TOP OF STAIRS)



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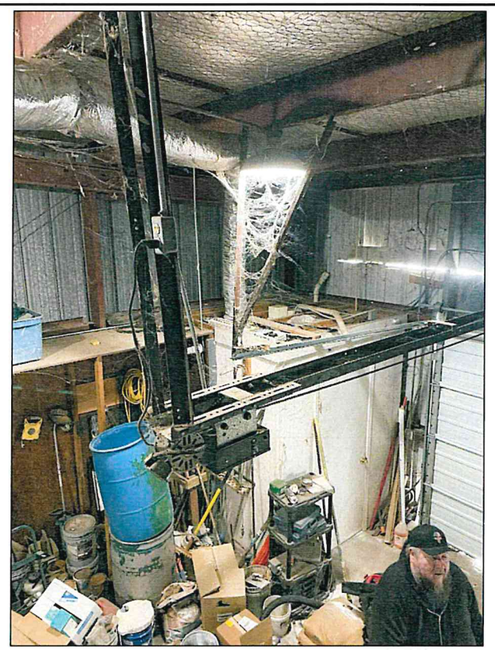
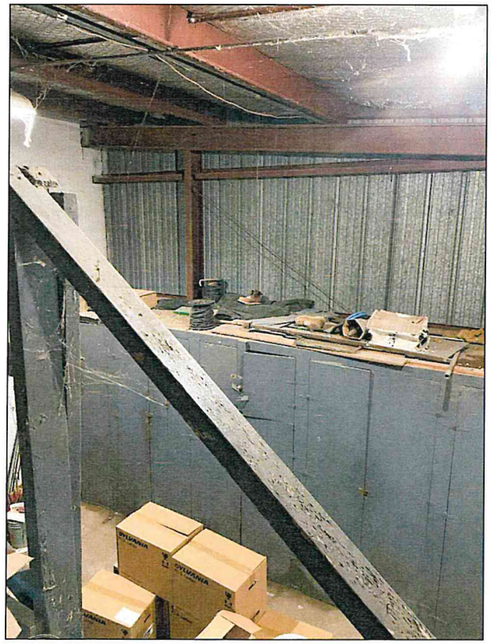


PICTURE 20 (AT TOP OF STAIRS)



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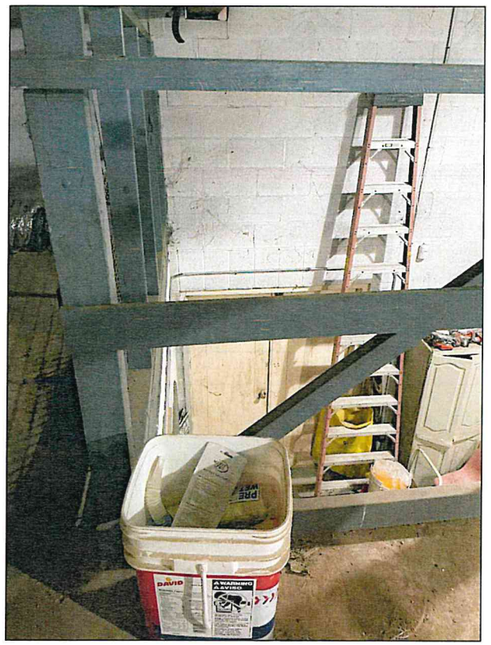
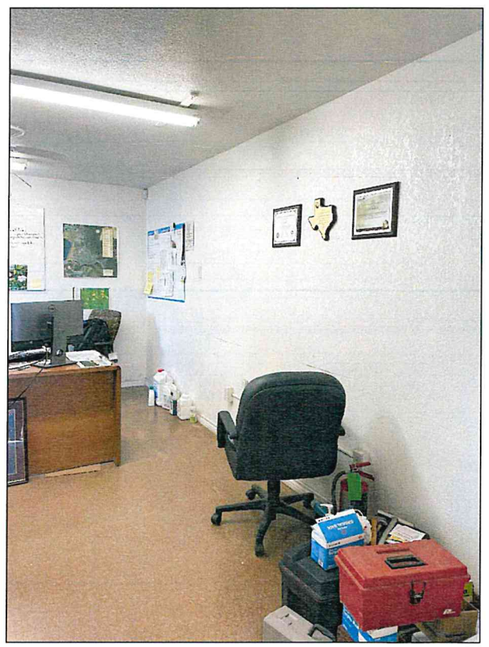


PICTURE 22 (AT TOP OF STAIRS)

PICTURE 23



PICTURE 24

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NO.	DATE	REVISION	BY

Plot Date: Apr 12, 2022 - 8:36pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

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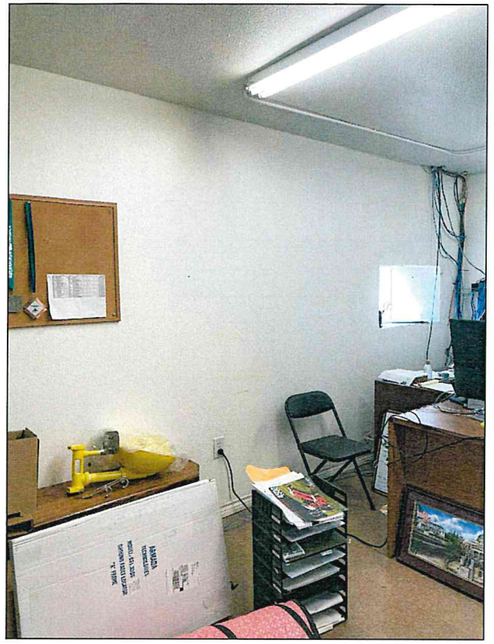
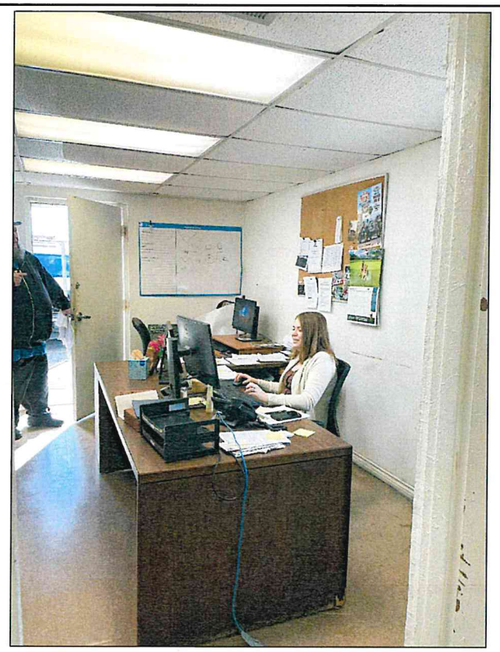
AVENUE G PUMP STATION IMPROVEMENTS
PUMP STATION DEMOLITION
DEMO PICTURES

SHEET NO. P-04
OF 16 SHEETS



PICTURE 25



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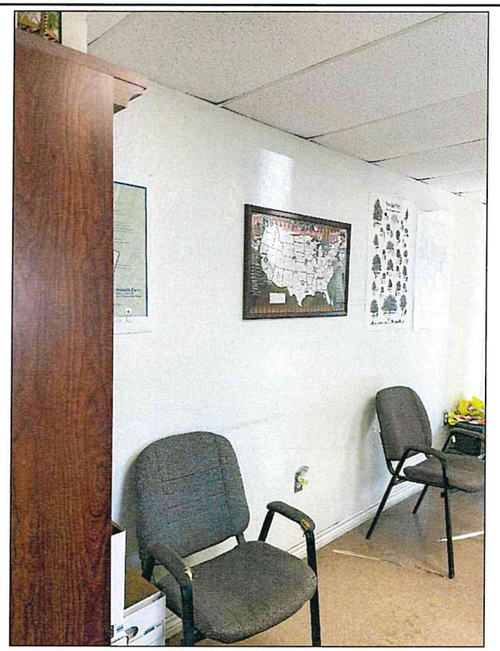

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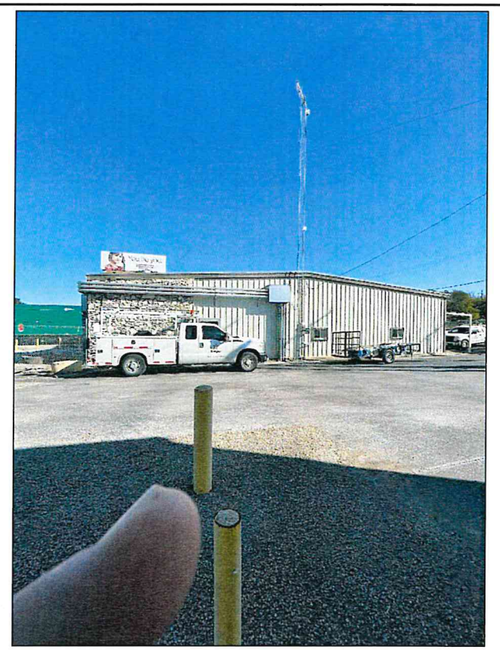

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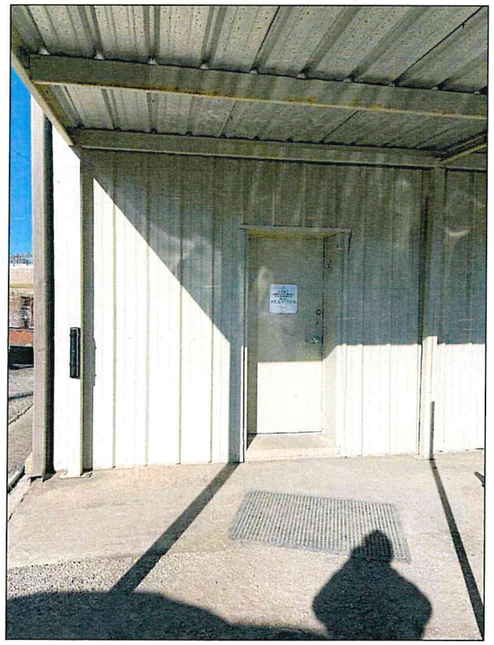
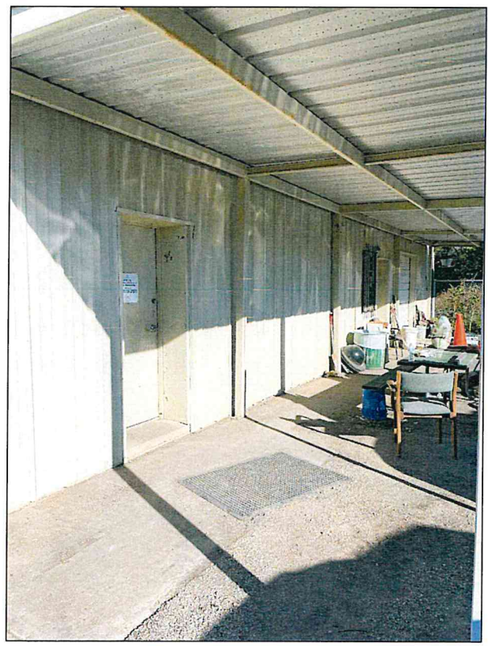


PICTURE 29



PICTURE 30

PICTURE 31

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NO.	DATE	REVISION	BY

Plot Date: Apr 12, 2022 - 8:37pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

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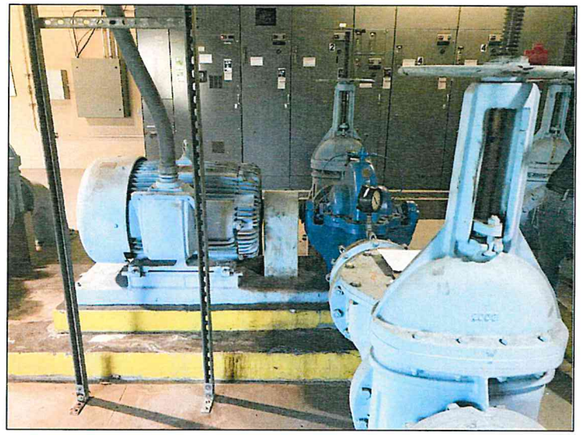
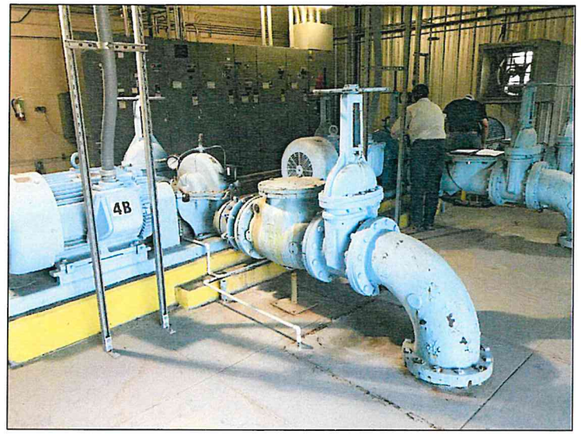
CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
PUMP STATION DEMOLITION
DEMO PICTURES

SHEET NO. P-05
OF 16 SHEETS

PICTURE 32



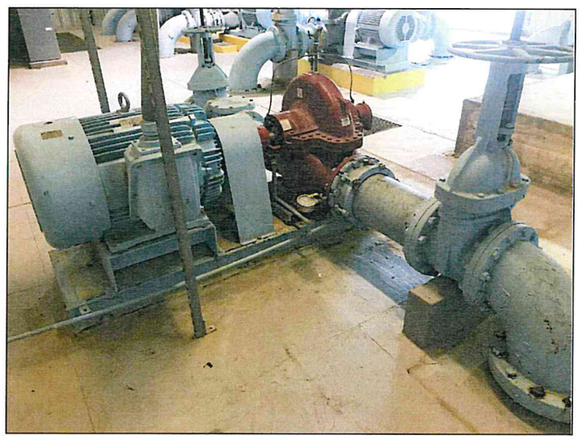
PICTURE 33



PICTURE 34

PICTURE 35

PICTURE 36



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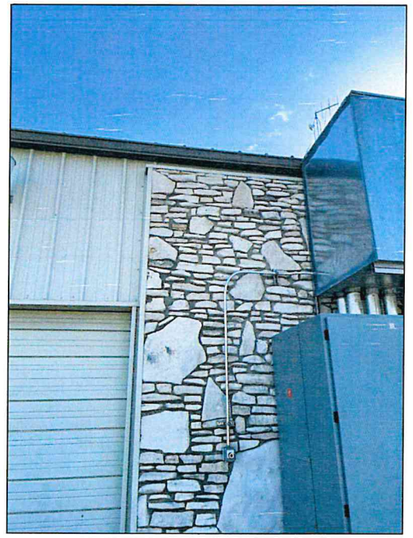

PICTURE 38

PICTURE 39

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NO.	DATE	REVISION	BY

Plot Date: Apr 12, 2022 - 8:37pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
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DATE 7/7/22

STATE OF TEXAS
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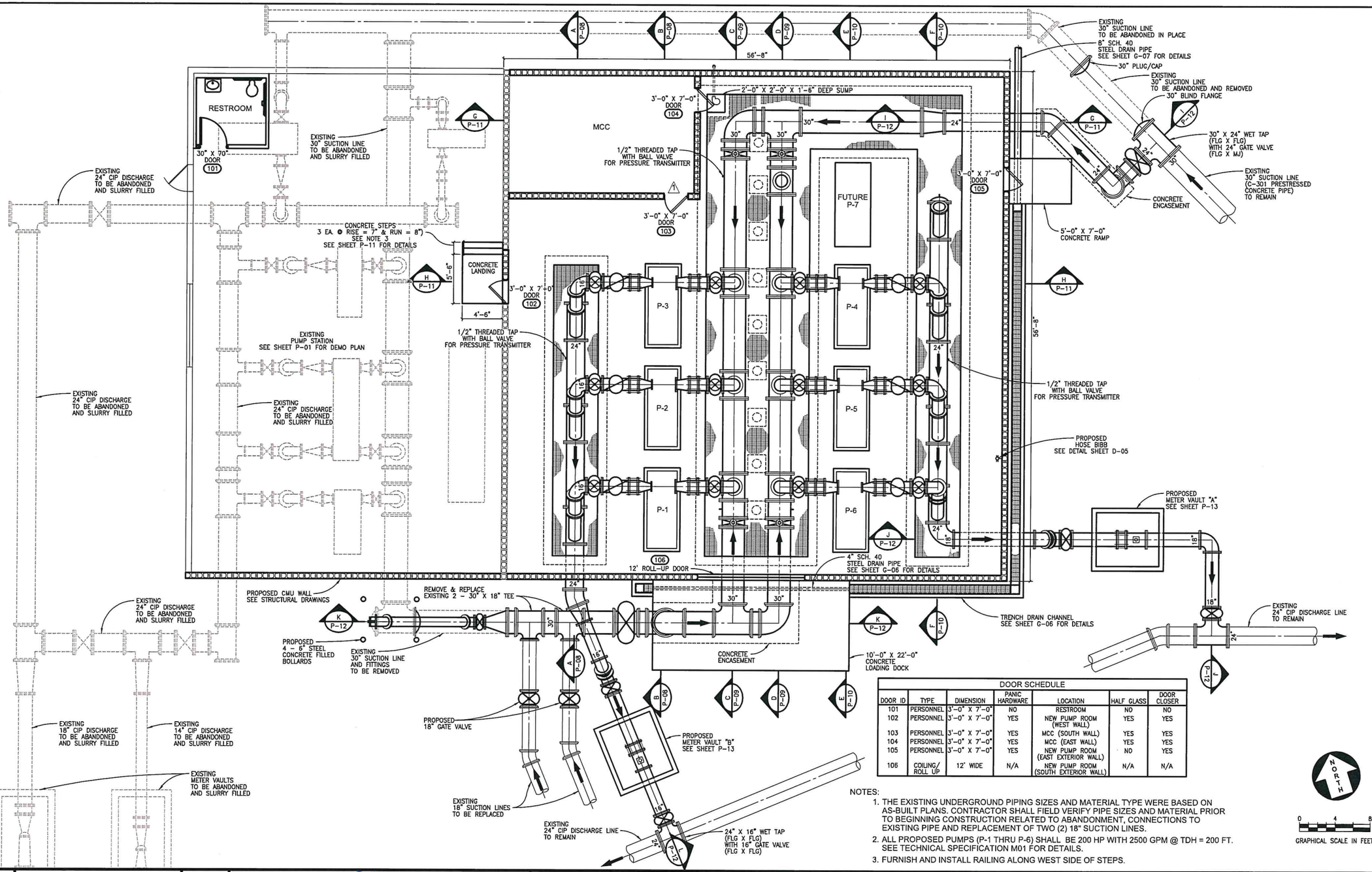
AVENUE G PUMP STATION IMPROVEMENTS
PUMP STATION DEMOLITION
DEMO PICTURES

SHEET NO. P-06
OF 16 SHEETS



DOOR SCHEDULE						
DOOR ID	TYPE	DIMENSION	PANIC HARDWARE	LOCATION	HALF GLASS	DOOR CLOSER
101	PERSONNEL	3'-0" X 7'-0"	NO	RESTROOM	NO	NO
102	PERSONNEL	3'-0" X 7'-0"	YES	NEW PUMP ROOM (WEST WALL)	YES	YES
103	PERSONNEL	3'-0" X 7'-0"	YES	MCC (SOUTH WALL)	YES	YES
104	PERSONNEL	3'-0" X 7'-0"	YES	MCC (EAST WALL)	YES	YES
105	PERSONNEL	3'-0" X 7'-0"	YES	NEW PUMP ROOM (EAST EXTERIOR WALL)	NO	YES
106	COILING/ ROLL UP	12' WIDE	N/A	NEW PUMP ROOM (SOUTH EXTERIOR WALL)	N/A	N/A

NOTES:
1. THE EXISTING UNDERGROUND PIPING SIZES AND MATERIAL TYPE WERE BASED ON AS-BUILT PLANS. CONTRACTOR SHALL FIELD VERIFY PIPE SIZES AND MATERIAL PRIOR TO BEGINNING CONSTRUCTION RELATED TO ABANDONMENT, CONNECTIONS TO EXISTING PIPE AND REPLACEMENT OF TWO (2) 18" SUCTION LINES.
2. ALL PROPOSED PUMPS (P-1 THRU P-6) SHALL BE 200 HP WITH 2500 GPM @ TDH = 200 FT. SEE TECHNICAL SPECIFICATION M01 FOR DETAILS.
3. FURNISH AND INSTALL RAILING ALONG WEST SIDE OF STEPS.

NO.	DATE	REVISION	BY
1	1-12-23	ADD 1' WIDTH TO MCC ROOM	RNK

Plot Date: Jan 12, 2023 - 12:07pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 1-12-23

STATE OF TEXAS
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CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS

PUMP STATION
PLAN

SHEET NO. P-07
OF 16 SHEETS

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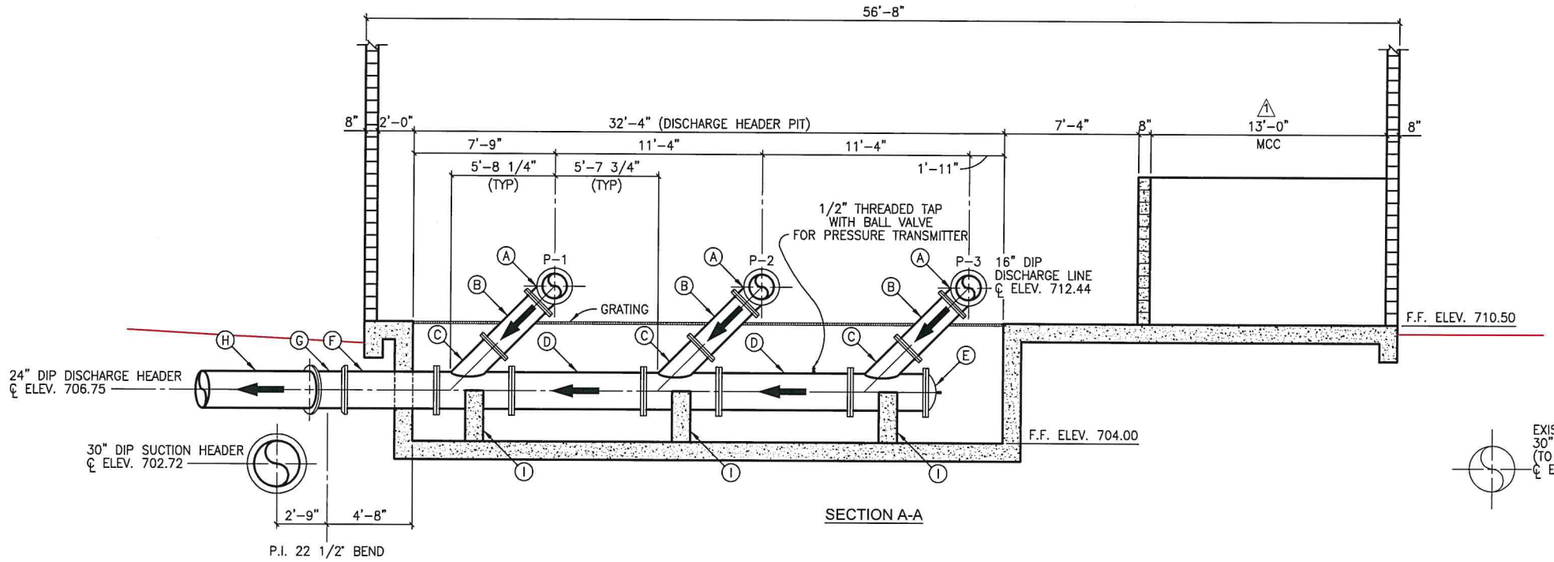
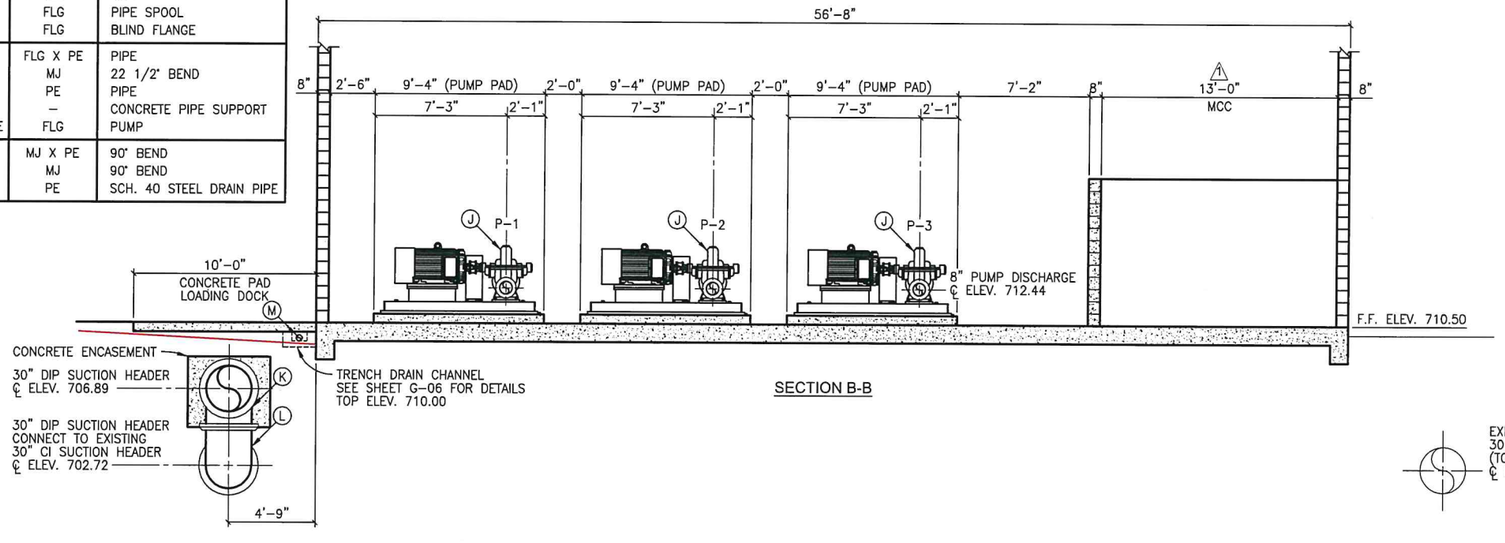


SECTION A-A

EXISTING 30" RCCP WATERLINE (TO BE ABANDONED) ℄ ELEV. 702.72

PIPE FITTINGS APPLIES TO THIS SHEET ONLY			
LETTER	SIZE	JOINT	DESCRIPTION
A	16"	FLG	90° BEND
B	16"	FLG	PIPE SPOOL
C	24" X 16"	FLG	WYE
D	24"	FLG	PIPE SPOOL
E	24"	FLG	BLIND FLANGE
F	24"	FLG X PE	PIPE
G	24"	MJ	22 1/2° BEND
H	24"	PE	PIPE
I	–	–	CONCRETE PIPE SUPPORT
J	8" DISCHARGE	FLG	PUMP
K	30"	MJ X PE	90° BEND
L	30"	MJ	90° BEND
M	4"	PE	SCH. 40 STEEL DRAIN PIPE



SECTION B-B

EXISTING 30" RCCP WATERLINE (TO BE ABANDONED) ℄ ELEV. 702.72

0 2 4 8
GRAPHICAL SCALE IN FEET

NO.	DATE	REVISION	BY
1	1-12-23	ADD 1' WIDTH TO MCC ROOM	RNK

Plot Date: Jan 12, 2023 - 12:08pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 1/12/23

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

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CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
PUMP STATION SECTION A & B

SHEET NO. P-08 OF 16 SHEETS

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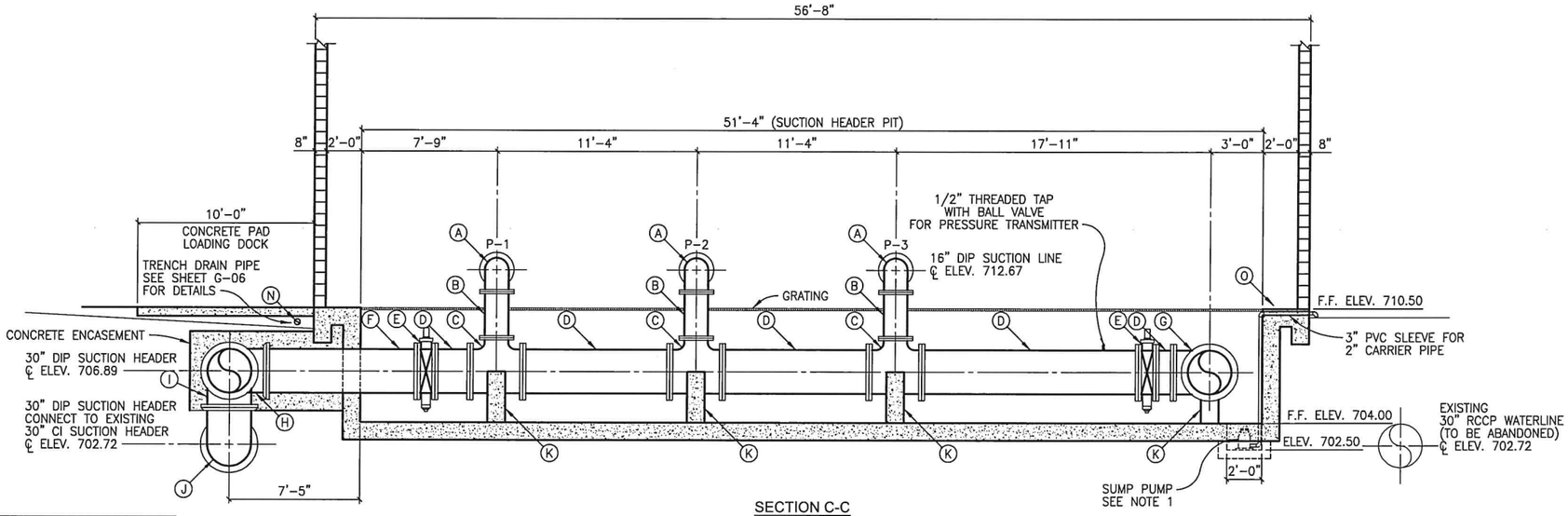


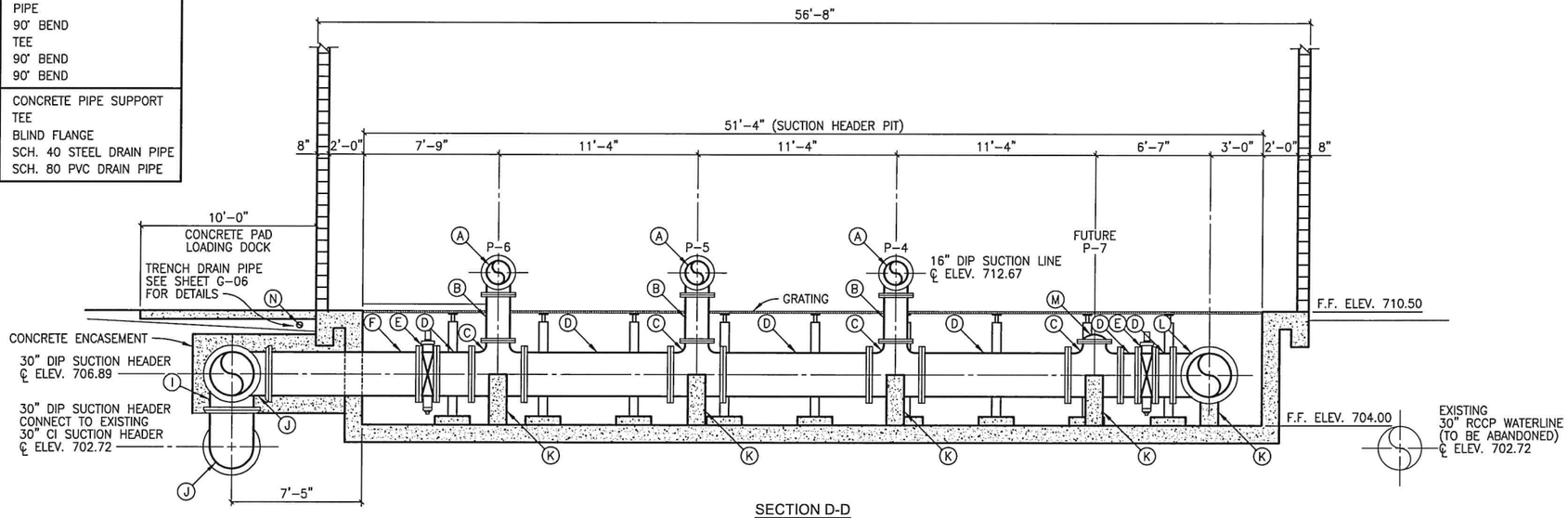
SECTION C-C

NOTE:

1. FURNISH AND INSTALL A MODEL 49 SUMP PUMP AS MANUFACTURED BY ZOELLER PUMP CO. OR APPROVED EQUAL. PUMP SHALL BE CAPABLE OF 25 GPM AT A TDH = 10 FEET. PUMP MOTOR SHALL BE A MINIMUM 1/4 HP (115 V/SINGLE PHASE/60 HZ).

PIPE FITTINGS
APPLIES TO THIS SHEET ONLY

LETTER	SIZE	JOINT	DESCRIPTION
A	16"	FLG	90° BEND
B	16"	FLG	PIPE SPOOL
C	30" X 16"	FLG	TEE
D	30"	FLG	PIPE SPOOL
E	30"	FLG	BUTTERFLY VALVE
F	30"	FLG X PE	PIPE
G	30"	FLG	90° BEND
H	30"	MJ	TEE
I	30"	MJ X PE	90° BEND
J	30"	MJ	90° BEND
K	–	–	CONCRETE PIPE SUPPORT
L	30"	FLG	TEE
M	16"	FLG	BLIND FLANGE
N	4"	PE	SCH. 40 STEEL DRAIN PIPE
O	2"	–	SCH. 80 PVC DRAIN PIPE



SECTION D-D

0 2 4 8
GRAPHICAL SCALE IN FEET

NO.	DATE	REVISION	BY

Plot Date: Aug 03, 2022 - 3:41pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED
PROFESSIONAL ENGINEER

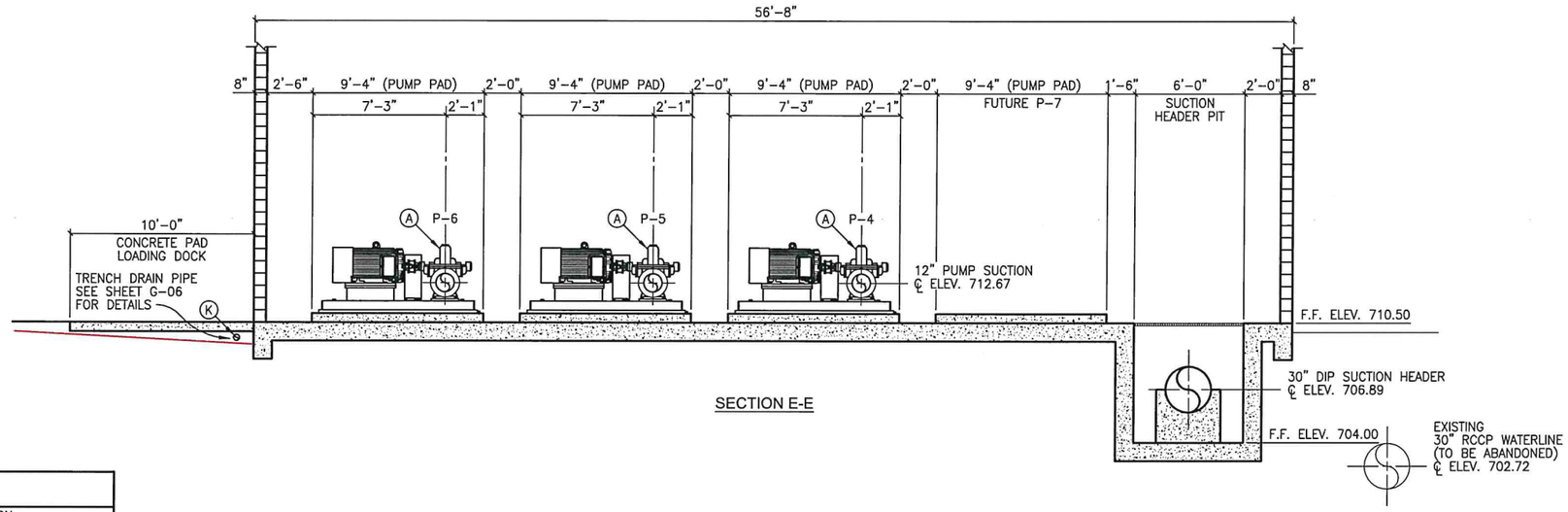
KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS
PUMP STATION
SECTION C & D

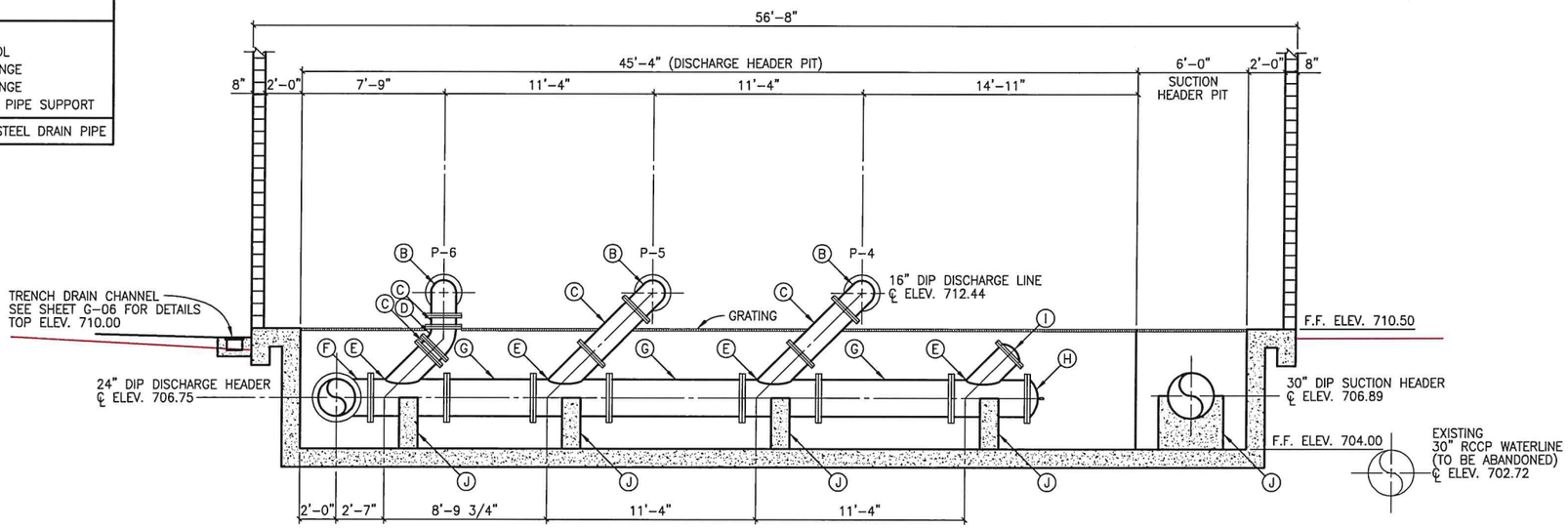
SHEET NO. P-09
OF 16 SHEETS

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\PUMP STATION PLAN.dwg



SECTION E-E

PIPE FITTINGS APPLIES TO THIS SHEET ONLY			
LETTER	SIZE	JOINT	DESCRIPTION
A	12" SUCTION	FLG	PUMP
B	16"	FLG	90° BEND
C	16"	FLG	PIPE SPOOL
D	16"	FLG	45° BEND
E	24" X 16"	FLG	WYE
F	24"	FLG	90° BEND
G	24	FLG	PIPE SPOOL
H	24"	FLG	BLIND FLANGE
I	24"	FLG	BLIND FLANGE
J	–	–	CONCRETE PIPE SUPPORT
K	4"	PE	SCH. 40 STEEL DRAIN PIPE



SECTION F-F

0 2 4 8
GRAPHICAL SCALE IN FEET

NO.	DATE	REVISION	BY

Plot Date: Apr 12, 2022 - 8:39pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
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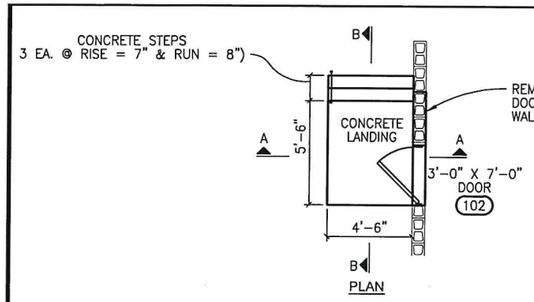
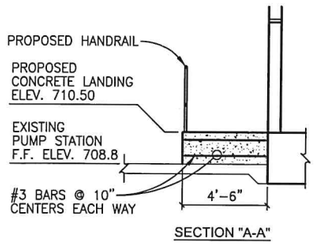
CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
PUMP STATION
SECTION E & F

SHEET NO. P-10
OF 16 SHEETS

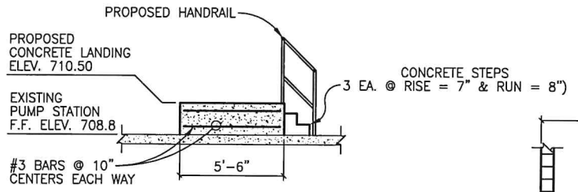
P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\PUMP STATION PLAN.dwg



PLAN

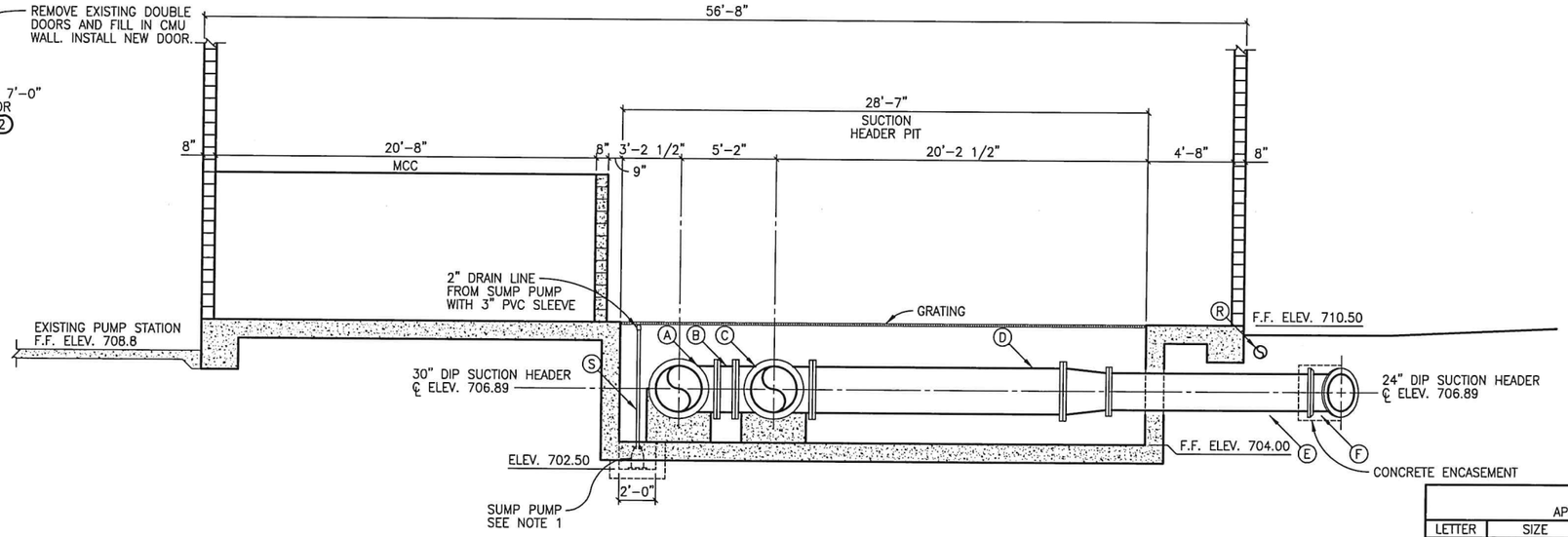


SECTION "A-A"

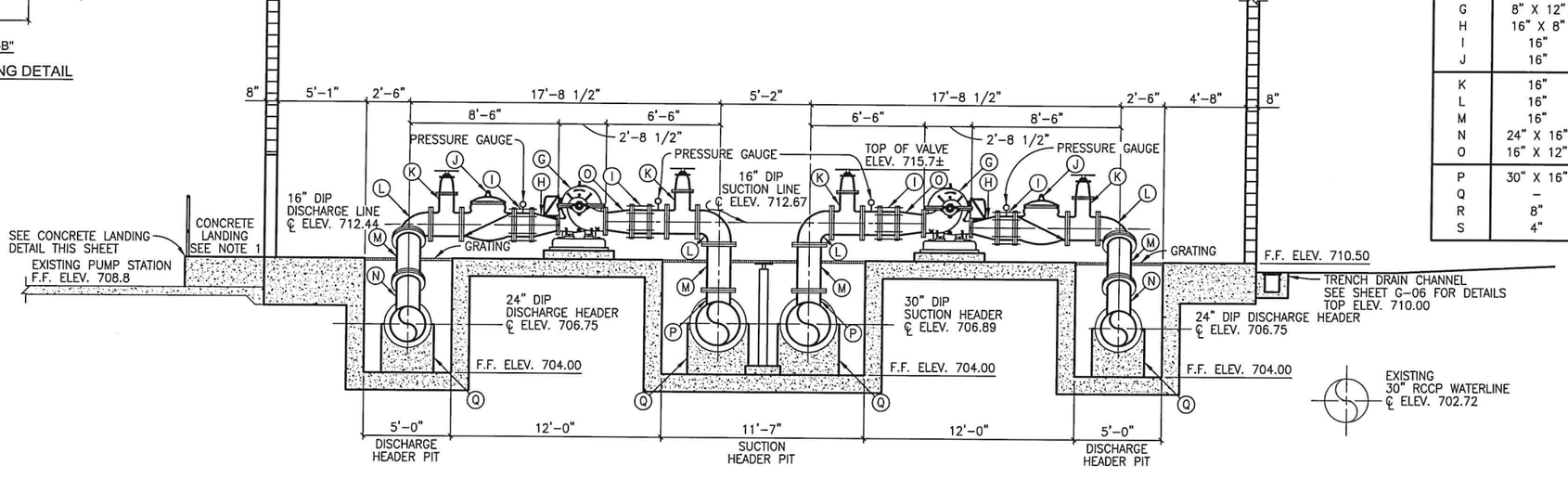


SECTION "B-B"

CONCRETE LANDING DETAIL



SECTION G-G



SECTION H-H

PIPE FITTINGS APPLIES TO THIS SHEET ONLY			
LETTER	SIZE	JOINT	DESCRIPTION
A	30"	FLG	90° BEND
B	30"	FLG	PIPE SPOOL
C	30"	FLG	TEE
D	30"	FLG X PE	PIPE
E	30"	MJ	45° BEND
F	30"	PE	PIPE
G	8" X 12"	FLG	PUMP
H	16" X 8"	FLG	REDUCER
I	16"	FLG	COUPLING
J	16"	FLG	CHECK VALVE
K	16"	FLG	GATE VALVE
L	16"	FLG	90° BEND
M	16"	FLG	PIPE SPOOL
N	24" X 16"	FLG	WYE
O	16" X 12"	FLG	REDUCER
P	30" X 16"	FLG	TEE
Q	–	–	CONCRETE PIPE SUPPORT
R	8"	PE	SCH. 40 STEEL DRAIN PIPE
S	4"	PE	SCH. 80 PVC DRAIN PIPE

NOTES:

1. FURNISH AND INSTALL A MODEL 49 SUMP PUMP AS MANUFACTURED BY ZOELLER PUMP CO. OR APPROVED EQUAL. PUMP SHALL BE CAPABLE OF 25 GPM AT A TDH = 10 FEET. PUMP MOTOR SHALL BE A MINIMUM 1/4 HP (115 V/SINGLE PHASE/60 HZ).
2. FURNISH AND INSTALL RAILING ALONG WEST SIDE OF STEPS.

0 2 4 8
GRAPHICAL SCALE IN FEET

NO.	DATE	REVISION	BY

Plot Date:
Aug 10, 2022 - 11:45am
Plotted By:
DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED
PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
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TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS
PUMP STATION
SECTION G & H

SHEET NO. P-11
OF 16 SHEETS

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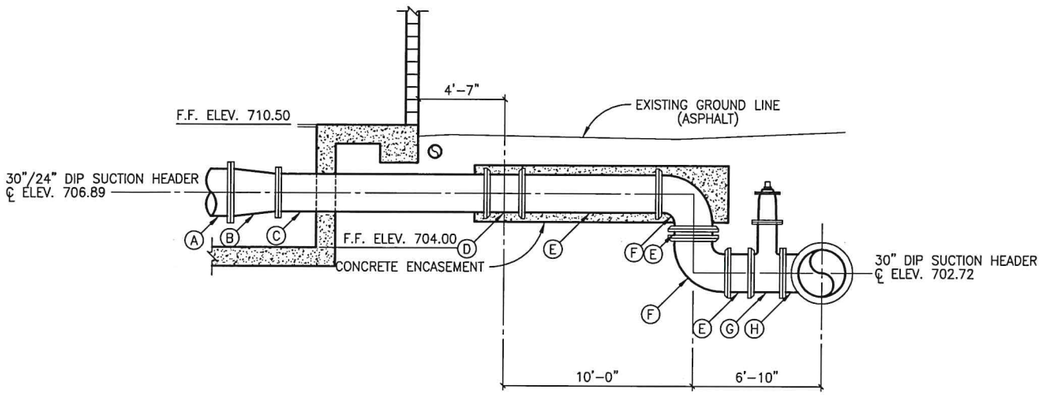
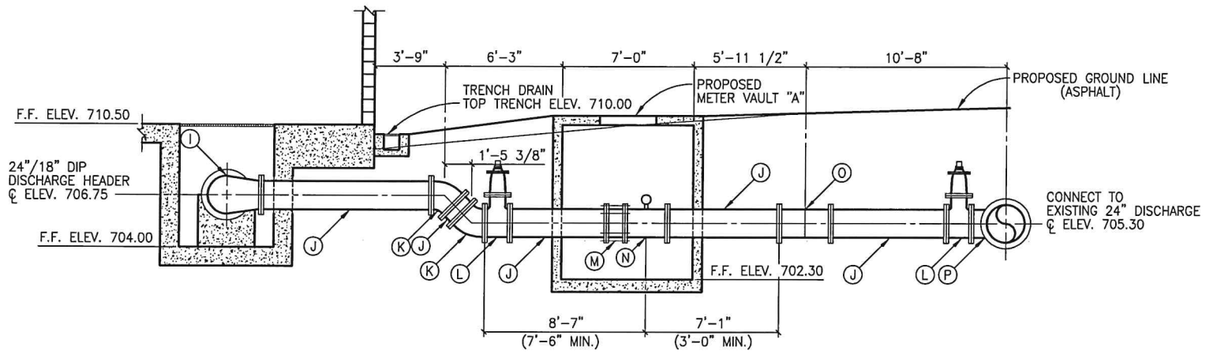


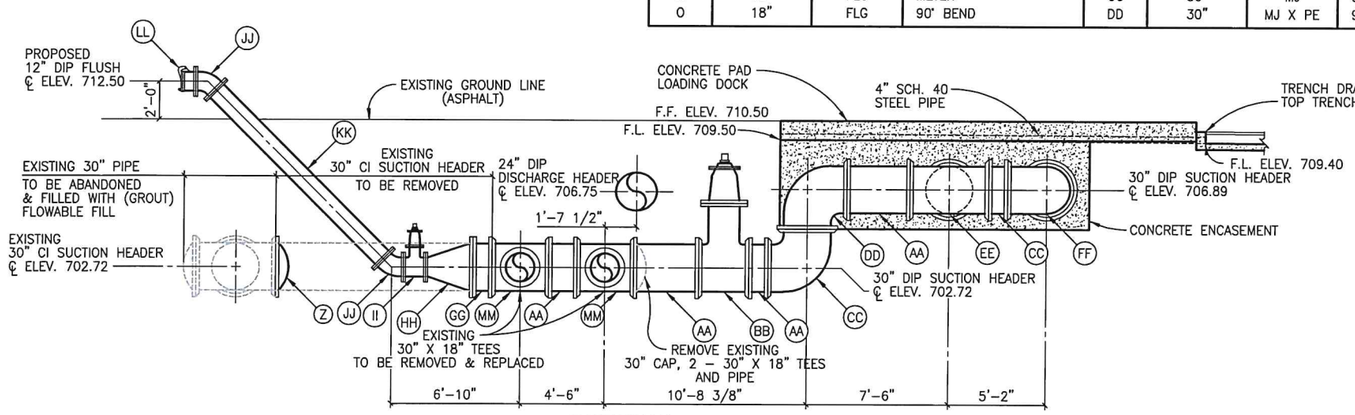
SECTION I-I



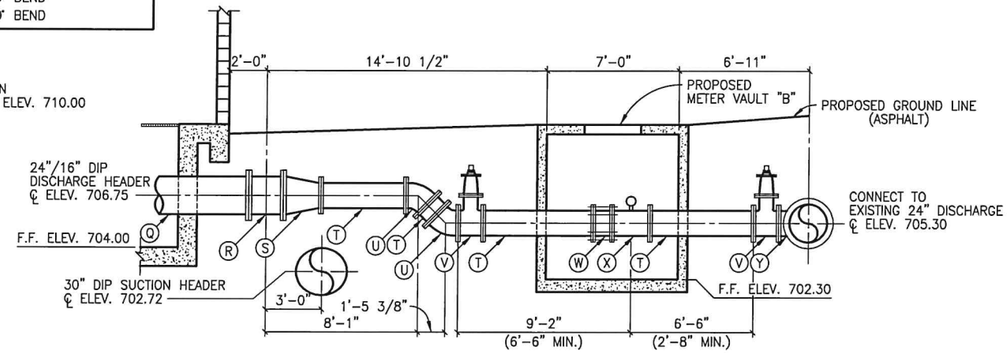
SECTION J-J

PIPE FITTINGS
APPLIES TO THIS SHEET ONLY

LETTER	SIZE	JOINT	DESCRIPTION	LETTER	SIZE	JOINT	DESCRIPTION	LETTER	SIZE	JOINT	DESCRIPTION
A	30"	FLG	PIPE	P	24" X 18"	FLG	WET TAP	EE	30"	MJ	TEE
B	30" X 24"	FLG	REDUCER	Q	24"	FLG	PIPE	FF	30"	MJ	90° BEND
C	24"	FLG X PE	PIPE	R	24"	FLG	22 1/2° BEND	GG	30"	FLG X PE	PIPE
D	24"	MJ	45° BEND	S	24" X 16"	FLG	REDUCER	HH	30" X 12"	FLG	REDUCER
E	24"	PE	PIPE	T	16"	FLG	PIPE	II	12"	FLG	GATE VALVE
F	24"	MJ	90° BEND	U	16"	FLG	45° BEND	JJ	12"	FLG	45° BEND
G	24"	FLG X MJ	GATE VALVE	V	16"	FLG	GATE VALVE	KK	12"	FLG	PIPE
H	30" X 24"	FLG	WET TAP	W	16"	FLG	COUPLING	LL	12"	FLG	FLAP VALVE
I	24" X 18"	FLG	REDUCING 90° BEND	X	16"	FLG	METER	MM	30" X 18"	MJ	TEE
J	18"	FLG	PIPE	Y	24" X 16"	FLG	WET TAP				
K	18"	FLG	45° BEND	Z	30"	MJ	PLUG/CAP				
L	18"	FLG	GATE VALVE	AA	30"	PE	PIPE				
M	18"	FLG	COUPLING	BB	30"	MJ	GATE VALVE				
N	18"	FLG	METER	CC	30"	MJ	90° BEND				
O	18"	FLG	90° BEND	DD	30"	MJ X PE	90° BEND				



SECTION K-K



SECTION L-L

0 2 4 8
GRAPHICAL SCALE IN FEET

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NO.	DATE	REVISION	BY

Plot Date: Jul 18, 2022 - 3:38pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

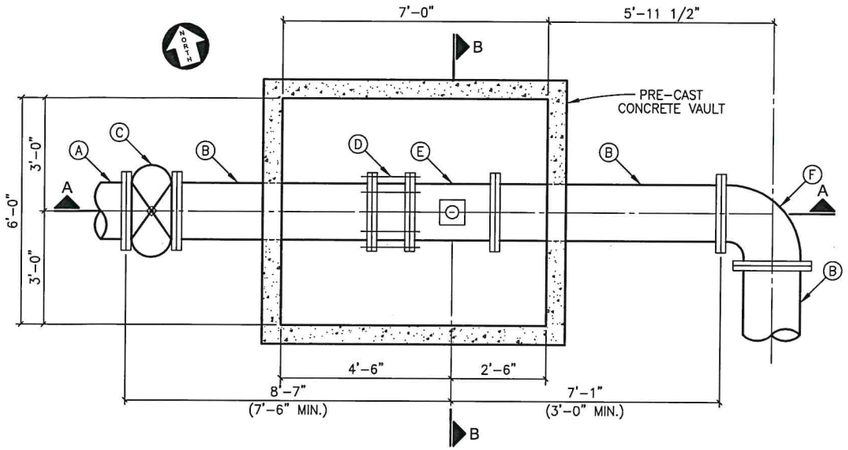
STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

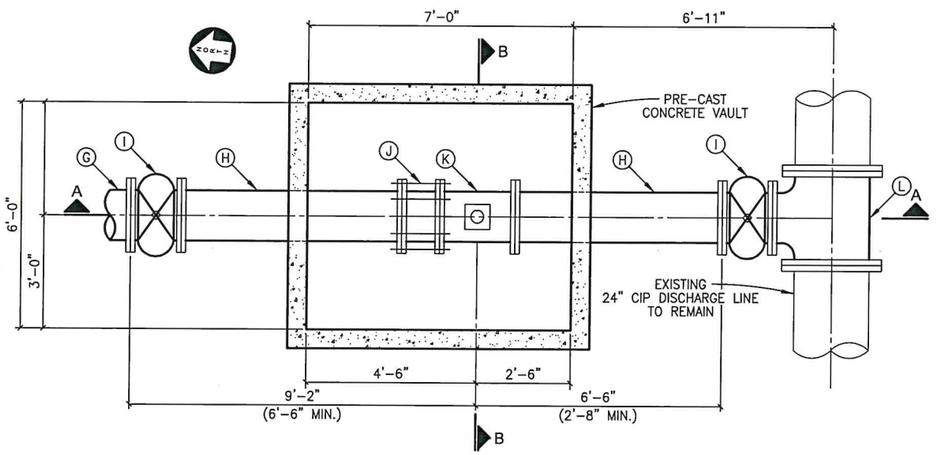
CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS

PUMP STATION
SECTION I-I, J-J, K-K & L-L

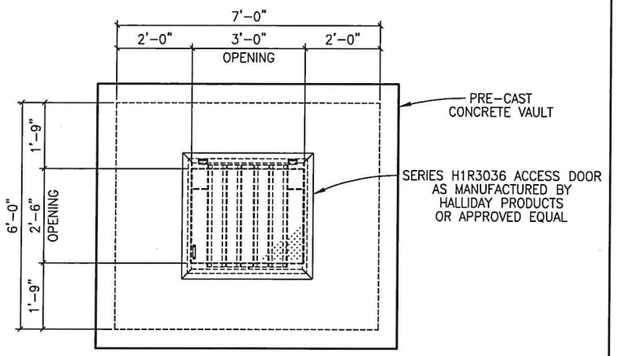
SHEET NO. **P-12**
OF **16** SHEETS



METER VAULT "A"
PIPING FLOOR PLAN



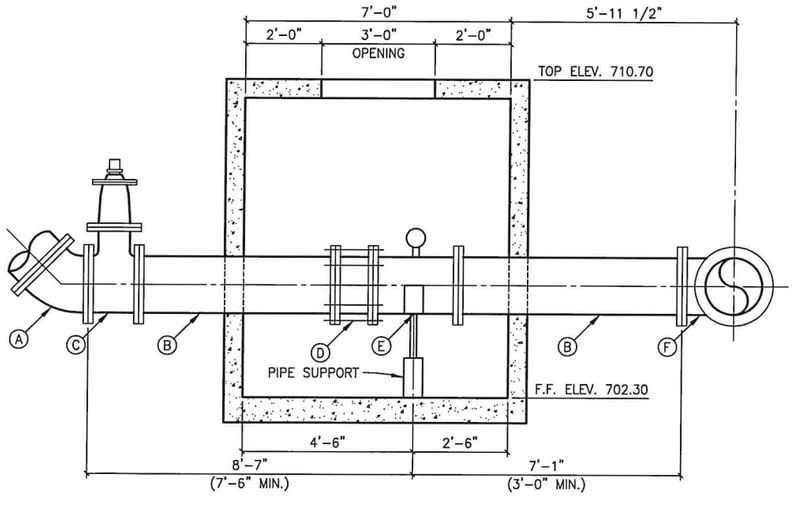
METER VAULT "B"
PIPING FLOOR PLAN



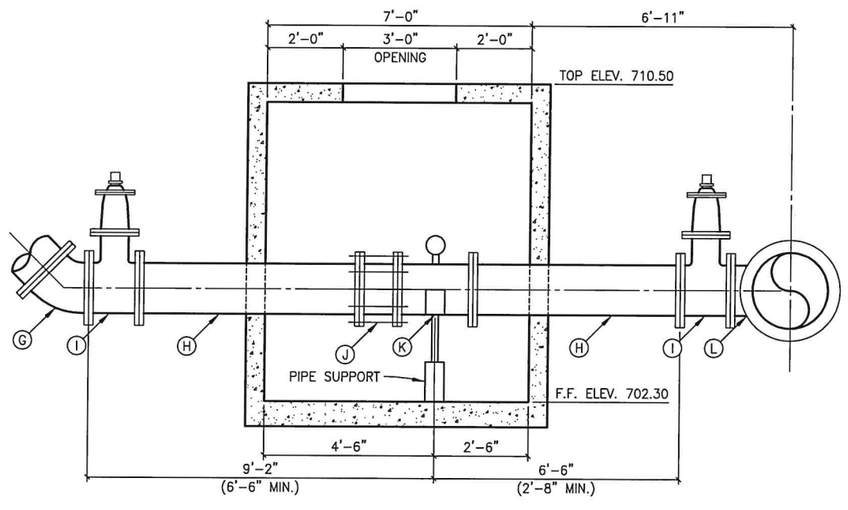
METER VAULT "A" & "B"
ROOF PLAN

PIPE FITTINGS
APPLIES TO THIS SHEET ONLY

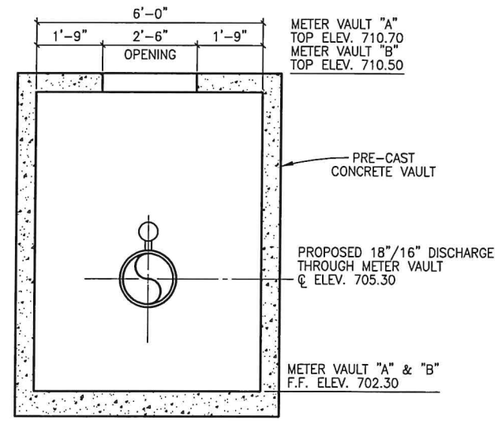
LETTER	SIZE	JOINT	DESCRIPTION	LETTER	SIZE	JOINT	DESCRIPTION
A	18"	FLG	45° BEND	G	16"	FLG	45° BEND
B	18"	FLG	PIPE	H	16"	FLG	PIPE
C	18"	FLG	GATE VALVE	I	16"	FLG	GATE VALVE
D	18"	FLG	COUPLING	J	16"	FLG	COUPLING
E	18"	FLG	METER	K	16"	FLG	METER
F	24" X 18"	FLG	90° BEND	L	24" X 16"	FLG	WET TAP



METER VAULT "A"
SECTON "A-A"



METER VAULT "B"
SECTION "A-A"



METER VAULT "A" & "B"
SECTION "B-B"

NO.	DATE	REVISION	BY

Plot Date: Jul 18, 2022 - 3:42pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED
PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
PUMP STATION METER VAULT DETAILS

SHEET NO. P-13
OF 16 SHEETS

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BNSF RAILROAD

Existing
14" Waterline
TO REMAIN IN PLACE

MH

10" WW

6" WW

CAUTION! CROSS
EXISTING 14" WATERLINE

96 L.F. – 4" PVC PIPE

4" WASTEWATER SERVICE
(24" MINIMUM COVER)
2 – 4" 45° BEND
2 – 4" WYE
1 – 4" CLEANOUT
25 L.F. – 4" PVC PIPE
SEE NOTE 1 THIS SHEET

NOTE:
1. CONTRACTOR SHALL SAW-CUT AND REMOVE EXISTING CONCRETE IN FLOOR AS REQUIRED TO INSTALL 4" WASTEWATER SERVICE LINE TO TOILET AND SINK. SERVICE LINES SHALL BE BACKFILLED WITH NON-SHRINK WITHIN EXISTING CONCRETE.

3' OFF EDGE OF CONCRETE

30" Suction Line TO BE ABANDONED

4" WWS

Existing Concrete Slab

Chain-Link Fence

4" WASTEWATER SERVICE
(24" MINIMUM COVER)
CONNECT TO EXISTING
6" WASTEWATER LINE
VERIFY LOCATION PRIOR
TO CONSTRUCTION
1 – 6" X 4" WYE
1 – 4" X 4" WYE
1 – 4" 22 1/2° BEND
1 – 4" CLEANOUT
7 L.F. – 4" PVC PIPE

Guy

Guy

Generator
with Concrete Pad

Bollards (Typ)

PROPOSED
PAD MOUNTED TRANSFORMER
SEE SHEET E 2.1 FOR DETAILS

PP

1" WS

3/4" DCW
SEE SHEET MP201

PROPOSED
HOSE BIBB
SEE DETAIL SHEET D-05

FH

GV

1" WATER SERVICE
(24" MINIMUM COVER)
CONNECT TO EXISTING
14" WATERLINE
VERIFY LOCATION PRIOR
TO CONSTRUCTION
1 – 14" X 1" TAPPING
SLEEVE WITH VALVE
1 – STANDARD WATER METER
2 – 1" 90° BEND
85 L.F. – 1" PVC PIPE
SEE CITY OF TEMPLE
STANDARD DETAILS

PROPOSED
METER VAULT "A"

PROPOSED
METER VAULT "B"

Asphalt

Meter Vault
to be Abandoned

Meter Vault
to be Abandoned

OHE

FO

MAMMA DOG CIR.

Transformer

Bollards (Typ)

NORTH

0 10 20

HORIZONTAL SCALE IN FEET

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\WASTEWATER SERVICE.dwg

NO.	DATE	REVISION	BY

Plot Date:
Aug 30, 2022 - 6:08pm
Plotted By:
DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED
PROFESSIONAL ENGINEER

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KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

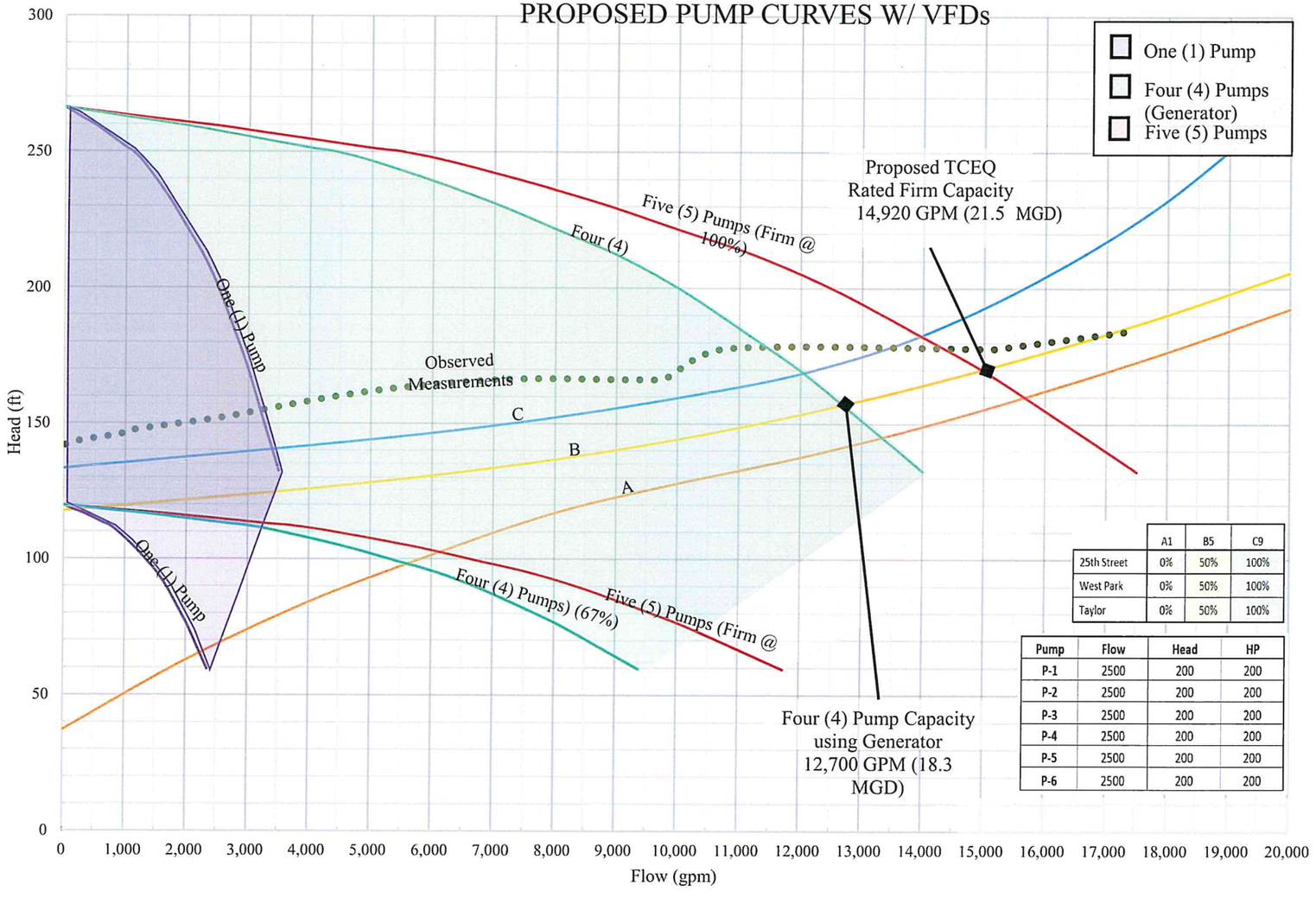
CITY OF TEMPLE, TEXAS

AVENUE G PUMP STATION
IMPROVEMENTS

PUMP STATION
WATER & WASTEWATER SERVICES

SHEET NO. P-14
OF 16 SHEETS

GRAPH - PP1
AVENUE G PUMP STATION
PROPOSED PUMP CURVES W/ VFDs



	A1	B5	C9
25th Street	0%	50%	100%
West Park	0%	50%	100%
Taylor	0%	50%	100%

Pump	Flow	Head	HP
P-1	2500	200	200
P-2	2500	200	200
P-3	2500	200	200
P-4	2500	200	200
P-5	2500	200	200
P-6	2500	200	200

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\WORKING\PUMP STATION PLAN.dwg

NO.	DATE	REVISION	BY

Plot Date: Jun 14, 2022 - 7:18pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

KPA

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CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS

PUMP STATION
SYSTEM HEAD CURVE

SHEET NO. P-15
OF 16 SHEETS

PUMP STATION OPERATION SEQUENCE BY STAGE

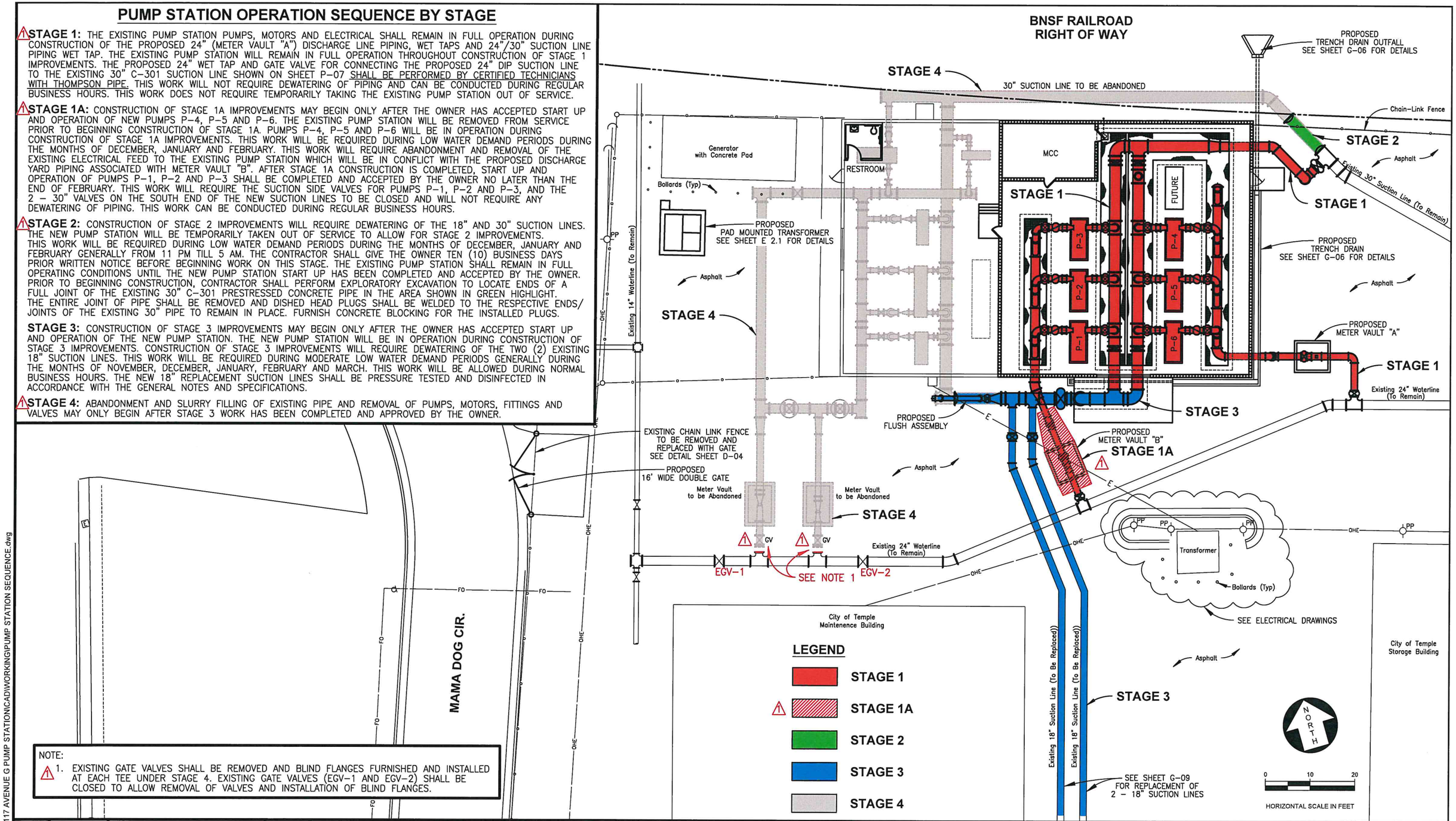
STAGE 1: THE EXISTING PUMP STATION PUMPS, MOTORS AND ELECTRICAL SHALL REMAIN IN FULL OPERATION DURING CONSTRUCTION OF THE PROPOSED 24" (METER VAULT "A") DISCHARGE LINE PIPING, WET TAPS AND 24"/30" SUCTION LINE PIPING WET TAP. THE EXISTING PUMP STATION WILL REMAIN IN FULL OPERATION THROUGHOUT CONSTRUCTION OF STAGE 1 IMPROVEMENTS. THE PROPOSED 24" WET TAP AND GATE VALVE FOR CONNECTING THE PROPOSED 24" DIP SUCTION LINE TO THE EXISTING 30" C-301 SUCTION LINE SHOWN ON SHEET P-07 SHALL BE PERFORMED BY CERTIFIED TECHNICIANS WITH THOMPSON PIPE. THIS WORK WILL NOT REQUIRE DEWATERING OF PIPING AND CAN BE CONDUCTED DURING REGULAR BUSINESS HOURS. THIS WORK DOES NOT REQUIRE TEMPORARILY TAKING THE EXISTING PUMP STATION OUT OF SERVICE.

STAGE 1A: CONSTRUCTION OF STAGE 1A IMPROVEMENTS MAY BEGIN ONLY AFTER THE OWNER HAS ACCEPTED START UP AND OPERATION OF NEW PUMPS P-4, P-5 AND P-6. THE EXISTING PUMP STATION WILL BE REMOVED FROM SERVICE PRIOR TO BEGINNING CONSTRUCTION OF STAGE 1A. PUMPS P-4, P-5 AND P-6 WILL BE IN OPERATION DURING CONSTRUCTION OF STAGE 1A IMPROVEMENTS. THIS WORK WILL BE REQUIRED DURING LOW WATER DEMAND PERIODS DURING THE MONTHS OF DECEMBER, JANUARY AND FEBRUARY. THIS WORK WILL REQUIRE ABANDONMENT AND REMOVAL OF THE EXISTING ELECTRICAL FEED TO THE EXISTING PUMP STATION WHICH WILL BE IN CONFLICT WITH THE PROPOSED DISCHARGE YARD PIPING ASSOCIATED WITH METER VAULT "B". AFTER STAGE 1A CONSTRUCTION IS COMPLETED, START UP AND OPERATION OF PUMPS P-1, P-2 AND P-3 SHALL BE COMPLETED AND ACCEPTED BY THE OWNER NO LATER THAN THE END OF FEBRUARY. THIS WORK WILL REQUIRE THE SUCTION SIDE VALVES FOR PUMPS P-1, P-2 AND P-3, AND THE 2 - 30" VALVES ON THE SOUTH END OF THE NEW SUCTION LINES TO BE CLOSED AND WILL NOT REQUIRE ANY DEWATERING OF PIPING. THIS WORK CAN BE CONDUCTED DURING REGULAR BUSINESS HOURS.

STAGE 2: CONSTRUCTION OF STAGE 2 IMPROVEMENTS WILL REQUIRE DEWATERING OF THE 18" AND 30" SUCTION LINES. THE NEW PUMP STATION WILL BE TEMPORARILY TAKEN OUT OF SERVICE TO ALLOW FOR STAGE 2 IMPROVEMENTS. THIS WORK WILL BE REQUIRED DURING LOW WATER DEMAND PERIODS DURING THE MONTHS OF DECEMBER, JANUARY AND FEBRUARY GENERALLY FROM 11 PM TILL 5 AM. THE CONTRACTOR SHALL GIVE THE OWNER TEN (10) BUSINESS DAYS PRIOR WRITTEN NOTICE BEFORE BEGINNING WORK ON THIS STAGE. THE EXISTING PUMP STATION SHALL REMAIN IN FULL OPERATING CONDITIONS UNTIL THE NEW PUMP STATION START UP HAS BEEN COMPLETED AND ACCEPTED BY THE OWNER. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL PERFORM EXPLORATORY EXCAVATION TO LOCATE ENDS OF A FULL JOINT OF THE EXISTING 30" C-301 PRESTRESSED CONCRETE PIPE IN THE AREA SHOWN IN GREEN HIGHLIGHT. THE ENTIRE JOINT OF PIPE SHALL BE REMOVED AND DISHED HEAD PLUGS SHALL BE WELDED TO THE RESPECTIVE ENDS/ JOINTS OF THE EXISTING 30" PIPE TO REMAIN IN PLACE. FURNISH CONCRETE BLOCKING FOR THE INSTALLED PLUGS.

STAGE 3: CONSTRUCTION OF STAGE 3 IMPROVEMENTS MAY BEGIN ONLY AFTER THE OWNER HAS ACCEPTED START UP AND OPERATION OF THE NEW PUMP STATION. THE NEW PUMP STATION WILL BE IN OPERATION DURING CONSTRUCTION OF STAGE 3 IMPROVEMENTS. CONSTRUCTION OF STAGE 3 IMPROVEMENTS WILL REQUIRE DEWATERING OF THE TWO (2) EXISTING 18" SUCTION LINES. THIS WORK WILL BE REQUIRED DURING MODERATE LOW WATER DEMAND PERIODS GENERALLY DURING THE MONTHS OF NOVEMBER, DECEMBER, JANUARY, FEBRUARY AND MARCH. THIS WORK WILL BE ALLOWED DURING NORMAL BUSINESS HOURS. THE NEW 18" REPLACEMENT SUCTION LINES SHALL BE PRESSURE TESTED AND DISINFECTED IN ACCORDANCE WITH THE GENERAL NOTES AND SPECIFICATIONS.

STAGE 4: ABANDONMENT AND SLURRY FILLING OF EXISTING PIPE AND REMOVAL OF PUMPS, MOTORS, FITTINGS AND VALVES MAY ONLY BEGIN AFTER STAGE 3 WORK HAS BEEN COMPLETED AND APPROVED BY THE OWNER.



NOTE:

1. EXISTING GATE VALVES SHALL BE REMOVED AND BLIND FLANGES FURNISHED AND INSTALLED AT EACH TEE UNDER STAGE 4. EXISTING GATE VALVES (EGV-1 AND EGV-2) SHALL BE CLOSED TO ALLOW REMOVAL OF VALVES AND INSTALLATION OF BLIND FLANGES.

NO.	DATE	REVISION	BY
1	9-16-2022	ADDENDUM NO. 1	RNK

Plot Date: Sep 16, 2022 - 12:32pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 9/16/23

STATE OF TEXAS — RICK N. KASBERG — 70163 — REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
SUCTION AND DISCHARGE PIPING SEQUENCE OF CONSTRUCTION

SHEET NO. P-16
OF 16 SHEETS

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CADWORKING\PUMP STATION SEQUENCE.dwg

DESIGN CRITERIA

1. THE CONSTRUCTION DOCUMENTS ARE BASED ON THE REQUIREMENTS OF THE *INTERNATIONAL BUILDING CODE* WITH LOCAL AMENDMENTS FROM THE AUTHORITY HAVING JURISDICTION. 2015 INTERNATIONAL BUILDING CODE
   - A. BUILDING CODE VERSION: CITY OF TEMPLE
   - B. AUTHORITY HAVING JURISDICTION:
2. DEAD LOADS:
   - A. DEAD LOADS ARE BASED UPON THE ACTUAL WEIGHTS OF MATERIALS OF CONSTRUCTION AND FIXED SERVICE EQUIPMENT.
   - B. HANGING CEILING AND MECHANICAL LOADS: AN ALLOWANCE OF 5 PSF HAS BEEN MADE FOR HANGING CEILING AND MECHANICAL EQUIPMENTS SUCH AS DUCT WORK AND SPRINKLER PIPES.
3. LIVE LOADS:
   - A. PUMP STATION.....100 PSF
   - B. BRIDGE CRANE
     - a. VERTICAL LOADS
       - MAXIMUM STATIC WHEEL LOAD.....4,000 LB
       - DYNAMIC IMPACT FACTOR.....1.10
     - b. LATERAL LOAD
       - MAXIMUM LOAD (PERPENDICULAR TO BEAM).....0.20x RATED CAPACITY
       - MAXIMUM LOAD (PARALLEL TO BEAM).....0.10x RATED CAPACITY
4. ROOF LIVE LOAD
   - a. ORDINARY, FLAT, PITCHED AND CURVED UNOCCUPIED ROOFS:.....20 PSF, 300 LB
5. SNOW LOAD:
   - A. GROUND SNOW LOAD, Pg:..... 5 PSF
6. WIND:
   - A. ULTIMATE DESIGN WIND SPEED Vult:..... 119 MPH (3-SEC PEAK GUST)
   - B. NOMINAL DESIGN WIND SPEED, Vasd:..... 92 MPH (3-SEC PEAK GUST)
   - C. RISK CATEGORY:..... IV
   - D. WIND EXPOSURE CATEGORY:..... B
   - E. INTERNAL PRESSURE COEFFICIENT:..... ± 0.18
   - F. COMPONENTS AND CLADDING PRESSURES:..... SEE SCHEDULE
   - G. MAIN WIND FORCE RESISTING SYSTEM:..... STEEL MOMENT FRAMES AND CABLE-BRACE FRAMES
7. RAIN
   - A. 100-YEAR RAINFALL INTENSITY (IN/HR):..... 4.04
   - B. MAXIMUM ROOF RAIN LOAD:..... 20 PSF
   - C. MAXIMUM RAINWATER LEVEL - PONDING (STATIC + HYDRAULIC HEAD):... 4"
   - D. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IF THE TOTAL RAIN WATER LEVEL EXCEEDS THE DESIGNED RAIN ROOF LOAD.
8. SEISMIC:

   MAPPED SPECTRAL RESPONSE VALUES, DESIGN SPECTRAL RESPONSE VALUES, AND AS SITE CLASS, HAVE BEEN PROVIDED BY :
   - A. GEOTECHNICAL COMPANY AND REPORT NO.:..... LFE REPORT NO. W21-052
   - B. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS, S_S & S_1..... 0.10 & 0.04
   - C. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS, S_{DS} & S_{D1}:..... 0.072 & 0.062
   - D. SITE CLASS:..... D
   - E. RISK CATEGORY:..... II
   - F. SEISMIC DESIGN CATEGORY, SDC:..... A
   - G. DESIGN BASE SHEAR:..... 1% SEISMIC WEIGHT

FOUNDATION DESIGN CRITERIA

1. GEOTECHNICAL REPORT: THIS FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS PROVIDED IN SITE-SPECIFIC GEOTECHNICAL REPORT. IN DESIGNING THE FOUNDATION FOR THE PROPOSED STRUCTURE, THE FOUNDATION DESIGN ENGINEER DOES NOT ASSUME RESPONSIBILITY FOR THE ACCURACY OF THE GEOTECHNICAL ENGINEER'S REPORT OR ANY INFORMATION CONTAINED THEREIN. INFORMATION CONTAINED IN THE GEOTECHNICAL REPORT(S) REFLECTS CONDITIONS AS FOUND AT THE LOCATION OF THE BORINGS. ACTUAL CONDITIONS AT LOCATIONS BETWEEN AND SURROUNDING THE BORINGS MAY DIFFER FROM THE SOIL STRATIGRAPHY DEPICTED BY THE BORINGS. IF THERE ARE ANY CONDITIONS DIFFERING FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT, OR IF ANY CHANGES HAVE BEEN IMPOSED ON THE SOILS IN QUESTION SINCE THE REPORT WAS WRITTEN, THEN THE DESIGN ENGINEER OF RECORD SHOULD BE NOTIFIED IN WRITING PRIOR TO CONSTRUCTION OF THE FOUNDATION IN ORDER TO REVIEW THE EFFECTS ON THE PERFORMANCE OF THE DESIGNED FOUNDATION.
   - A. GEOTECHNICAL ENGINEER: LANGERMAN FOSTER ENGINEERING COMPANY
   - B. REPORT NUMBER: W21-052
   - C. REPORT DATE: AUGUST 9, 2021
   - D. THE FOUNDATION DESIGN PARAMETERS PROVIDED WILL NOT ELIMINATE POST-CONSTRUCTION FOUNDATION MOVEMENT. AS SUCH, MEASURES SHALL BE TAKEN TO INCREASE THE TOLERANCE OF THE STRUCTURE SUPPORTED BY THE FOUNDATION. MEASURES INCLUDE BUT ARE NOT LIMITED TO FREQUENT CONTROL JOINTS FOR MASONRY/BRICK/STONE/STUCCO EXTERIOR VENEER (15'-0 MAXIMUM), VERTICALLY SLOTTED CLIPS TO ATTACH ROOF TRUSSES TO NON-LOAD BEARING WALLS, ETC.
2. **ABNORMAL CONDITIONS:** IF THE FOUNDATION IS INSTALLED DURING A DRY OR WET PERIOD, WHICH IS CONSIDERED EXTREME OR ABNORMAL, THEN THE BUILDER SHALL NOTIFY THE GEOTECHNICAL ENGINEER AND FOUNDATION ENGINEER PRIOR TO CONSTRUCTION FOR POSSIBLE SOIL CONDITIONING OR FOUNDATION RE-DESIGN .
3. **FOUNDATION MOVEMENT:** THE FOUNDATION HAS BEEN DESIGNED WITH THE ASSUMPTION THAT MOVEMENT CAN BE TOLERATED WITHIN A STANDARD PERFORMANCE LIMIT:
   - A. STANDARD PERFORMANCE DEFLECTION LIMIT: ***L/360***
   - B. STANDARD PERFORMANCE TILT LIMIT: ***1%***
4. **SOIL MOISTURE LEVEL:** A REASONABLY UNIFORM SOIL MOISTURE LEVEL IS MAINTAINED AROUND THE FOUNDATION FOR THE LIFE OF THE STRUCTURE.
5. **FOUNDATION MAINTENANCE:** POSITIVE DRAINAGE AWAY FROM THE STRUCTURE SHALL BE MAINTAINED FOR THE LIFE OF THE STRUCTURE AND THE CONTRACTOR SHALL CONVEY THIS REQUIREMENT TO THE OWNER. THE INITIAL AND ALL SUBSEQUENT OWNERS MAINTAIN THE FOUNDATION IN ACCORDANCE WITH THE LATEST REVISION OF DOCUMENT NO. FPA-SC-07, "FOUNDATION MAINTENANCE AND INSPECTION GUIDE FOR RESIDENTIAL AND OTHER LOW-RISE BUILDINGS", AVAILABLE ON THE FOUNDATION PERFORMANCE ASSOCIATION'S WEBSITE: WWW.FOUNDATIONPERFORMANCE.ORG. CONTRACTOR SHALL PROVIDE THIS DOCUMENT TO OWNER.
6. **EXPIRATION:** PLANS ARE VALID FOR 6-MONTHS FROM THE DATE THE PLANS ARE ISSUED OR REVISED BY THE ENGINEER. CONTACT ENGINEER FOR REVIEW IF PLANS HAVE EXPIRED OR IF CONSTRUCTION OF THE FOUNDATION HAS NOT COMMENCED WITHIN THIS TIME FRAME.

LATERAL LOAD RESISTING SYSTEM

1. ALL LATERAL LOAD RESISTANCE AND STABILITY OF THE BUILDING IS PROVIDED EXCLUSIVELY BY VERTICAL LATERAL LOAD RESISTING SYSTEM. THE HORIZONTAL DIAPHRAGMS DISTRIBUTE THE LATERAL WIND AND SEISMIC FORCES HORIZONTALLY TO THE VERTICAL LATERAL LOAD RESISTING SYSTEM.
   - A. VERTICAL LATERAL LOAD RESISTING SYSTEM: STEEL MOMENT FRAMES AND CABLE-BRACE FRAMES
   - B. HORIZONTAL LATERAL LOAD RESISTING SYSTEM: HORIZONTAL CABLE BRACES

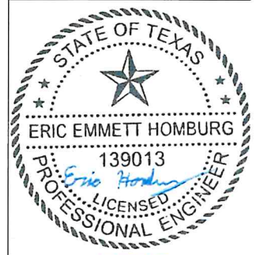
STRUCTURAL DEFERRED SUBMITTALS:

1. STRUCTURAL DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH REQUIRE STRUCTURAL ENGINEERING THAT ARE NOT SUBMITTED AT THE TIME OF THE APPLICATION BUT ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL AT A LATER DATE. DEFERRED SUBMITTALS SHALL BE SUBMITTED TO AND APPROVED BY THE BUILDING OFFICIAL PRIOR TO INSTALLATION OF ANY SAID WORK.
2. COMPLETE STRUCTURAL SHOP DRAWINGS FOR CONSTRUCTION OF EACH BUILDING COMPONENT NOT DESIGNED BY THE STRUCTURAL ENGINEER-OF-RECORD (SER) AND NOT SPECIFIED ON THE PROJECT CONSTRUCTION DOCUMENTS SHALL BE SEALED AND SIGNED BY A SPECIALTY STRUCTURAL ENGINEER (SSE) WHO IS A LICENED PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS BEING CONSTRUCTED WHO IS QUALIFIED TO PERFORM SAID WORK. A SEAL BY A LICENSED PROFESSIONAL ENGINEER IS NOT REQUIRED FOR EITHER PRODUCTS WHICH HAVE BEEN TESTED AND CERTIFIED BY AN APPROVED AGENCY SUCH AS THE ICC NOR FOR COMPONENTS WHICH ARE FABRICATED BY A FABRICATOR THAT IS CERTIFIED BY AN APPROVED AGENCY IN WHICH THE AGENCY SPECIFIED THAT SEALING OF THE SHOP DRAWINGS IS NOT REQUIRED (E.G. STEEL JOIST INSTITUTE IN REGARDS TO OPEN WEB STEEL JOISTS)
3. THE SPECIALTY STRUCTURAL ENGINEER (SSE) SHALL SPECIFICALLY INDICATE IN A COVER PAGE AT THE FRONT OF THE SHOP DRAWING THAT THEY ARE THE STRUCTURAL ENGINEER IN RESPONSIBLE CHARGE FOR THE DEFERRED SUBMITTAL AND THAT THEY HAVE REVIEWED THE SHOP DRAWING TO ENSURE COMPLIANCE WITH THEIR DESIGN AND CALCULATIONS.
4. ALL STRUCTURAL DEFERRED SUBMITTALS SHALL BE REVIEWED BY THE SER AND MARKED AS EITHER NO EXCEPTIONS OR EXCEPTION NOTED, PRIOR TO SUBMITTING TO THE "FOR CONSTRUCTION" VERSION TO THE AUTHORITY HAVING JURISDICTION (AHJ) AND PRIOR TO RELEASE FOR FABRICATION.
5. STRUCTURAL DEFERRED SUBMITTALS ON THIS PROJECT INCLUDE:
   - A. STAIRS, GUARDRAIL, HANDRAILS, GRAB BARS, LADDERS, ETC.
   - B. AWNINGS, CANOPIES, AND LOUVERS, ETC.
   - C. WINDOWS
   - D. SITE: LIGHT POLES, FLAG POLES, ANTENNAS, MONUMENT SIGNS, TRASH ENCLOSURES, RETAINING WALLS
   - E. BOLLARDS, TRAFFIC BARRIERS, ETC.

GENERAL CONDITIONS

1. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. METHODS, PROCEDURES AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR QUALITY CONTROL, INCLUDING WORKMANSHIP AND MATERIALS FURNISHED BY SUBCONTRACTORS AND SUPPLIERS.
3. REFER TO DRAWINGS OTHER THAN STRUCTURAL FOR COMPLETE INFORMATION REGARDING: SLEEVES, CURBS, INSERTS, DEPRESSIONS, OPENINGS, ETC.
4. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND LATEST REVISIONS/ADDENDA AND TO SUBMIT SUCH DOCUMENTS TO ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS OR MATERIAL PROCUREMENT.
5. THE USE OR REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, DUE TO ANY ERRORS THAT MAY OCCUR HEREON.
6. ALL WORK SHALL CONFORM TO OSHA STANDARDS.
7. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH ALL CODES AND REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
8. THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND REPORT ANY DISCREPANCIES BETWEEN EACH SET OF DRAWINGS AND WITHIN EACH SET OF DRAWINGS TO THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS.
9. FRAMING LAYOUTS ARE PROVIDED TO REPRESENT DESIGN CONCEPTS AND SYSTEMS CONSTRUCTION. THE CONTRACTOR AND SUBCONTRACTORS ARE RESPONSIBLE FOR MATERIAL QUANTITIES AND ANY AND ALL UNSPECIFIED COMPONENTS REQUIRED FOR CONSTRUCTION.
10. WHERE MEMBER LOCATIONS ARE NOT SPECIFICALLY DIMENSIONED, MEMBERS ARE EITHER LOCATED ON COLUMN LINES OR ARE EQUALLY SPACED BETWEEN THE LOCATED MEMBERS.
11. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS SHOWN OR SPECIFIED IN SIMILAR CONDITIONS.
12. WHERE CONFLICT EXISTS AMONG THE VARIOUS PARTS OF THE STRUCTURAL CONTRACT DOCUMENTS, STRUCTURAL DRAWINGS, GENERAL NOTES AND SPECIFICATIONS, THE STRICTEST REQUIREMENTS, AS INDICATED BY THE ENGINEER, SHALL GOVERN.
13. THE FLOOR DESIGN LIVE LOAD FOR EACH ELEVATED FLOOR STRUCTURE OR PORTION THEREOF THAT EXCEEDS 50 POUNDS PER SQUARE FOOT (PSF) SHALL BE STATED ON DURABLE SIGNS AND CONSPICUOUSLY POSTED BY THE OWNER IN THE APPLICABLE AREA(S) OF THE BUILDING.
14. ALL STRUCTURES REQUIRE PERIODIC MAINTENANCE TO EXTEND LIFESPAN AND ENSURE STRUCTURAL INTEGRITY FROM EXPOSURE TO THE ENVIRONMENT. A PLANNED PROGRAM OF MAINTENANCE SHALL BE ESTABLISHED BY THE BUILDING OWNER. THIS PROGRAM SHALL INCLUDE SUCH ITEMS AS, BUT NOT LIMITED TO, PAINTING OF STRUCTURAL STEEL, PROTECTIVE COATING FOR CONCRETE, SEALANTS, CAULKED JOINTS, EXPANSION JOINTS, CONTROL JOINTS, SPALLS AND CRACKS IN CONCRETE, AND PRESSURE WASHING OF EXPOSED STRUCTURAL ELEMENTS EXPOSED TO A SALT ENVIRONMENT OR OTHER HARSH CHEMICALS.
15. THE STRUCTURAL ENGINEER'S ROLE DURING CONSTRUCTION
   - A. THE ENGINEER SHALL NOT HAVE CONTROL NOR CHARGE OF, AND SHALL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
   - B. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF THE STRUCTURAL ENGINEER IS SOLELY FOR THE PURPOSE OF BECOMING GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF THE WORK COMPLETED AND DETERMINING, IN GENERAL, IF THE WORK OBSERVED IS BEING PERFORMED IN A MANNER INDICATING THAT THE WORK, WHEN FULLY COMPLETED, WILL BE IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.

Revision Schedule		
Revision Number	Revision Description	Revision Date



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba **DUDLEY**
6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0729 | TBPE Firm No. F-18677

GENERAL NOTES

S0.0

Date:	04/14/2022
Project No:	21-139

C&C - GROSS ALLOWABLE WIND PRESSURES

Cladding Type	Location	Effective Area (sf)	Coefficients +GCp	Coefficients -GCp	Wind pressures +p (psf)	Wind pressures -p (psf)
Wall	Interior	10	0.90	-0.99	+23.3	-25.3
		40	0.80	-0.89	+21.2	-23.2
		50	0.79	-0.88	+20.9	-22.9
		100	0.74	-0.83	+19.9	-21.8
		200	0.69	-0.78	+18.9	-20.8
Wall	Edge	10	0.90	-1.26	+23.3	-31.1
		40	0.80	-1.07	+21.2	-27.0
		50	0.79	-1.04	+20.9	-26.3
		100	0.74	-0.94	+19.9	-24.2
		200	0.69	-0.85	+18.9	-22.2
Roof	Interior	10	0.30	-1.00	+10.4	-25.5
		40	0.24	-0.94	+10.0	-24.2
		50	0.23	-0.93	+10.0	-24.0
		100	0.20	-0.90	+10.0	-23.3
		200	0.20	-0.90	+10.0	-23.3
Roof	Edge	10	0.30	-1.80	+10.4	-42.7
		40	0.24	-1.38	+10.0	-33.6
		50	0.23	-1.31	+10.0	-32.2
		100	0.20	-1.10	+10.0	-27.6
		200	0.20	-1.10	+10.0	-27.6
Roof	Corner	10	0.30	-2.80	+10.4	-64.3
		40	0.24	-1.78	+10.0	-42.2
		50	0.23	-1.61	+10.0	-38.7
		100	0.20	-1.10	+10.0	-27.6
		200	0.20	-1.10	+10.0	-27.6
Overhang	Interior & Edge	10	0.00	-1.70	+10.0	-36.7
		40	0.00	-1.64	+10.0	-35.4
		50	0.00	-1.63	+10.0	-35.2
		100	0.00	-1.60	+10.0	-34.5
		200	0.00	-1.38	+10.0	-29.9
Overhang	Corner	10	0.00	-2.80	+10.0	-60.4
		40	0.00	-1.60	+10.0	-34.5
		50	0.00	-1.40	+10.0	-30.3
		100	0.00	-0.80	+10.0	-17.3
		200	0.00	-0.80	+10.0	-17.3
Parapet	Interior	10	2.70	-1.89	+58.3	-40.8
		40	2.18	-1.70	+47.1	-36.7
		50	2.10	-1.67	+45.3	-36.0
		100	1.84	-1.57	+39.7	-33.9
		200	1.79	-1.48	+38.7	-31.9
Parapet	Edge	10	3.70	-2.16	+79.9	-46.6
		40	2.58	-1.87	+55.7	-40.4
		50	2.40	-1.83	+51.8	-39.4
		100	1.84	-1.68	+39.7	-36.3
		200	1.79	-1.54	+38.7	-33.2

a = MINIMUM OF (10% OF LEAST HORIZONTAL DIMENSION OR 0.4h) BUT NOT LESS THAN 4% OF LEAST HORIZONTAL DIMENSION OR 3FT

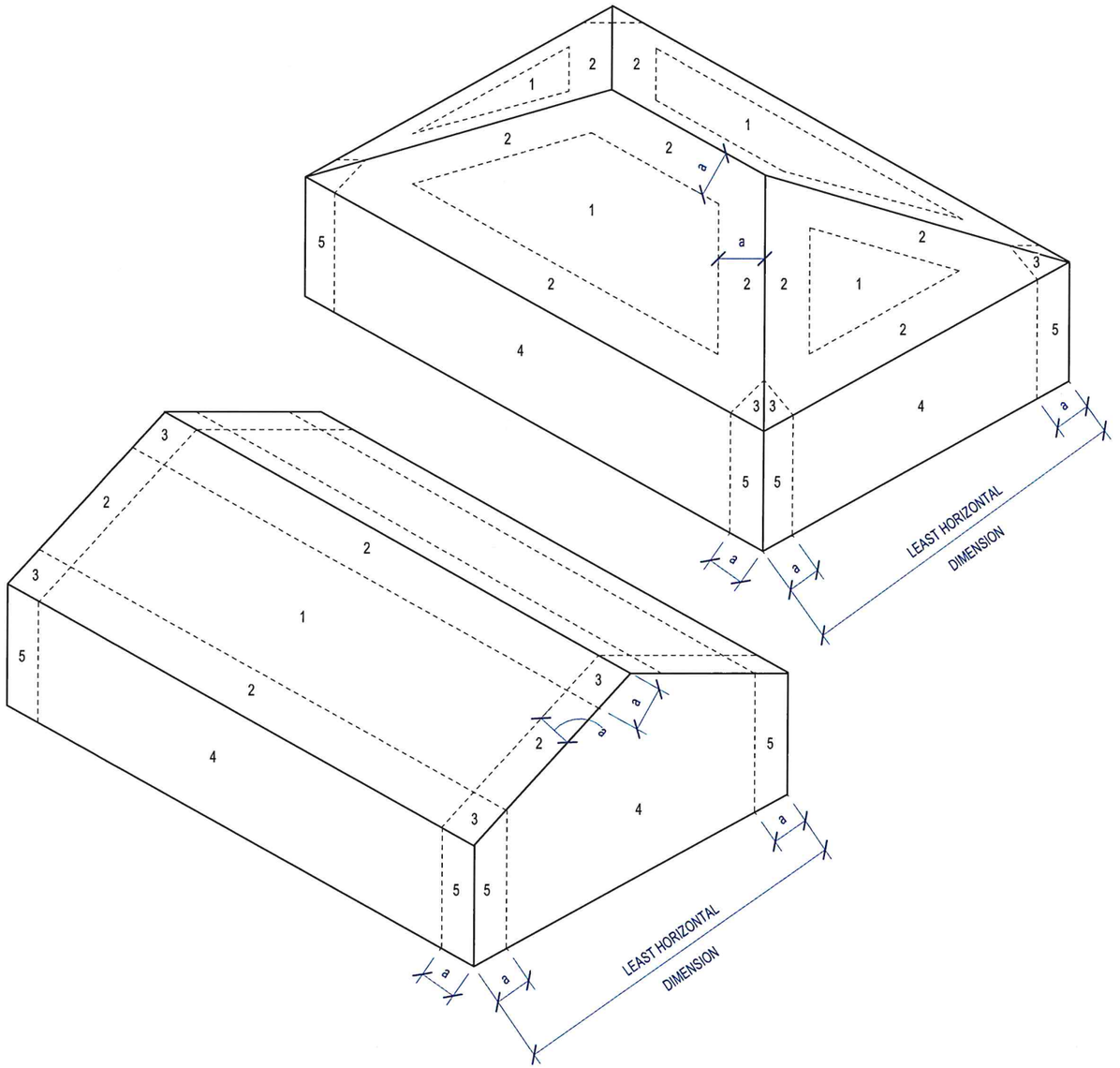
h = MEAN ROOF HEIGHT OF A BUILDING, EXCEPT THAT EAVE HEIGHT SHALL BE USED FOR ROOF ANGLES LESS THAN OR EQUAL TO 10° (~2:12 ROOF PITCH)

MEAN ROOF HEIGHT = THE AVERAGE OF THE ROOF EAVE HEIGHT AND HEIGHT TO THE HIGHEST POINT ON THE ROOF SURFACE.

COMPONENTS AND CLADDING ZONES	
DESCRIPTION	ZONE
ROOF INTERIOR	1
ROOF EDGE	2
ROOF CORNER	3
WALL INTERIOR	4
WALL EDGE	5

EXISTING CONDITIONS

1. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS OF THE EXISTING BUILDING AT THE JOB SITE AND REPORT ANY DISCREPANCIES FROM ASSUMED CONDITIONS SHOWN ON THE DRAWINGS TO THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION AND ERECTION OF ANY MEMBERS.
2. WORK SHOWN ON THE DRAWINGS IS NEW, UNLESS NOTED AS EXISTING.
3. EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS WAS OBTAINED FROM EXISTING CONSTRUCTION DOCUMENTS AND LIMITED SITE OBSERVATION. THESE DRAWINGS OF EXISTING CONSTRUCTION ARE AVAILABLE FOR CONTRACTOR USE. HOWEVER, THE AVAILABLE DRAWINGS OF EXISTING CONSTRUCTION ARE NOT NECESSARILY COMPLETE. THE CONTRACTOR SHALL FIELD VERIFY ALL PERTINENT INFORMATION.
4. DEMOLITION, CUTTING, DRILLING, ETC. OF EXISTING WORK SHALL BE PERFORMED WITH GREAT CARE SO AS NOT TO JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING. IF ANY ARCHITECTURAL, STRUCTURAL, OR MEP MEMBERS NOT DESIGNATED FOR REMOVAL INTERFERE WITH THE NEW WORK, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY AND APPROVAL OBTAINED PRIOR TO REMOVAL OF THOSE MEMBERS.
5. THE CONTRACTOR SHALL SAFELY SHORE EXISTING CONSTRUCTION WHEREVER EXISTING SUPPORTS ARE REMOVED TO ALLOW THE INSTALLATION OF NEW WORK. ALL SHORING METHODS AND SEQUENCING OF DEMOLITION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND HIS ENGINEER. THE SHORING SHALL BE IN ACOMPLIANCE WITH ASCE/SEI 37 (LATEST ED.) "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION".
6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION AND TAKE CARE TO PROTECT EXISTING UTILITIES THAT ARE TO REMAIN IN SERVICE.
7. THE CONTRACTOR SHALL REPAIR ALL DAMAGE CAUSED DURING CONSTRUCTION WITH SIMILAR MATERIALS AND WORKMANSHIP TO RESTORE CONDITIONS TO LEVELS ACCEPTABLE TO THE ARCHITECT/OWNER.



Revision Schedule		
Revision Number	Revision Description	Revision Date

STATE OF TEXAS
ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER

4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba DUDLEY
6103 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0726 | TBPE Firm No. F-18677

GENERAL NOTES

S0.1

Date:	04/14/2022
Project No:	21-139

STAIR, HANDRAILS, RESTROOM ACCESSORIES AND GUARDRAIL SPECIFICATIONS:

1. ALL STAIRS, GUARDRAILS AND HANDRAILS SHALL BE DESIGNED BY A REGISTERED STRUCTURAL ENGINEER BASED ON THE FOLLOWING DESIGN CRITERIA:
   - A. STAIRS:
     - a. STAIR STRINGERS, TREADS AND RISERS SHALL BE DESIGNED TO SUPPORT 100 PSF LIVE LOAD.
     - b. INDIVIDUAL STAIR TREADS SHALL BE DESIGNED TO SUPPORT A 300 LB CONCENTRATED LOAD PLACED IN A POSITION THAT WOULD CAUSE THE MAX STRESS.
   - B. HANDRAIL AND GUARDS
     - a. GUARD TOP RAIL AND HANDRAILS: THE TOP RAIL OF GUARDRAILS AND HANDRAILS SHALL BE DESIGNED TO WITHSTAND A LOAD OF 50 PLF APPLIED HORIZONTALLY AT RIGHT ANGLES, OR A 200 LB CONCENTRATED LOAD IN ANY DIRECTION.
     - b. INTERMEDIATE RAILS, PANEL FILLER AND THEIR CONNECTIONS SHALL BE DESIGNED TO WITHSTAND A LOAD OF 50 PSF APPLIED HORIZONTALLY AT RIGHT ANGLES OVER THE ENTIRE TRIBUTARY AREA, INCLUDING OPENINGS AND SPACES BETWEEN RAILS.
   - C. RESTROOM ACCESSORIES:
     - a. GRAB BARS, TUB AND SHOWER SEATS, FASTENERS, AND MOUNTING DEVICES SHALL BE DESIGNED TO RESIST A CONCENTRATED LOAD OF 250 POUNDS AT ANY LOCATION AND IN ANY DIRECTION.

CONTRACTOR QUALIFICATION

1. WORK SHALL BE PERFORMED BY A QUALIFIED CONSTRUCTION CONTRACTOR AND SUBCONTRACTOR EXPERIENCED IN THIS TYPE OF WORK. SUCH KNOWLEDGE SHALL INCLUDE MAKING ALLOWANCES FOR PERFORMING WORK OF THIS NATURE FOLLOWING INDUSTRY STANDARDS OF CARE.
2. THE CONSTRUCTION CONTRACTOR AND SUBCONTRACTORS SHALL UNDERSTAND THE NATURE OF DRAWING PRODUCTION AND COORDINATION BETWEEN CONSULTANTS AND SHALL NOT ENTER INTO A CONTRACT BASED ON DRAWINGS THAT ARE BELIEVED TO CONTAIN DISCREPANCIES OR ARE OTHERWISE INCOMPLETE UNLESS PROPER ALLOWANCES HAVE BEEN MADE FOR COST IMPLICATIONS THAT MAY ARISE DUE TO FUTURE DRAWING CHANGES MADE IN PREPARATION OF FINAL CONSTRUCTION DOCUMENTS.
3. IN THE COURSE OF PRODUCING AND ISSUING DRAWINGS, VARIOUS STAGES OF COMPLETION ARE DEVELOPED. THE CONSTRUCTION CONTRACTOR AND SUBCONTRACTORS SHALL UNDERSTAND THE PURPOSE AND CONTENT CONTAINED IN PERMIT, PRICING, AND CONSTRUCTION DRAWINGS. COST IMPLICATIONS AND CONTRACTIBILITY ARE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR AND SUBCONTRACTORS UNLESS PRIOR ARRANGEMENTS HAVE BEEN MADE WITH THE OWNER.

BUILDING MOVEMENT AND DEFLECTION CRITERIA

1. THE BUILDING MOVEMENT SPECIFIED HEREIN IS ANTICIPATED TO OCCUR AND SHOULD BE CONSIDERED BY THE CONTRACTOR IN PERFORMANCE OF THE WORK.
   - A. LATERAL FRAME WIND DEFLECTION (DRIFT): THE FOLLOWING PROVISION FOR LATERAL FRAME DEFLECTION IN THE PLANE OF THE WALL OF ONE FLOOR RELATIVE TO AN ADJACENT FLOOR SHALL BE MADE IN THE DESIGN, FABRICATION AND INSTALLATION FOR THE BUILDING CLADDING.
     - a. TYPICAL FLOOR TO FLOOR DRIFT: H/400
       - H = FLOOR TO FLOOR HEIGHT
   - B. FLOOR DEFLECTIONS: THE FOLLOWING PROVISION FOR SUPERIMPOSED LOAD DEFLECTIONS SHALL BE MADE IN THE DESIGN, FABRICATION, AND INSTALLATION OF ALL PARTITIONS, GLASS WALLS, AND OTHER ELEMENTS SUPPORT BY AND ATTACHED TO THE STRUCTURE:
     - a. TYPICAL FLOOR MEMBERS: SPAN / 360 BUT NOT LESS THAN 1/2"
     - b. TYPICAL ROOF MEMBERS: SPAN / 360 BUT NOT LESS THAN 1/2"
   - C. EXTERIOR WALL DEFLECTIONS: THE FOLLOWING PROVISION FOR SUPERIMPOSED LOAD DEFLECTIONS SHALL BE MADE IN THE DESIGN, FABRICATION, AND INSTALLATION OF ALL PARTITIONS, GLASS WALLS, AND OTHER ELEMENTS SUPPORT BY AND ATTACHED TO THE STRUCTURE:
     - a. EXTERIOR WALLS SUPPORTING MASONRY VENEER: SPAN / 600
     - b. EXTERIOR WALLS SUPPORTING FLEXIBLE FINISHES (METAL PANEL, FIBER-CEMENT SIDING, ETC.): SPAN / 360

FUTURE EXPANSION

1. NO PROVISIONS FOR ANY FUTURE EXPANSION HAVE BEEN MADE IN THE STRUCTURAL DESIGN.

SUBSTITUTIONS:

1. ALL REQUESTS FOR SUBSTITUTIONS OF MATERIALS OR DETAILS SHOWN IN THE CONTRACT DOCUMENTS SHALL BE SUBMITTED FOR APPROVAL DURING THE BIDDING PERIOD. ONCE BIDS ARE ACCEPTED, PROPOSED SUBSTITUTIONS WILL BE CONSIDERED ONLY WHEN THEY ARE OFFICIALLY SUBMITTED WITH AN IDENTIFIED SAVINGS TO BE DEDUCTED FROM THE CONTRACT.

REQUEST FOR INFORMATION (RFI)

1. RFI'S MUST INCLUDE A TRANSMITTAL SHEET THAT INDICATES THE FOLLOWING:
   - A. RFI NUMBER
   - B. RFI CATEGORY:
     - a. REQUEST FOR SUBSTITUTION
     - b. CORRECTIVE REPAIR
     - c. ADDITIONAL INFORMATION REQUIRED
     - d. DISCREPANCY BETWEEN CONSTRUCTION DOCUMENTS
   - C. DATE SUBMITTED
   - D. DATE RESPONSE NEED BY
   - E. SUBMITTED BY (INCLUDE EMAIL AND PHONE NUMBER)
   - F. RFI DESCRIPTION INCLUDING:
     - a. SHEET NUMBER, DETAIL AND/OR SPECIFICATION NUMBER IF APPLICABLE
     - b. SKETCHES IF APPLICABLE
     - c. PHOTOS IF APPLICABLE.

SUBMITTALS

1. SUBMITTAL LIST AND SCHEDULE
   - A. THE GENERAL CONTRACTOR SHALL PREPARE A DETAILED LIST AND SCHEDULE OF ALL SUBMITTAL ITEMS TO BE SENT TO THE STRUCTURAL ENGINEER PRIOR TO THE START OF CONSTRUCTION. THIS LIST SHALL BE UPDATED AND REVISED AS THE JOB PROGRESSES.
2. SUBMITTAL REQUIREMENTS:
   - A. ALL SUBMITTALS MUST BE REVIEWED AND ELECTRONICALLY STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL TO THE DESIGN TEAM AS NO EXCEPTIONS.
   - B. ALL SUBMITTALS MUST INCLUDE A TRANSMITTAL SHEET WHICH INDICATES:
     - a. SUBMITTAL NUMBER PER THE FOLLOWING FORMAT: E.G. 03 30 00-01.00 (DIVISION, SUBMITTAL # FOR DIVISION, ISSUE # - THE EXAMPLE INDICATES THE FIRST SUBMITTAL, FIRST ISSUE OF A CONCRETE SUBMITTAL)
     - b. BRIEF DESCRIPTION OF SUBMITTAL CONTENTS
     - c. DATE ISSUED
     - d. REQUESTED RETURN DATE
     - e. ISSUING PARTY INCLUDING NAME, PHONE NUMBER AND EMAIL
   - C. CONTRACTOR SHALL PROVIDE THE SUBMITTAL IN ELECTRONIC (PDF) FORMAT. SUBMITTALS SHALL NOT BE SCANNED COPIES OF PRINTED DOCUMENTS.
   - D. THE OMISSION FROM THE SHOP DRAWINGS OF ANY MATERIALS REQUIRED BY THE CONTRACT DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING AND INSTALLING SUCH MATERIALS, REGARDLESS OF WHETHER SHOWN OR COMMENTED IN THE SHOP DRAWING
   - E. THE CONTRACTOR MUST ALLOW A MINIMUM OF 14 DAYS FOR STRUCTURAL REVIEW OF ALL SUBMITTALS. THE CONTRACTOR CAN REQUEST AN EXPEDITED REVIEW AT AN AGREED UPON FEE WITH THE STRUCTURAL ENGINEER.
   - F. STRUCTURAL STEEL SUBMITTALS MUST BE ACCOMPANIED BY THE SDS/2 OR TEKLA MODEL WHICH WILL BE USED BY THE DESIGN TEAM AS A VISUAL AID TO THE SHOP DRAWINGS.
3. REFER TO THE SPECIFICATIONS FOR A LIST OF ALL THE REQUIRED SUBMITTALS.
4. ENGINEER REVIEW STAMP DESIGNATIONS: ALL DESIGNATIONS ARE INDICATIVE OF A REVIEW FOR GENERAL CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS.
   - A. NO EXCEPTIONS
     - a. NO ITEMS WERE FOUND TO BE IN CONFLICT WITH THE CONSTRUCTION DOCUMENTS, NO "FOR REVIEW" RESUBMITTAL REQUIRED.
   - B. EXCEPTIONS NOTED
     - a. ITEMS WERE FOUND IN CONFLICT WITH THE CONSTRUCTION DOCUMENTS AND NEED TO BE REVISED PRIOR TO SUBMITTING "FOR CONSTRUCTION" SUBMITTAL.
   - C. REVISE AND RESUBMIT
     - a. SIGNIFICANT ITEMS WERE FOUND IN CONFLICT WITH THE CONSTRUCTION DOCUMENTS. THE SUBMITTAL NEEDS TO BE RESUBMITTED "FOR REVIEW".
   - D. NOT REVIEWED
     - a. THE SUBMITTAL WAS NOT STRUCTURAL.
   - E. FOR INFORMATION ONLY
     - a. THE SUBMITTAL DID NOT REQUIRE REVIEW BUT HAS BEEN FILED FOR THE RECORD.
   - F. IMPACT TO STRUCTURE
     - a. THE SUBMITTAL HAS BEEN REVIEWED FOR THE STRUCTURALLY IMPACT TO THE STRUCTURE ONLY.

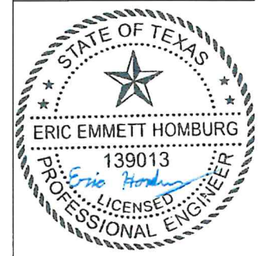
INSPECTIONS:

1. CONSTRUCTION OR WORK FOR WHICH A PERMIT IS REQUIRED SHALL BE SUBJECT TO INSPECTION BY THE BUILDING OFFICIAL AND SUCH CONSTRUCTION OR WORK SHALL REMAIN ACCESSIBLE AND EXPOSED FOR INSPECTION PURPOSES UNTIL APPROVED. REQUIRED TESTING INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
   - A. FOUNDATION INSPECTION:
     - a. FOOTING AND FOUNDATION INSPECTIONS SHALL BE MADE AFTER EXCAVATIONS FOR FOOTINGS ARE COMPLETE AND ANY REQUIRED REINFORCING STEEL IS IN PLACE. FOR CONCRETE FOUNDATIONS, ANY REQUIRED FORMS SHALL BE IN PLACE PRIOR TO INSPECTION. MATERIALS FOR THE FOUNDATION SHALL BE ON THE JOB, EXCEPT WHERE CONCRETE IS READY MIXED IN ACCORDANCE WITH ASTM C94, THE CONCRETE NEED NOT BE ON THE JOB.
   - B. CONCRETE SLAB AND UNDER-FLOOR INSPECTION:
     - a. CONCRETE SLAB AND UNDER-FLOOR INSPECTIONS SHALL BE MADE AFTER IN-SLAB OR UNDER-FLOOR REINFORCING STEEL AND BUILDING SERVICE EQUIPMENT, CONDUIT, PIPING ACCESSORIES AND OTHER ANCILLARY EQUIPMENT ITEMS ARE IN PLACE, BUT BEFORE ANY CONCRETE IS PLACED OR FLOOR SHEATHING INSTALLED, INCLUDING THE SUBFLOOR.
   - C. FRAME INSPECTION:
     - a. FRAMING INSPECTIONS SHALL BE MADE AFTER THE ROOF DECK OR SHEATHING, ALL FRAMING, FIREBLOCKING AND BRACING ARE IN PLACE AND PIPES, CHIMNEYS AND VENTS TO BE CONCEALED ARE COMPLETE AND THE ROUGH ELECTRICAL, PLUMBING, HEATING WIRES, PIPES AND DUCTS ARE APPROVED.
2. SPECIAL INSPECTIONS - REFER TO THE STATEMENT OF SPECIAL INSPECTION FOR REQUIRED STRUCTURAL SPECIAL INSPECTIONS
3. ADDITIONAL INSPECTIONS REQUIRED BY STRUCTURAL ENGINEER: REFERENCE SPECIFICATIONS

DRAWING INTERPRETATION:

1. DRAWINGS VIEWS LABELED AS TYPICAL
   - A. PARTIAL PLANS, ELEVATIONS, SECTIONS, DETAIL OR SCHEDULES LABELED WITH "TYPICAL" AT THE BEGINNING OF THEIR TITLE SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THE THOSE SPECIFICALLY SHOWN. THE APPLICABILITY OF THE CONTENT OF THESE VIEWS TO LOCATIONS ON THE PLAN CAN BE DETERMINED FROM THE TITLE OF THE VIEW. SUCH VIEWS SHALL APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION. DECISIONS REGARDING APPLICABILITY OF THESE "TYPICAL" VIEWS SHALL BE DETERMINED BY THE STRUCTURAL ENGINEER.

Revision Schedule		
Revision Number	Revision Description	Revision Date



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

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GENERAL NOTES

S0.2

Date:	04/14/2022
Project No:	21-139

REINFORCING STEEL - 03 20 00

1. DETAILING OF CONCRETE REINFORCEMENT BARS AND ACCESSORIES SHALL CONFORM TO THE RECOMMENDATIONS OF THE ACI DETAILING MANUAL ACI 315 AND SP-66 (ACI DETAILING MANUAL).
2. CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615, GRADE 60, WITH SUPPLEMENTARY REQUIREMENTS.
3. COMPLETE REINFORCING PLACEMENT DRAWINGS PREPARED IN ACCORDANCE WITH ACI315 SHALL BE REVIEWED BY THE ENGINEER AND AVAILABLE ON THE JOB SITE PRIOR TO & DURING THE PLACING OF CONCRETE.
4. ALL REINFORCING STEEL SHALL BE SUPPORTED AT DESIGNED DEPTH USING PLASTIC OR METALLIC CHAIRS SPACED AT 48" OC IN ALL DIRECTIONS TO SUPPORT FULL LENGTH OF REINFORCEMENT. IF ALTERNATE IS TO BE USED, PROPOSED CHAIR IS TO BE SUBMITTED IN WRITING AND APPROVED BY E.O.R.
5. END HOOKS, DEVELOPMENT LENGTHS, AND SPLICES SHALL CONFORM TO THE REQUIREMENTS OF ACI 318.
6. REINFORCEMENT MAY BE PLACED IN BUNDLES OF NOT MORE THAN TWO W/ THE CLEAR DISTANCE BETWEEN BUNDLES OF REINFORCEMENT OR TENDONS OF 3 INCHES MINIMUM. CONCRETE COVER NOT SPECIFICALLY DETAILED ON THE DRAWINGS SHALL BE IN ACCORDANCE WITH ACI 318.
7. COVERAGE: THE FOLLOWING SHALL BE THE MINIMUM REINFORCEMENT CONCRETE COVERAGE (INCLUDING TENDONS):
   - A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ..... 3"
   - B. CONCRETE EXPOSED TO EARTH OR WEATHER:
     - a. NO. 6 AND LARGER ..... 2"
     - b. NO. 5 BAR AND SMALLER ..... 1½"
   - C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND ..... ¾"
8. UNO, ALL LAP SPLICES OF REINFORCEMENT IN GROUND SUPPORTED ELEMENTS (GRADE BEAMS, FOOTINGS, MAT FOUNDATIONS) SHALL BE A MINIMUM OF 48Ø, WHERE Ø = THE DIAMETER OF THE BAR, REINFORCEMENT IN ELEVATED STRUCTURES SHALL REFER TO THE TYPICAL LAP SPLICE DETAIL.

REINFORCED CONCRETE - 03 30 00

1. GENERAL
   - A. CONCRETE WORK SHALL CONFORM TO THE LATEST ED. OF ACI 301 (SPECIFICATIONS FOR STRUCTURAL CONCRETE) UNO IN THESE CONSTRUCTION DOCUMENTS.
2. MIX DESIGN:
   - A. ALL CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED REGISTERED ENGINEER. MIX DESIGN DATA RESULTS EITHER COMPLYING WITH THE FIELD EXPERIENCE OR TRIAL MIXTURE METHOD PER ACI 318 SHALL BE SUBMITTED FOR EACH CONCRETE MIX. PROPORTIONS OF MATERIALS FOR CONCRETE SHALL BE ESTABLISHED TO:
     - a. PROVIDE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO FORMS AND AROUND REINFORCEMENT UNDER CONDITIONS OF PLACEMENT TO BE EMPLOYED, WITHOUT SEGREGATION OR EXCESSIVE BLEEDING.
     - b. MEET REQUIREMENTS FOR APPLICABLE EXPOSURE REQUIREMENTS.
     - c. MEET OR EXCEED THE REQUIRED F'C.
     - d. NOT EXCEED THE MAXIMUM W/C RATIO.
   - B. THE CONTRACTOR MUST INDICATE THE PLANNED PLACEMENT METHOD FOR EACH CONCRETE MIX
   - C. WATER MAY NOT BE ADDED TO THE CONCRETE MIX IN THE FIELD TO ADJUST THE SLUMP (RETEMPERING) WITHOUT THE SPECIAL INSPECTOR BEING PRESENT TO CONFIRM THAT IT DOES NOT EXCEED THE W/C RATIO OR DESIGN SLUMP. THE READY-MIX COMPANY MUST INDICATE THE MAXIMUM WATER WITHELD AT THE PLANT. IF THE AMOUNT, THE W/C RATIO OR DESIGN SLUMP IS EXCEEDED THEN THE CONCRETE SHALL BE REJECTED.
   - D. AIR-ENTRAINED CONCRETE SHALL NOT BE USED IN ANY NORMALWEIGHT CONCRETE FLOOR SLAB THAT IS TO RECEIVE A HARD-TROWELED FINISH.
3. CONCRETE MATERIALS:
   - A. HYDRAULIC CEMENT:
     - a. USE ASTM C150 TYPE I OR TYPE III.
   - B. FLY ASH:
     - a. FLY ASH MAY BE USED TO REPLACE A PORTION OF THE PORTLAND CEMENT, SUBJECT TO THE APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER NOT TO EXCEED THE AMOUNTS LISTED IN THE CONCRETE TABLE.
     - b. USE ASTM C618 CLASS C OR F.
   - C. NORMAL WEIGHT AGGREGATE:
     - a. USE ASTM C33.
     - b. MATERIAL CERTIFICATES FROM THE AGGREGATE SUPPLIER MUST BE SUBMITTED WITH THE CONCRETE MIX DESIGN.
     - c. RIVER ROCK OR PEA STONE AGGREGATES ARE NOT ACCEPTABLE.
   - D. WATER
     - a. COMPLY WITH THE REQUIREMENTS OF ASTM C1602.
4. PLACEMENT:
   - A. CONCRETE SHALL BE PLACED CAREFULLY SO AS NOT TO DEVIATE TENDONS AND REINFORCEMENT FROM THE DESIGN LOCATION.
   - B. CONCRETE SHALL BE PROPERLY VIBRATED, ESPECIALLY AROUND POST-TENSIONED ANCHORAGES AND CONGESTED AREAS SUCH AS COLUMN JOINTS.
   - C. TOLERANCES FOR CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST ED. OF ACI 117 (SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS).

ELEMENT	f'c	EXPOSURE CATEGORY	MAX Cl^-	MAX FLY ASH	MAX W/CM RATIO	MAX COARSE AGG. SIZE	MIN. AIR CONTENT
MAT SLAB	3,500	F0,S0,W0,C1	0.30	20%	0.45	1"	N/A

CONCRETE FINISHING AND CURING

1. FINISHING: FINISHING OPERATIONS AND BULL FLOATING SHALL BE COMPLETED PRIOR TO THE ACCUMULATION OF BLEED WATER ON THE SURFACE. FINAL FINISHING SHOULD NOT BEGIN UNTIL THE BLEED WATER HAS EVAPORATED AND THE WATER SHEEN HAS DISAPPEARED FROM THE SURFACE. TROWELLING THE WET SURFACE WILL WEAKEN IT AND CAN RESULT IN SURFACE CRAZING AND DUSTING. REFER TO ARCHITECTURE FOR FINAL FINISHING REQUIREMENTS (STEEL TROWEL, BROOM FINISH, ETC.).
2. EXCESSIVE BLEED WATER REMOVAL: BLEEDING (FREE SURFACE WATER) OCCURS AS AGGREGATES SETTLE IN THE PLACED CONCRET, DISPLACING WATER TO THE SURFACE. IF ALLOWED TO REMAIN ON THE SURFACE, IT DILUTES THE CEMENT CONTENT, SIGNIFICANTLY REDUCING THE STRENGTH NEAR THE SURFACE. THE CONTRACTOR SHALL REMOVE BLEED WATER. ONE METHOD OF REMOVING BLEED WATER IS TO DRAG THE SURFACE WITH A GARDEN HOSE.
3. CONTROL JOINTS (SAW CUTS) IF REQUIRED, SHALL BE MADE AS SOON AS THE CONCRETE CAN SUPPORT THE WEIGHT OF WORKER AND THE EQUIPMENT.
4. CURING: IMMEDIATELY AFTER FINISHING THE SLAB, THE SLAB MUST BE CURED FOR A MINIMUM OF 7 DAYS BY EITHER:
   - A. APPLYING A WATER-BASED DISSIPATING RESIN TYPE CURING COMPOUND WHICH CHEMICALLY BREAKS DOWN AFTER APPROXIMATELY 4 WEEKS. MEMBRANE FORMING COMPOUND SHALL ADHERE TO ASTM C 309, TYPE O OR 1D, CLASS B. THE COMPOUND SHALL BE APPLIED IN TWO COATS, EACH AT RIGHT ANGLES TO THE OTHER TO ENSURE A TIGHTLY SEALED SURFACE.
   - B. WET-CURED BY KEEPING THE SURFACE WET AFTER THE CONCRETE HAS SET AND FINISHING IS COMPLETE.

CONCRETE CRACKS

1. EVEN WITH PROPER DESIGN AND CONSTRUCTION ALL CONCRETE WILL CRACK. PLASTIC SHRINKAGE CRACKS CONTINUE TO OPEN AS THE SLAB AGES UP TO APPROXIMATELY ONE YEAR, AND REACH 50% OF THEIR FINAL SIZE IN APPROXIMATELY 30 DAYS. MANY PLASTIC SHRINKAGE CRACKS ARE VERY SMALL WHICH MAKE THEM BARELY NOTICABLE AND INCONSEQUENTIAL TO THE STRUCTURAL PERFORMANCE OF THE CONCRETE. CRACKS WIDER THAN APPROXIMATLEY 0.06" ARE LIKELY INDICATIVE OF CONCRETE THAT DID NOT ADHERE TO THE CONCRETE MIX REQUIREMENTS, PLACEMENT, FINISHING AND CURING REQUIREMENTS. IN ADDITION TO BEING VISIBLY OBJECTIONABLE, IF THESE CRACKS EXIST IN REGULAR CONSISTENCY, THEY MAY REDUCE THE STRUCTURAL PERFORMANCE OF THE CONCRETE AND REQUIRE STRUCTURAL REPAIR (FILL CRACKS WITH EPOXY PRODUCT) OR REPLACEMENT.
2. PLASTIC SHRINKAGE CRACKS: OCCUR SOONS AFTER THE CONCRETE IS PLACED AND WHILE IT IS STILL PLASTIC. IT IS CAUSED BY OVERLY RAPID DRYING OF THE SURFACE, USUALLY DUE TO HOT WEATHER, HIGH WIND, LOW HUMIDITY, OR A DELAY IN APPLYING THE CURING MEMBRANE.

RETEMPERING

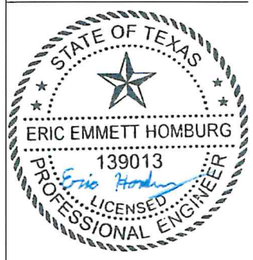
1. WATER SHALL NOT BE ADDED TO THE MIX TRUCKS ON THE JOB SITE IN EXCESS OF THE VOLUME OF WATER THAT IS SPECIFICALLY INDICATED TO HAVE BEEN WITHELD FROM THE READY MIX SUPPLIER.
2. PRIOR TO ADDING WATER, THE CONTRACTOR SHALL CONFIRM THAT THE MIX IS NOT ALREADY WITHIN TOLERANCE ON SLUMP. WATER SHALL ONLY BE ADDED IF THE SLUMP IS BELOW TOLERANCE AND THE READY MIX SUPPLIER HAD INDICATE THE VOLUME OF WITHELD WATER.

COLD-FORMED METAL FRAMING - 05 40 00

1. THE COLD-FORMED FRAMING MATERIALS SHALL BE MFRD BY ANY SSMA MEMBER MFR. IN ACCORDANCE WITH ASTM C 955. MATERIAL SIZES AND GAUGES ARE INDICATED ON THE DRAWINGS. ALL COLD-FORMED MEMBERS SHALL BE MANUFACTURED FROM SHEET STEEL AND GALVANIZED IN ACCORDANCE WITH ASTM A 1003, WITH A MIN G60 COATING.
2. THE MINIMUM YIELD STRENGTH OF THE COLD-FORMED FRAMING COMPONENTS SHALL BE AS FOLLOWS:
   - A. 54 MIL (16 GA.) OR HEAVIER - Fy = 50 KSI MIN (ASTM A 1003 STRUCTURAL GRADE 50 (GRADE 340)TYPE H)
   - B. 43 MIL (18 GA) OR LIGHTER - Fy = 33 KSI MIN (ASTM A 1003 STRUCTURAL GRADE 33 (GRADE 230) TYPE H)
   - C. ALL ACCESSORIES - Fy - 33 KSI MIN (ASTM A 1003 STRUCTURAL GRADE 33 (GRADE 230) TYPE H)
3. THE COLD-FORMED FRAMING HAD BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND SPECIFICATIONS:
   - A. AISI S100-16: NORTH AMERICAN SPECIFICATION FOR DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS
   - B. AISI S202-15: CODE OF STANDARD PRACTICE FOR STRUCTURAL COLD-FORMED STEEL FRAMING
   - C. AISI S240-15: STANDARD FOR COLD-FORMED STEEL FRAMING: PRODUCT DATA
   - D. AISI S213-07: NORTH AMERICAN STANDARD FOR COLD-FORMED STEEL FRAMING - LATERAL DESIGN 2007 ED. WITH SUPPLEMENT 1.
4. ALL CONNECTIONS SHALL BE FASTENED AS INDICATED ON THESE DRAWINGS.
   - A. COLD-FORMED TO COLD-FORMED CONNECTIONS: SCREWS - #10 SELF DRILLING SCREWS (UNLESS NOTED OTHERWISE) MFRD BY HILTI, GRABBER, BUILDEX, COMPASS OR EQUAL AND INSTALLED PER THE MFR SPECIFICATIONS. MINIMUM 1/2" LENGTH .
     - a. SCREWS SHALL COMPLY WITH ASTM C 1513.
     - b. MINIMUM EDGE DISTANCE SHALL BE 1.5 X FASTENER Ø.
     - c. MINIMUM SPACING SHALL BE 3 X FASTENER Ø.
   - B. COLD-FORMED TO TIMBER CONNECTIONS: #10 WOOD SCREWS UNLESS NOTED OTHERWISE. MINIMUM 1½" LENGTH.
   - C. POWDER-ACTUATED FASTENERS: MINIMUM SHANK Ø =0.138". APPROVED MRS INCLUDE HILTI, RAMSET, POWER OR APPROVED EQUAL.
     - a. PROVIDE MIN 1¼" LONG PAF FOR COLD-FORMED TO CONCRETE CONNECTIONS. SPACING SHALL BE A MIN OF 4" WITH A MIN EDGE DISTANCE OF 3".
     - b. PROVIDE MIN. 1/2" LONG PAF WITH KNURLED SHANK FOR COLD-FORMED TO STRUCTURAL STEEL CONNECTIONS. MIN SPACING AND EDGE DISTANCE SHALL BE 1".
5. ALL MEMBERS SHALL BE CUT SQUARE FOR ATTACHMENT TO PERPENDICULAR MEMBERS OR SLOPE CUT AS REQUIRED FOR AN ANGULAR FIT AGAINST ABUTTING MEMBERS.
6. FIELD CUTTING OF COLD-FORMED MEMBERS SHALL BE DONE BY SAWING OR SHEARING. TORCH CUTTING OF COLD-FORMED MEMBERS IS NOT ALLOWED.
7. DO NOT CUT OR SPLICE COLD-FORMED FRAMING MEMBERS UNLESS INDICATED BY THESE DRAWINGS.
8. DO NOT BEAR OR CONNECT COLD-FORMED MEMBERS WITHIN 10" OF THE PUNCHED OPENINGS IN THE MEMBER WEBS UNLESS THE MEMBERS ARE REINFORCED WITH A MINIMUM 18" LONG UNPUNCHED TRACK OR STUD AT THE PUNCH OPENING. THE TRACK OR STUD REINFORCING PIECE SHALL BE THE SAME SIZE AND GA. AS THE PUNCHED MEMBER. FASTEN THE REINFORCING PIECE TO THE MEMBER WITH A MINIMUM OF (4) -#10 SCREWS.
9. THE COLD-FORMED FRAMING HAS BEEN DESIGNED TO SUPPORT THE LOADS INDICATED IN THE CALCULATIONS. ADDITIONAL TEMPORARY BRACING AND SHORING SHALL BE PROVIDED AS REQUIRED TO STABILIZE THE FRAMING AND TO SUPPORT CONSTRUCTION LOADS. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL PERMANENT BRACING IS INSTALLED AND/OR ADDITIONAL CONSTRUCTION LOAD ARE REMOVED.
10. THE CONTRACTOR SHALL PROVIDE COLD-FORMED MEMBERS AT THE SIZE AND SPACING INDICATED ON THESE DRAWINGS. LARGER SIZE AND/OR CLOSER SPACING MAY BE SUBSTITUTED PROVIDED THE SUBSTITUTIONS ARE COORDINATED WITH THE PROJECT ARCHITECT.
11. THESE DRAWINGS ARE INTENDED TO INDICATE THE MEMBERS SIZES AND CONNECTIONS RELEVANT TO THE COLD-FORMED FRAMING. THESE SHOP DRAWINGS ARE NOT INTENDED TO BE "DIMENSIONED" DRAWINGS AND SHOULD NOT BE USED FOR MATERIAL TAKE-OFFS
12. SHEATHING OF THE COLD FORMED FRAMING SHALL BE INSTALLED AS INDICATED IN THE PROJECT CONSTRUCTION DOCUMENTS UNLESS MORE STRINGENT REQUIREMENTS ARE CALLED FOR IN THESE DRAWINGS.
13. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH OSHA STANDARDS.
14. SUBSTITUTION OF SPECIFIED CONNECTORS AND FASTENERS MUST BE APPROVED BY DUDLEY DUNHAM ENGINEERING

Revision Schedule

Revision Number	Revision Description	Revision Date



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

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GENERAL NOTES

S0.3

Date: 04/14/2022

Project No: 21-139

CRANE LOADS:

1. DESIGN LOADS FOR THE RUNWAY BEAMS, CONNECTIONS, AND SUPPORT BRACKETS OF MOVING BRIDGE CRANES AND MONORAIL CRANES SHALL INCLUDE THE FOLLOWING CRANE LOADS:
   - A. MAXIMUM WHEEL LOADS
   - B. VERTICAL IMPACT FORCES
   - C. LATERAL FORCES
   - D. LONGITUDINAL FORCES
2. CRANE LIVE LOAD SHALL BE THE RATED CAPACITY OF THE CRANE.
3. **MAXIMUM WHEEL LOAD:** SHALL BE THE SUM OF THE WHEEL LOADS PRODUCED BY THE WEIGHT OF THE BRIDGE, THE RATED CAPACITY OF THE CRANE, AND THE WEIGHT OF THE TROLLEY WITH THE TROLLEY POSITIONED ON ITS RUNWAY AT THE LOCATION WHERE THE RESULTING LOAD EFFECT IS MAXIMUM.
4. **VERTICAL IMPACT FORCE:** THE MAXIMUM WHEEL LOADS SHALL BE INCREASED BY THE FOLLOWING PERCENTAGES TO DETERMINE THE VERTICAL IMPACT OR VIBRATION FORCE:
   - A. MONORAIL CRANES (POWERED).....25 PERCENT
   - B. CAB-OPERATED OR REMOTELY OPERATED BRIDGE CRANES (POWERED).....25 PERCENT
   - C. PENDANT-OPERATED BRIDGE CRANES (POWERED).....10 PERCENT
   - D. BRIDGE CRANES OR MONORAIL CRANES WITH HAND-GEARED BRIDGE, TROLLEY AND HOIST.....0 PERCENT
5. **LATERAL FORCE:** THE LATERAL FORCE ON RUNWAY BEAMS WITH ELECTRICALLY POWERED TROLLEYS SHALL BE 20 PERCENT OF THE SUM OF THE RATED CAPACITY OF THE CRANE AND THE WEIGHT OF THE HOIST AND TROLLEY.
6. **LONGITUDINAL FORCE:** THE LONGITUDINAL FORCE ON RUNWAY BEAMS, EXCEPT FOR BRIDGE CRANES WITH HAND-GEARED BRIDGES, SHALL BE CALCULATED AS 10 PERCENT OF THE MAXIMUM WHEEL LOADS OF THE CRANE.

STRUCTURAL STEEL - 05 12 00

1. GENERAL
   - A. ALL STRUCTURAL STEEL IS TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF AISC 360 (SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS).
2. MATERIAL
   - A. ALL HOT ROLLED STEEL PLATES, SHAPES AND BARS SHALL BE NEW STEEL CONFORMING TO ASTM SPECIFICATION A6, LATEST ED.
     - a. W-SHAPES: A992
     - b. CHANNELS, ANGLES, PLATES: A36
     - c. RECTANGULAR HSS: A500, GR.C (F_Y = 50 KSI)
     - d. ROUND HSS: A500, GR.B (F_Y = 42 KSI)
3. SUBMITTALS
   - A. STRUCTURAL STEEL SUBMITTALS MUST BE ACCOMPANIED BY THE SDS/2 OR TEKLA MODEL WHICH WILL BE USED BY THE DESIGN TEAM AS A VISUAL AID TO THE SHOP DRAWINGS
   - B. SHOP DRAWINGS MUST BE PRODUCED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE.
4. CONNECTIONS
   - a. CONNECTION DESIGN: ALL STEEL CONNECTIONS NOT FULLY DETAILED WITHIN THESE DRAWINGS SHALL BE DESIGNED BY A CONNECTION ENGINEER TO BE HIRED BY THE CONTRACTOR. THE CONTRACTOR'S CONNECTION ENGINEER SHALL BE A PROFESSIONAL ENGINEER FAMILIAR WITH THE DESIGN OF SUCH ELEMENTS AND SHALL BE LICENSED TO PRACTICE ENGINEERING IN THE STATE IN WHICH THE PROJECT IS BEING CONSTRUCTED. CONNECTION DESIGNS AND DETAILS SHOWN ON THE DRAWINGS ARE CONCEPTUAL. THE FINAL CONFIGURATION, PLATE AND ANGLE THICKNESS, NUMBER OF BOLTS ETC. SHALL BE DESIGNED BY THE CONNECTION ENGINEER.
   - b. STRUCTURAL BOLTS: ALL BOLTS IN STRUCTURAL CONNECTION SHALL CONFORM TO ASTM A325 TYPE 1, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   - c. THREADED ROUND STOCK: THREADED RODS SHALL CONFORM TO ASTM F1554 GR36.
   - d. WELDING: UNLESS NOTED OTHERWISE, ELECTRODES FOR WELDING SHALL CONFORM TO E70XX (SMAW), F7XX-EXX (SAW), ER70S-X (GMAW) OR E8XT-X (FCAW).
     - FIELD WELDING TO BE DONE BY CERTIFIED WELDERS FOR STRUCTURAL STEEL. CONTINUOUS INSPECTION BY A SPECIAL INSPECTOR IS REQUIRED.
     - SHOP WELDS MUST BE PERFORMED IN FABRICATION SHOP THAT IS CERTIFIED BY THE AUTHORITY HAVING JURISDICTION.
   - e. ANCHOR RODS: ALL ANCHOR RODS SHALL CONFORM TO ASTM F1554. THE TYPICAL SIZE SHALL BE 3/4"Ø AND SHALL BE EMBEDDED A MINIMUM OF 1'-0" WITH A HEAVY HEX NUT AT THE EMBEDDED UNLESS NOTED OTHERWISE.
   - f. GROUT: GROUT BELOW STRUCTURAL STEEL BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI WHEN BEARING ON A 3,000 PSI CONCRETE OR LESS.
   - g. ALL STEEL LOCATED IN UNCONDITIONED SPACE AND/OR OUTSIDE THE BUILDING ENVELOPE SHALL EITHER BE HOT-DIP GALVANIZED OR PAINTED WITH A ZINC RICH PAINT. THE CONTRACTOR SHALL PREPARE THE STEEL IN ACCORDANCE WITH THE GALVANIZING OR PAINT REQUIREMENTS.
   - h. SPLICING STEEL MEMBERS WHERE NOT DETAILED ON THE DRAWINGS IS PROHIBITED WITHOUT WRITTEN APPROVAL FROM EOR.
   - i. THE CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER OF ANY MISFABRICATED STRUCTURAL STEEL PRIOR TO ERECTION OF SAME.
   - j. PENETRATIONS SHALL NOT BE CUT IN STRUCTURAL STEEL MEMBERS UNLESS SO INDICATED IN THE DRAWINGS OR AS REVIEWED BY THE ENGINEER.
   - k. HEADED CONCRETE STUD ANCHORS ("HSA") SHALL BE NELSON OR KSM HEADED CONCRETE ANCHORS (OR APPROVED ALTERNATIVE), AND SHALL CONFORM TO ASTM A108, GRADES C-1010 THROUGH C-1020. ANCHORS SHALL BE AUTOMATICALLY END WELDED WITH SUITABLE STUD WELDING EQUIPMENT IN THE SHOP OR IN THE FIELD. WELDING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE NELSON STUD WELDING COMPANY OR THE KSM WELDING SYSTEMS COMPANY.
   - l. DEFORMED BAR ANCHORS ("DBA") SHALL BE NELSON OR KSM DEFORMED BAR ANCHORS (OR APPROVED ALTERNATIVE), AND SHALL BE MADE FROM COLD DRAWN WIRE PER ASTM A496 CONFORMING TO ASTM A108 WITH A MINIMUM YIELD STRENGTH OF 70 KSI. ANCHORS SHALL BE AUTOMATICALLY END WELDED WITH SUITABLE WELDING EQUIPMENT IN THE SHOP OR IN THE FIELD. WELDING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE NELSON STUD WELDING COMPANY OR THE KSM WELDING SYSTEMS COMPANY.
   - m. BEAMS SHALL BE CAMBERED UPWARD WHERE SHOWN ON THE CONTRACT DOCUMENTS. WHERE NO UPWARD CAMBER IS INDICATED, ANY MILL CAMBER SHALL BE DETAILED UPWARD IN THE BEAMS.
   - n. WHERE INDICATED ON THE DRAWINGS, STRUCTURAL STEEL MEMBERS, FABRICATIONS, AND WELDED ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION BY HOT DIP PROCESS IN ACCORDANCE WITH ASTM A123. WEIGHT OF ZINC COATING SHALL CONFORM TO THE REQUIREMENTS SPECIFIED UNDER "WEIGHT OF COATING" IN ASTM A123 OR ASTM A386, AS APPLICABLE. THE AFFECTED PORTIONS OF FIELD WELDED GALVANIZED ASSEMBLIES SHALL BE FIELD PAINTED WITH ZINC RICH CORROSION RESISTANT PAINT.
   - o. STRUCTURAL STEEL MEMBERS TO RECEIVE FIREPROOFING SHALL NOT BE PRIMED NOR PAINTED. FIREPROOFING MATERIAL THICKNESS SHALL BE INCREASED AS REQUIRED FOR STEEL MEMBERS NOT CONFORMING TO THE MINIMUM SIZES INDICATED IN THE U.L. FIRE RESISTANCE DIRECTORY-VOLUME 1 AND FOR STEEL MEMBERS DETERMINED UNRESTRAINED.
   - p. ALL FILLET WELDS SHALL HAVE A MINIMUM SIZE PER THE FOLLOWING, UNO IN SPECIFIC DETAILS.

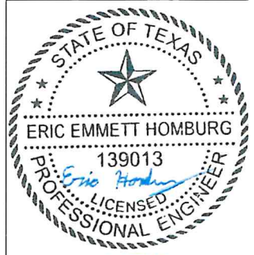
MATERIAL THICKNESS OF THINNER PART JOINED "T"	SIZE OF FILLET WELD
T = 3/16	3/16
T= 1/4	3/16
T = 5/16	1/4
T = 3/8	5/16
T = 7/16	3/8
T = 1/2	7/16
T = 3/4	1/2
T > 3/4"	5/8

CONCRETE UNIT MASONRY - 04 22 00

- A. MATERIAL:
  - A. SPECIFIED COMPRESSIVE STRENTH OF CONCRETE MASONRY, f'm:.....**1,700 PSI**
  - B. CONCRETE BLOCK:
  - C. ASTM C90 BLOCK TYPE: :..... **MEDIUMWEIGHT BLOCK (115 PCF)**
    - a. MIMIMUM 28 DAY UNIT COMPRESSIVE STRENGTH: ..... **1,900 PSI MINIMUM**
  - D. GROUT: MUST MEET ASTM C476 WITH A MINIMUM COMPRESSIVE STRENTH OF:... **THE GREATER OF f'm OR 2,000 PSI**
  - E. MORTAR:ASTM C270, TYPE S OR M PORTLAND CEMENT /LIME ONLY (USE TYPE M MORTAR WHEN MASONRY IS IN DIRECT CONTACT WITH SOIL AND TYPE S IN ALL OTHER CONDITIONS
- B. MIX DESIGNS
  - A. MORTAR MIX PROPORTIONS FOR TYPE OF MORTAR REQUIRED TO ACHIEVE SPECIFIED COMPRESSIVE STRENGTH OF MASONRY.
  - B. MIX DESIGNS AND MORTAR TESTS PERFORMED IN ACCORDANCE WITH ASTM C 270
  - C. GROUT MIX PROPORTIONS ACCORDING TO ASTM C476 FOR THE TYPES OF GROUT REQUIRED FOR THE WORK.
  - D. MIX DESIGNS AND GROUT TESTS PERFORMED IN ACCORDANCE WITH ASTM C 476.
- C. JOINT REINFORCEMENT
  - A. JOINT REINFORCEMENT: ASTM A 951: WELDED-WIRE UNITS PREFABRICATED WITH DEFORMED CONTINUOUS SIDE RODS AND PLAIN CROSS RODS IN STRAIGHT LENGTHS OF NOT LESS THAN 10 FEET, WITH PREFABRICATED CORNER AND TEE UNITS.
  - B. FOR SINGLE-WYTHE MASONRY PROVIDE EITHER LADDER OR TRUSS TYPE WITH SINGLE PAIR OF SIDE RODS AND CROSS WIRES IN LADDER-TYPE OR POINTS OF CONNECTION IN TRUSS-TYPE REINFORCEMENT SPACED NO MORE THAN 16 INCHES O.C. HORIZONTALLY.
  - C. FOR MULTI-WYTHE MASONRY PROVIDE LADDER TYPE WITH CROSS RODS SPACED NOT MORE THAN 16" O.C., HORIZONTALLY, AND NUMBER OF SIDE RODS AS FOLLOWS:
    - a. RETAIN ONE OR MORE SIDE ROD REQUIREMENTS FROM CHOICES BELOW. KEEP ADJUSTABLE TYPE FOR MULTI-WYTHE WALLS WHEREIN THE HORIZONTAL JOINTS DO NOT ALIGN VERTICALLY.
      - ONE SIDE ROD FOR EACH FACE SHELL OF CONCRETE MASONRY UNITS IN EITHER WYTHE MORE THAN 4 INCHES IN THICKNESS PLUS ONE SIDE ROD FOR EACH WYTHE OF CONCRETE MASONRY UNITS 4 INCHES OR LESS IN WIDTH.
      - ADJUSTABLE (TWO-PIECE) TYPE, LADDER DESIGN, WITH ONE SIDE ROD AT EACH FACE SHELL OF BACKING WYTHE AND WITH SEPARATE TIES THAT EXTEND INTO FACING WYTHE. TIES HAVE TWO HOOKS THAT ENGAGE EYES OR SLOTS IN REINFORCEMENT AND RESIST MOVEMENT PERPENDICULAR TO WALL. TIES EXTEND AT LEAST HALFWAY THROUGH FACING WYTHE BUT WITH AT LEAST 5/8-INCH COVER ON OUTSIDE FACE. THE MAXIMUM CLEARANCE BETWEEN CONNECTING PARTS OF THE TIES IS 1/16".
- D. SUBMITTALS:
  - A. PRODUCT TEST REPORTS: PROVIDE WRITTEN REPORTS BASED ON EVALUATION OF COMPREHENSIVE TESTS PERFORMED BY QUALIFIED TESTING AGENCY INDICATING THAT EACH PRODUCT COMPLIES WITH REQUIREMENTS.
    - a. CONCRETE MASONRY UNITS: MATERIAL TEST REPORTS.
    - b. CEMENTITIOUS MATERIALS: EACH PRODUCT REQUIRED FOR MORTAR AND GROUT INCLUDING NAME OF MFR. BRAND TYPE, AND WEIGHT SLIPS AT TIME OF DELIVERY.
    - c. JOINT REINFORCEMENT
- E. INSTALLER QUALIFICATIONS:
  - a. EXPERIENCE: INSTALLER'S PERSONNEL WITH NOT LESS THAN 10 YEARS OF EXPERIENCE IN THE SUCCESSFUL PERFORMANCE OF WORK SIMILAR TO SCOPE OF THIS PROJECT.
  - b. SUPERVISION: INSTALLER SHALL MAINTAIN A COMPETENT SUPERVISOR AT PROJECT WHILE WORK IS IN PROGRESS.
- F. COLD WEATHER REQUIREMENTS:
  - A. COMPLY WITH THE BUILDING CODE OR TMS 602.ACI 530.1 WHICHEVER IS MORE STRINGENT, AND THE FOLLOWING:
    - a. DO NOT APPLY WHEN AMBIENT TEMPERATURES ARE LESS THAN 32°F.
- G. WARM WEATHER REQUIREMENTS:
  - A. COMPLY WITH THE BUILDING CODE OR TMS 602.ACI 530.1 WHICHEVER IS MORE STRINGENT, AND THE FOLLOWING:
  - B. PROTECT WORK AGAINST UNEVEN AND EXCESSIVE EVAPORATION AND FROM STRONG FLOWS OF DRY AIR.
  - C. APPLY AND CURE WORK AS REQUIRED BY THE CLIMATIC AND JOB CONDITIONS TO PREVENT DRYOUT DURING CURE PERIOD.
  - D. PROVIDE SUITABLE COVERINGS, MOIST CURING, BARRIERS TO DEFLECT SUNLIGHT AND WIND, AS REQUIRED.
- H. INSTALLATION:
  - A. LAY OUT WALLS IN ADVANCE FOR ACCURATE SPACING OF SURFACE BOND PATTERNS, AND UNIFORM JOINT THICKNESSES. AVOID USING LESS THAN HALF-SIZE UNITS AT CORNERS AND WHERE POSSIBLE AT OTHER LOCATIONS.
  - B. MORTAR BEDDING AND JOINTING:
    - a. MORTAR JOINT THICKNESS SHALL BE MINIMUM 3/8" WIDE FOR HEAD AND BED JOINTS.
    - b. DO NOT DISTURB PREVIOUSLY LAID UNITS.
    - c. SPREAD MORTAR FOR BED JOINT ONLY SO FAR AHEAD OF LAYING UNITS THAT MORTAR WILL BE PLASTIC WHEN UNITS ARE LAID.
    - d. BUTTER END OF UNIT WITH AMPLE MORTAR SO THAT HEAD JOINT IS COMPLETELY FILLED WITH MORTAR WHEN PLACED.
    - e. DO NOT DEEPLY FURROW BED JOINTS OR SLUSH HEAD JOINTS.
  - C. GROUTING: DO NOT PLACE GROUT UNTIL ENTIRE HEIGHT OF MASONRY TO BE GROUTED HAS ATTAINED ENOUGH STRENGTH TO RESIST GROUT PRESSURE.
    - a. COMPLY WITH REQUIREMENTS IN TMS 602/ACI 530.1/ASCE 6 FOR CLEANOUTS AND FOR GROUT PLACEMENT, INCLUDING MINIMUM GROUT SPACE AND MAXIMUM POUR HEIGHT UNLESS OTHERWISE REQUIRED BY LOCAL APPLICABLE CODE.
    - b. PLACE GROUT ONLY AFTER INSPECTORS HAVE VERIFIED COMPLIANCE OF GROUT SPACES AND GRADES, SIZES, AND LOCATIONS OF REINFORCEMENT.
    - c. LIMIT HEIGHT OF VERTICAL GROUT POURS TO NOT MORE THAN 60 IN (1500 MM).
    - d. FILL WITH GROUT, VERTICAL CELLS, BOND BEAMS, LINTELS AND OTHER STRUCTURAL MEMBERS HAVING REINFORCEMENT. SECURE IN PLACE AND INSPECT REINFORCING BEFORE GROUTING. KEEP MORTAR DROPPINGS OUT OF GROUT SPACE AND PUDDLE OR VIBRATE GROUT IN PLACE. GROUT MUST ALSO BE RECONSOLIDATED.
    - e. PROVIDE SOLID BEARING UNDER STRUCTURAL MEMBERS AT LEAST 8 IN (200 MM) VERTICALLY AND AT LEAST 16 IN (400 MM) HORIZONTALLY. BEARING MAY BE SOLID UNITS, OR HOLLOW UNITS WITH GROUT. FILL CELLS IN UNITS ADJACENT TO OPENINGS.
    - f. GROUT FROM INSIDE FACE OF MASONRY AND PREVENT GROUT FROM STAINING MASONRY FACE. PROTECT PROJECTING SURFACES FROM DROPPINGS AND CLEAN IMMEDIATELY ANY GROUT WHICH COMES IN CONTACT WITH FACE OF MASONRY.

Revision Schedule

Revision Number	Revision Description	Revision Date



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
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GENERAL NOTES

S0.4

Date:	04/14/2022
Project No:	21-139

STRUCTURAL STATEMENT OF SPECIAL INSPECTIONS & TESTING

1. SPECIAL INSPECTIONS AND STRUCTURAL TESTING SHALL BE PROVIDED BY AN INDEPENDENT AGENCY EMPLOYED BY THE OWNER FOR THE ITEMS IDENTIFIED IN THIS SECTION AND IN OTHER AREAS OF THE APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS. (SEE IBC CHAPTER 17).
2. THE NAMES AND CREDENTIALS OF THE SPECIAL INSPECTORS TO BE USED SHALL BE SUBMITTED TO THE BUILDING OFFICIAL FOR APPROVAL. DUDLEY DUNHAM ENGINEERING CAN BE SOLICITED TO PROVIDE SPECIAL INSPECTIONS. WE RECOMMEND THAT THE PROJECT GEOTECHNICAL ENGINEER BE SOLICITED TO PROVIDE SPECIAL INSPECTIONS FOR THE SOILS AND TESTING FOR THE SOIL AND CONCRETE.
3. DUTIES OF THE SPECIAL INSPECTOR:
   - A. THE SPECIAL INSPECTOR SHALL REVIEW ALL WORK LISTED BELOW FOR CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS AND THE IBC.
   - B. THE SPECIAL INSPECTOR SHALL FURNISH SPECIAL INSPECTION REPORTS TO THE EOR, CONTRACTOR, OWNER AND BUILDING OFFICIAL ON A WEEKLY BASIS, OR MORE FREQUENTLY AS REQUIRED BY THE BUILDING OFFICIAL. ALL ITEMS NOT IN COMPLIANCE SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND IF UNCORRECTED, TO THE EOR AND THE BUILDING OFFICIAL.
   - C. ONCE CORRECTIONS HAVE BEEN MADE BY THE CONTRACTOR, THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO THE BUILDING OFFICIAL STATING THAT THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE SPECIAL INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS AS WELL AS THE APPLICABLE WORKMANSHIP PROVISIONS OF THE IBC.
4. DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR:
   - A. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE OWNER AND THE BUILDING OFFICIAL PRIOR TO THE COMMENCEMENT OF WORK. IN ACCORDANCE WITH IBC 1704.4, THE STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF THE SPECIAL INSPECTION REQUIREMENTS CONTAINED WITHIN THIS "STATEMENT OF SPECIAL INSPECTIONS".
   - B. THE CONTRACTOR SHALL NOTIFY THE RESPONSIBLE SPECIAL INSPECTOR THAT WORK IS READY FOR INSPECTION AT LEAST ONE WORKING DAY (24 HOURS MINIMUM) BEFORE SUCH INSPECTION IS REQUIRED.
   - C. ALL WORK REQUIRING SPECIAL INSPECTION SHALL REMAIN ACCESSIBLE AND EXPOSED UNTIL IT HAS BEEN OBSERVED BY THE SPECIAL INSPECTOR.
5. PLEASE SEE THE "SPECIAL INSPECTION SCHEDULE" FOR THE TYPES, EXTENTS AND FREQUENCY OF SPECIFIC ITEMS REQUIRING SPECIAL INSPECTIONS AND STRUCTURAL TESTS AS PART OF THIS PROJECT.
6. REFER TO ARCHITECTURAL AND/OR MEP DRAWINGS FOR ADDITIONAL SPECIAL INSPECTION REQUIRED. DUDLEY DUNHAM ENGINEERING HAS LISTED THE STRUCTURAL SPECIAL INSPECTIONS AND TESTING.

WIND-RESISTING COMPONENTS (1705.11.3)

PERIODIC SPECIAL INSPECTION IS REQUIRED FOR FASTENING OF THE FOLLOWING SYSTEMS AND COMPONENTS:
1. ROOF COVERING, ROOF DECK AND ROOF FRAMING CONNECTIONS.
2. EXTERIOR WALL COVERING AND WALL CONNECTIONS TO ROOF AND FLOOR DIAPHRAGMS AND FRAMING

REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION (TABLE 1705.3)

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS AND PLACEMENT.	-	X	YES
INSPECTION OF ANCHORS CAST IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN USED OR STRENGTH DESIGN IS USED.	-	X	YES
INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS.	-	X	YES
VERIFYING USE OF REQUIRED MIX DESIGN		X	YES
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	-	YES
INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	YES
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURES AND TECHNIQUES	-	X	YES
INSPECTION OF PRESTRESSED CONCRETE APPLICATION OF PRESTRESSING FORCES	X	-	NO
ERECTION OF PRECAST CONCRETE MEMBERS	-	X	NO
VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	YES
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X	YES

REQUIRED VERIFICATION AND INSPECTION OF SOILS (TABLE 1705.6)

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	-	X	YES
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIALS	-	X	YES
PERFORM CLASSIFICATION AND TESTING OF COMPACTED MATERIALS	-	X	YES
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X	-	YES
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THE SITE HAS BEEN PREPARED PROPERLY	-	X	YES

REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION (§1705.4) - LEVEL B QUALITY ASSURANCE

MINIMUM TESTING			
VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX AS DELIVERED TO PROJECT SITE IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.5 B.1b.3 FOR SELF-CONSOLIDATING GROUT			
VERIFICATION OF f'm IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.4 B PRIOR TO CONSTRUCTION, EXCEPT WHERE SPECIFICALLY EXEMPT.			
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS.		X	YES
2. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:		X	YES
A. PROPORTIONS OF SITE-PREPARED MORTAR.		X	YES
B. CONSTRUCTION OF MORTAR JOINTS		X	YES
3. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE		X	YES
A. GROUT SPACE		X	YES
B. GRADE TYPE AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS	-	X	YES
C. PLACEMENT OF REINFORCEMENT AND CONNECTORS.		X	YES
D.PROPORTIONS OF SITE-PREPARED GROUT.		X	YES
E. CONSTRUCTION OF MORTAR JOINTS		X	YES
4. VERIFY DURING CONSTRUCTION		X	YES
A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS		X	YES
B. TYPE, SIZE AND LOCATION OF ANCHOR INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION		X	YES
C. WELDING OF REINFORCEMENT		X	NO
D. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (< 40°F) OR HOT WEATHER (>90°)		X	YES

Revision Schedule		
Revision Number	Revision Description	Revision Date

STATE OF TEXAS
ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER
4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

DUDLEY
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STATEMENT OF SPECIAL INSPECTIONS

S0.5

Date: 04/14/2022

Project No: 21-139

COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION (1705.11.2)

PERIODIC SPECIAL INSPECTION IS REQUIRED FOR WELDING OPERATIONS OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR SCREW ATTACHMENT, BOLTING, ANCHORING AND OTHER FASTENING OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM, INCLUDING SHEAR WALLS, BRACES, DIAPHRAGMS, COLLECTORS (DRAG STRUTS) AND HOLD-DOWNS.

EXCEPTION: SPECIAL INSPECTION IS NOT REQUIRED FOR COLD-FORMED STEEL LIGHT-FRAME SHEAR WALLS AND DIAPHRAGMS, INCLUDING SCREWING, BOLTING, ANCHORING AND OTHER FASTENING TO COMPONENTS OF THE WIND FORCE RESISTING SYSTEM WHERE EITHER OF THE FOLLOWING APPLIES:
1. THE SHEATHING IS GYPSUM BOARD OR FIBERBOARD.
2. THE SHEATHING IS WOOD STRUCTURAL PANEL OR STEEL SHEETS ON ONLY ONE SIDE OF THE SHEAR WALL, SHEAR PANEL OR DIAPHRAGM ASSEMBLY AND THE FASTENER SPACING OF THE SHEATHING IS MORE THAN 4 INCHES (102 MM) ON CENTER (O.C.).

REQUIRED VERIFICATION AND INSPECTION OF STRUCTURAL STEEL CONSTRUCTION (§1705.2.1)

STRUCTURAL STEEL - GENERAL

THE SPECIAL INSPECTOR SHALL INSPECT THE FABRICATED OR ERECTED STEEL FRAME, AS APPROPRIATE, TO VERIFY COMPLIANCE WITH THE DETAIL SHOWN ON THE CONSTRUCTION DOCUMENTS, SUCH AS BRACES, STIFFENERS, MEMBER LOCATIONS AND PROPER APPLICATION OF JOINT DETAILS AT EACH CONNECTION.

STRUCTURAL STEEL - ANCHOR RODS / EMBED PLATES

THE SPECIAL INSPECTOR SHALL BE ON THE PREMISES FOR INSPECTION DURING THE PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENT SUPPORTING STRUCTURAL STEEL FOR COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS. AS A MINIMUM, THE DIAMETER, GRADE, TYPE AND LENGTH OF THE ANCHOR RODS OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT INTO THE CONCRETE, SHALL BE VERIFIED PRIOR TO PLACEMENT OF CONCRETE.

STRUCTURAL STEEL - WELDS

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
INSPECTION TASKS PRIOR TO WELDING (AISC 360 TABLE N5.4-1)			
WELDING PROCEDURE SPECIFICATION(WPS'S) AVAILABLE	X	-	YES
MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	X	-	YES
MATERIAL IDENTIFICATION (TYPE / GRADE)	-	X	YES
WELDER IDENTIFICATION SYSTEM	-	X	YES
FIT-UP GROOVE WELDS	-	X	NO
CONFIGURATION AND FINISH OF ACCESS HOLES	-	X	NO
FIT-UP FILLET WELDS	-	X	YES
CHECK WELDING EQUIPMENT	-	X	YES
INSPECTION TASKS DURING WELDING (AISC 360 TABLE N5.4-2)			
USE OF QUALIFIED WELDERS	-	X	YES
CONTROL AND HANDLING OF WELDING CONSUMABLES	-	X	YES
NO WELDING OVER CRACKED TACK WELDS	-	X	YES
ENVIRONMENTAL CONDITIONS (WIND SPEED WITHIN LIMITS, PRECIPITATION AND TEMPERATURE	-	X	YES
WPS FOLLOWED • SETTINGS ON WELDING EQUIPMENT • TRAVEL SPEED • SELECTED WELDING MATERIALS • SHIELDING GAS TYPE / FLOW RATE • PREHEAT APPLIED • INTERPASS TEMPERATURE MAINTAINED (MIN/ MAX) • PROPER POSITION (F, V, H, OH)	-	X	YES
WELDING TECHNIQUES • INTERPASS AND FINAL CLEANING • EACH PASS WITHIN PROFILE LIMITATIONS • EACH PASS MEET QUALITY REQUIREMENTS	-	X	YES
WELDS CLEANED	-	X	YES
SIZE, LENGTH AND LOCATION OF WELDS	X	-	YES
WELDS MEET VISUAL ACCEPTANCE CRITERIA • CRACK PROHIBITION • WELD / BASE-METAL FUSION • CRATER CROSS SECTION • WELD PROFILES • WELD SIZE • UNDERCUT • POROSITY	X	-	YES
ARC STRIKES	X	-	YES
k-AREA	X	-	YES
BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	X	-	YES
REPAIR ACTIVITIES	X	-	YES
DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT MEMBER	X	-	YES
NON-DESTRUCTIVE TESTING OF WELDED JOINTS			
FILLET WELDS:			
MT TEST A MINIMUM OF 10% OF THE LENGTH OF EACH FILLET WELD EXCEEDING 5/16".	-	X	YES
PERIODIC MT TESTING OF REPRESENTATIVE FILLET WELDS 5/16" AND LESS BUT NEED NOT EXCEED 10% OF ALL SUCH WELDS, EXCEPT AS REQUIRED FOR HIGH REJECTION RATES AS INDICATED IN THE FOLLOWING PARAGRAPH.	-	X	YES
INCREASE MT TESTING RATE FOR WELDERS HAVING A HIGH REJECTION RATE AS REQUIRED TO ENSURE ACCEPTABLE WELDS.	X	-	YES
PARTIAL JOINT PENETRATION (PJP) WELDS INCLUDING FLARE BEVEL WELDS			
MT TEST A MINIMUM OF 25% OF THE LENGTH OF EACH PJP WELD EXCEEDING 5/16" EFFECTIVE THROAT.	-	X	YES
PERIODIC MT TESTING OF REPRESENTATIVE PJP WELDS 5/16" AND LESS BUT NEED NOT EXCEED 10% OF ALL SUCH WELDS, EXCEPT AS REQUIRED FOR HIGH REJECTION RATES AS INDICATED IN THE FOLLOWING PARAGRAPH..	-	X	YES
INCREASE MT TESTING RATE FOR WELDERS HAVING A HIGH REJECTION RATE AS REQUIRED TO ENSURE ACCEPTABLE WELDS	X	-	YES
COMPLETE JOINT PENETRATION (CJP) WELDS			
ALL CJP WELDS EXCEEDING 5/16" THICKNESS SHALL BE 100% UT TESTED PER AWS D1.1 CLAUSE 6 PART F. THE TESTING LABORATORY SHALL REVIEW THE CJP JOINTS TO DETERMINE WHERE GEOMETRY OR ACCESSIBILITY PRECLUDES THE USE OF STANDARD SCANNING PATTERNS PER AWS D1.1 CLAUSE 6 PART F. AT THESE LOCATIONS THE TESTING LABORATORY SHALL DEVELOP AND SUBMIT FOR APPROVAL A WRITTEN TESTING PROCEDURE IN ACCORDANCE WITH AWS D1.1 ANNEX S.	X	-	YES
PERIODIC MT TESTING OF REPRESENTATIVE CJP WELDS 5/16" AND LESS NOT TO EXCEED 10% OF ALL SUCH WELDS.	-	X	YES
INCREASE MT TESTING RATE FOR WELDERS HAVING A HIGH REJECTION RATE AS REQUIRED TO ENSURE ACCEPTABLE WELDS.	X	-	YES

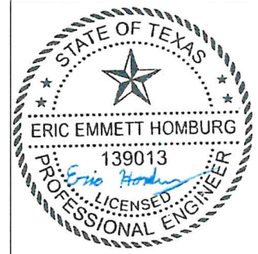
COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION (1705.11.2)

PERIODIC SPECIAL INSPECTION IS REQUIRED FOR WELDING OPERATIONS OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR SCREW ATTACHMENT, BOLTING, ANCHORING AND OTHER FASTENING OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM, INCLUDING SHEAR WALLS, BRACES, DIAPHRAGMS, COLLECTORS (DRAG STRUTS) AND HOLD-DOWNS.

EXCEPTION: SPECIAL INSPECTION IS NOT REQUIRED FOR COLD-FORMED STEEL LIGHT-FRAME SHEAR WALLS AND DIAPHRAGMS, INCLUDING SCREWING, BOLTING, ANCHORING AND OTHER FASTENING TO COMPONENTS OF THE WIND FORCE RESISTING SYSTEM WHERE EITHER OF THE FOLLOWING APPLIES:
1. THE SHEATHING IS GYPSUM BOARD OR FIBERBOARD.
2. THE SHEATHING IS WOOD STRUCTURAL PANEL OR STEEL SHEETS ON ONLY ONE SIDE OF THE SHEAR WALL, SHEAR PANEL OR DIAPHRAGM ASSEMBLY AND THE FASTENER SPACING OF THE SHEATHING IS MORE THAN 4 INCHES (102 MM) ON CENTER (O.C.).

Revision Schedule

Revision Number	Revision Description	Revision Date



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
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STATEMENT OF SPECIAL INSPECTIONS

S0.6

Date: 04/14/2022

Project No: 21-139

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (SNUG-TIGHT) - INSPECTION TASKS PRIOR TO BOLTING

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
DOCUMENTATION AND ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	-	X	YES

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (PRETENSIONED) - INSPECTION TASKS PRIOR TO BOLTING

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
MFR. CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	-	X	YES
FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	-	X	YES
PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	-	X	YES
PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	-	X	YES
CONNECTING ELEMENTS, INCLUDE THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION , IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	-	X	YES
PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENERS ASSEMBLIES AND METHODS USED	X	-	YES
PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	-	X	YES

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (PRETENSIONED) - INSPECTION TASKS DURING BOLTING

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	-	X	YES
JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO PRETENSIONING OPERATION	-	X	YES
FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	-	X	YES
FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARDS THE FREE EDGES	-	X	YES

STRUCTURAL STEEL COMPOSITE CONSTRUCTION - INSPECTIONS PRIOR TO CONCRETE PLACEMENT

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
PLACEMENT AND INSTALLATION OF STEEL DECK	-	X	YES
PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS.	-	X	YES
DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS	-	X	YES

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (SNUG-TIGHT) - INSPECTION TASKS DURING BOLTING

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
DOCUMENTATION OF ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS.	-	X	YES

STRUCTURAL STEEL HIGH-STRENGTH BOLTS (TURN-OF-NUT)

TURN-OF-NUT PRETENSIONING: THE INSPECTOR SHALL OBSERVE THE PRE-INSTALLATION VERIFICATION TESTING REQUIRED IN SECTION 8.2. SUBSEQUENTLY, IT SHALL BE ENSURED BY ROUTINE OBSERVATION THAT THE BOLTING CREW PROPERLY ROTATES THE TURNED ELEMENT RELATIVE TO THE UNTURNED ELEMENT BY THE AMOUNT SPECIFIED IN TABLE 8.2. ALTERNATIVELY, WHEN FASTENER ASSEMBLIES ARE MATCH-MARKED AFTER THE INITIAL FIT-UP OF THE JOINT BUT PRIOR TO PRETENSIONING, VISUAL INSPECTION AFTER PRETENSIONING IS PERMITTED IN LIEU OF ROUTINE OBSERVATION. NO FURTHER EVIDENCE OF CONFORMITY IS REQUIRED. A PRETENSION THAT IS GREATER THAN THE VALUE SPECIFIED IN TABLE 8.1 SHALL NOT BE CAUSE FOR REJECTION. A ROTATION THAT EXCEEDS THE REQUIRED VALUES, INCLUDING TOLERANCE, SPECIFIED IN TABLE 8.2 SHALL NOT BE CAUSE FOR REJECTION.

TABLE 8.2: NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING

BOLT LENGTH	DISPOSITION OF OUTER FACES OF BOLTED PARTS		
	BOTH FACE NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS
LENGTH ≤ $4d_b$	1/3 TURN	1/2 TURN	2/3 TURN
$4d_b$ < LENGTH ≤ $8d_b$	1/2 TURN	2/3 TURN	5/6 TURN
$8d_b$ < LENGTH ≤ $12d_b$	2/3 TURN	5/6 TURN	1 TURN

a. NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR ALL REQUIRED ROTATIONS, THE TOLERANCE IS PLUS 60° AND MINUS 30°
b. APPLICABLE TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL (TABLE 1705.2.2)

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REQUIRED
1. MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK:			
A. IDENTIFICATION MARKING TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	-	X	NO
B. MANUFACTURER'S CERTIFIED TEST REPORTS	-	X	NO
2. INSPECTION OF WELDING			
A. COLD-FORMED STEEL DECK - FLOOR AND ROOF DECK WELDS	-	X	NO
A. REINFORCING STEEL			
1. VERIFICATION OF EDIBILITY OF REINFORCING STEEL OTHER THAN ASTM A 706	-	X	NO
2. SHEAR REINFORCEMENT	X	-	NO
3. OTHER REINFORCEMENT	-	X	NO

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STATE OF TEXAS
ERIC EMMETT HOMBURG
139013
LICENSED
PROFESSIONAL ENGINEER

4/14/2022

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TEMPLE, TX

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STATEMENT OF SPECIAL INSPECTIONS

S0.7

Date: 04/14/2022

Project No: 21-139

NOTE:
REF SHEET S1.1 FOR LEGEND

EXISTING STEEL COLUMN

TYP. 4 S6.2

7'-2"

3'-0" 4'-4"

CANTILEVER NON-LOADBEARING INTERIOR CMU WALL
(1) #4 BAR @ 36" O.C.
DRILL & EPOXY DOWELS
T.O.W. 718.80

EXISTING CMU WALL TO REMAIN

EXISTING OPENING EXTENTS, OPENING TO BE FILLED IN W/ NEW CMU

20'-0"

REF. 3 /S4.4 FOR BASE PLATE DETAIL

EXISTING FOUNDATION TO REMAIN

S3.1 2

CONTRACTOR TO VERIFY THAT ALL NEW COLUMN LOCATIONS ALIGN WITH FRAME LINES IN EXISTING BUILDING

SAW-CUT JOINT THROUGH EXISTING SLAB

VERTIAL CABLE BRACE, REF 1 /S5.2

REMOVE EXISTING EXTERIOR ROCK FACADE AND INSTALL METAL PANEL SIM. TO THAT EXISTING IN ITS PLACE
NOTE: ALL PANELS AND DUCT WORK TO BE REMOVED - REPAINT WEST METAL WALL TO MATCH EXISTING AND NEW METAL PANELS

REMOVE EXISTING EXTERIOR ROCK FACADE AND INSTALL 8" CMU IN ITS PLACE
ENTIRE SOUTH SECTION OF EXISTING WALL SHALL BE COVERED W/ NEW CMU

1 2 S3.0 1

5'-1" 5'-0" 10'-11" 1'-1" 11'-7" 12'-0" 5'-0" 4'-8"

54'-1 1/2"

7 1/4" 8"

2'-8" CL PIER

2 S2.1 1 S2.1 4 S4.0 TYP.

3"Ø PIPE, REF CIVIL

NEW CMU WALL

CANTILEVER NON-LOADBEARING INTERIOR CMU WALL
(1) #4 BAR @ 36" O.C.
T.O.W. 720.50

17'-6"

4'-5" TYP

5 S4.2 TYP. CONCRETE MAT SLAB, REF SCHEDULE

2 S4.1 TYP. PUMP PAD, REF CIVIL FOR SIZE AND LOCATION, TYP.

NEW OPENING EXTENTS

2 S4.4 TYP. 6'-0"

BAR GRATING
REF. 6 /S5.0

7 S4.2 TYP.

6 S4.0 TYP.

DISCHARGE HEADER PIT

32'-4"

4 S4.4 TYP.

1 S2.0

1 S4.2 TYP.

CONCRETE MAT SLAB, REF SCHEDULE

6 S5.2 TYP.

HSS4x4x1/4", TYP.

3 S4.7 TYP.

4 S5.3 TYP.

4 S4.7 TYP.

HEADER, REF CIVIL

5 S4.3

3 S4.1

4 S4.0 TYP.

SLOPE

10'-0"

OPENING FOR 12' ROLL-UP DOOR

3 S4.9 TYP.

22'-0"

54'-1 3/8"

1 S4.9

2 S3.0

7 1/4" 5'-1" 5'-0" 12'-0" 11'-7" 12'-0" 5'-0" 5'-4" 8" 7 1/4"

56'-0"

C6X8.2
T.O.S. 710.35

REF. 3 /S4.4 FOR BASE PLATE DETAIL

1'-2 1/2" 2'-8"

2'-0" TYP 2'-0" TYP

3 S4.8 TYP.

7'-0"

SLOPE

1 S4.0 TYP. 5'-0"

16'-3 1/2"

NEW DOOR OPENING

CONCRETE RAMP, BY OTHERS

TRENCH DRAIN, REF CIVIL

1 S3.1

21'-2" 5'-1/4" 56'-8"

BAR GRATING
REF. 6 /S5.0

1 S4.5 2'-0" TYP

2'-0" TYP

2 S4.5

16'-9 1/2"

2'-8"

1'-2 1/2"

HEADER, REF CIVIL

17'-8"

6'-9 1/2"

2'x2'x1'-6" DEEP SUMP

5'-3 1/2" TYP

BAR GRATING
REF. 6 /S5.0

6'-0"

1'-0"

4 S5.3 TYP.

4 S4.7 TYP.

C6X8.2, TYP.
T.O.S. = 710.35

FUTURE PUMP PAD

SUCTION HEADER PIT

2'-0" TYP.

(8) @ 5'-2"

5'-1/4"

45'-4"

BAR GRATING
REF. 6 /S5.0

2'-0" TYP.

DISCHARGE HEADER PIT

TRUE

1 PUMP ROOM FOUNDATION PLAN
1/8" = 1'-0"

Revision Schedule		
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6102 Imperial Loop Drive | College Station, Texas 77845
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FOUNDATION PLAN

S1.0

Date: 04/14/2022

Project No: 21-139

SUBGRADE AND BUILDING PAD NOTES:

1. SITE PREPARATION:
   - A. PLACE AT LEAST 2 FEET OF SELECT FILL BELOW THE UPPER SLABS. SOFT SOILS SHOULD BE REMOVED UNTIL FIRM SOIL IS REACHED. THE SOFT SOILS CAN BE AERATED AND PLACED BACK IN SIX-INCH LOOSE LIFTS AND COMPACTED TO 95% AS SPECIFIED BY ASTM D-698. TREE STUMPS, TREE ROOTS, OLD SLABS, OLD FOUNDATIONS AND EXISTING PAVEMENTS SHOULD BE REMOVED FROM THE STRUCTURE AREA. IF THE TREE STUMPS AND ROOTS ARE LEFT IN PLACE, SETTLEMENT AND TERMITE INFESTATION MAY OCCUR. ONCE A ROOT SYSTEM IS REMOVED, A VOID IS CREATED IN THE SUBSOIL. IT IS RECOMMENDED TO FILL THESE VOIDS WITH SELECT FILL OR CEMENT-STABILIZED SAND AND COMPACT TO 95% AS SPECIFIED BY ASTM D-698. SELECT FILL SHOULD EXTEND A MINIMUM DISTANCE OF 2 FEET BEYOND THE BUILDING PERIMETER.
   - B. ANY LOW-LYING AREAS INCLUDING RAVINES, DITCHES, SWAMPS, ETC. SHOULD BE FILLED WITH SELECT FILL AND PLACED IN SIX-INCH LIFTS. EACH LIFT SHOULD BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AT 0 TO +3%OF THE OPTIMUM MOISTURE CONTENT AS SPECIFIED BY ASTM D-698.
   - C. IMPORTED SELECT FILL SHOULD MEET THE REQUIREMENTS OF 2014 TxDOT ITEM 247, TYPE A, GRADE 3 OR BETTER PER THE GEOTECH. REPORT.
   - D. THE EXPOSED SUBGRADE SHOULD BE SCARIFIED TO A MINIMUM DEPTH OF SIX (6) INCHES IN THE DRIVEWAY AND SLAB AREAS. THE SUBGRADE SHOULD THEN BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AT +2 TO +5% OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE STANDARD MOISTURE DENSITY RELATIONSHIP (ASTM D-698). IN THE EVENT THAT THE UPPER SIX (6) INCHES CANNOT BE COMPACTED DUE TO EXCESSIVE MOISTURE, WE RECOMMEND THAT THESE SOILS BE EXCAVATED AND REMOVED OR CHEMICALLY STABILIZED TO PROVIDE A FIRM BASE FOR FILL PLACEMENT. PROOF ROLLING SHOULD BE PERFORMED USING A HEAVY TIRED LOADED TRUCK OR PNEUMATIC RUBBER-TIRED WEIGHING 25 TONS.
   - E. A QUALIFIED SOIL TECHNICIAN SHOULD MONITOR ALL EARTHWORK OPERATIONS. FIELD DENSITY TESTS SHOULD BE CONDUCTED ON EACH LIFT USING A NUCLEAR DENSITY GAUGE. THE GAUGE SHOULD BE CALIBRATED EVERY DAY. PRIOR TO FIELD DENSITY TESTS, A 50-POUND SAMPLE FROM THE SUBGRADE SOILS SHOULD BE OBTAINED. A SIMILAR SAMPLE SHOULD BE OBTAINED FROM THE FILL SOILS. A STANDARD MOISTURE DENSITY RELATIONSHIP (ASTM D-698) SHOULD BE PERFORMED ON EACH SAMPLE IN ORDER TO OBTAIN AN OPTIMUM MOISTURE CONTENT AND A MAXIMUM DRY DENSITY. THE FIELD DENSITY TESTS SHOULD BE COMPARED TO THESE RESULTS EVERY TIME THE SOILS ARE TESTED IN THE FIELD.
2. DRAINAGE
   - A. ROOF DRAINAGE SHOULD BE COLLECTED BY A SYSTEM OF GUTTERS AND DOWN SPOUTS AND TRANSMITTED TO A PAVED SURFACE WHERE WATER CAN DRAIN RAPIDLY AWAY FROM THE STRUCTURE. SIDEWALKS, PARKING AREAS, BUILDING ACCESS DRIVES, AND THE GENERAL GROUND SURFACE SHOULD BE SLOPED SO THAT WATER WILL DRAIN AWAY FROM THE STRUCTURE. WATER SHOULD NOT BE ALLOWED TO POND NEAR THE BUILDING FOUNDATIONS.
   - B. FINAL GRADES SHALL SLOPE A MINIMUM OF 5% FOR THE FIRST 10 FEET AWAY FROM THE FOUNDATION IN ALL DIRECTIONS. THIS SLOPE SHALL OCCUR IN THE SELECT FILL OR IN-SITU SOIL. MERELY SLOPING TOPSOIL IS NOT SUFFCIENT.
3. SOIL MOISTURE
   - A. EXPANSIVE SOILS HEAVE AND SUBSIDE DUE TO CHANGES IN MOISTURE CONTENT. CHANGES IN MOISTURE CONTENT CAN CAUSE VERY LARGE CHANGES IN SOIL VOLUME WHEN GOING FROM A DRY TO A SATURATED CONDITION, AND VICE VERSA. THIS MOVEMENT DOES NOT MEAN THE FOUNDATION IS IMPROPERLY DESIGNED OR THAT IT HAS FAILED. THE FOUNDATION DESIGN ENGINEER CANNOT CONTROL THE MOISTURE CONTENT OF THE SOIL, BUT OFTEN THE OWNER/TENANT CAN. UNIFORMITY IS THE KEY: UNIFORM MOISTURE CONTENT IN THE SOIL, UNIFORMLY MAINTAINED IN ALL AREAS AROUND THE FOUNDATION. IF CHANGES IN MOISTURE CONTENT ARE UNIFORM, THEN MOVEMENT OF THE FOUNDATION WILL BE UNIFORM AND LESS DISTRESS WILL BE CREATED IN THE STRUCTURE. IF CHANGES IN MOISTURE CONTENT ARE NON-UNIFORM, THEN THERE MAY BE DIFFERENTIAL MOVEMENT IN THE FOUNDATION. DIFFERENTIAL MOVEMENT CAN CAUSE GREATER (AND MORE OBVIOUS) DISTRESS IN THE STRUCTURE. LEAKING POOLS, LEAKING PLUMBING LINES, LEAKING DRAINS, DRIPPING FAUCETS, DRIPPING AIR CONDITIONING CONDENSATE LINES, AND MISDIRECTED WATER FROM CLOGGED AND BROKEN GUTTERS AND DOWNSPOUTS CAN CAUSE LOCAL HIGH MOISTURE CONTENTS THAT CAN RESULT IN DIFFERENTIAL MOVEMENT IN AREAS OF EXPANSIVE SOILS. THESE CONDITIONS SHOULD BE REMEDIED AS SOON AS POSSIBLE. TREES IN OR NEAR THE FOOTPRINT OF THE FOUNDATION, EITHER REMOVED OR PLANTED DURING CONSTRUCTION, CAUSE THE MAJORITY OF FOUNDATION PROBLEMS REQUIRING REPAIR IN THIS AREA. TREES REMOVED DURING CONSTRUCTION TEND TO CAUSE HEAVE OF EXPANSIVE SOILS DURING THE FIRST FEW YEARS, WITH INITIAL DISTRESS OFTEN EVIDENT AT THE TIME OF MOVE-IN. TREES PLANTED DURING OR AFTER CONSTRUCTION TEND TO CAUSE SUBSIDENCE OF EXPANSIVE SOILS. HOWEVER, SIGNIFICANT SUBSIDENCE DISTRESS WILL USUALLY NOT OCCUR FOR TEN TO TWENTY YEARS AS THE TREES MATURE.
4. CLIMATE
   - A. DURING PERIODS OF DRY WEATHER, THE SOIL AROUND THE FOUNDATION SHOULD BE IRRIGATED IF THE BUILDING IS LOCATED IN AN AREA WHERE EXPANSIVE SOILS ARE KNOWN TO OCCUR. THE MOST COMMONLY USED IRRIGATION SYSTEM IS ABOVEGROUND TIMED SPRINKLERS WITH A MANUAL OVERRIDE SO THEY CAN BE TURNED OFF IN RAINY WEATHER. AN AUTOMATIC BELOWGROUND IRRIGATION SYSTEM THAT SENSES THE MOISTURE CONTENT OF THE SOIL MAY ALSO BE USED. TEND TO KEEP THE IRRIGATION SYSTEM SET ON "MANUAL", AND ONLY USE IT IN DRIER PERIODS WHEN WILTING OF THE LAWN GRASSES AND OTHER VEGETATION OCCURS. THE IRRIGATION SHOULD BE DONE AT LEAST ONE TO TWO FEET AWAY FROM THE FOUNDATION, AND THEN LIGHTLY SO THAT TREE ROOTS ARE NOT ATTRACTED THERE. DO NOT ALLOW SPRINKLERS TO SPRAY WATER AGAINST THE STRUCTURE. IN EXTENDED DRY PERIODS, SHOULD THE SOIL CRACK AND PULL AWAY FROM THE FOUNDATION, DO NOT WATER DIRECTLY INTO THE GAP.
5. UTILITIES
   - A. CONNECTIONS FOR UTILITIES (PLUMBING, ELECTRICAL, GAS, ETC.) THAT ARE UNDERNEATH, GO THROUGH OR ARE ATTACHED TO THE FOUNDATION SHALL HAVE BE FLIEXIBLE TO ACCOMODATE FOUNDATION MOVEMENT OF AT LEAST 2". ALL DRAINAGE PIPING, AND GENERAL PLUMBING SYSTEMS ASSOCIATED WITH THE FOUNDATION OR IN PROXIMITY TO THE FOUNDATION SHALL BE LEAK TESTED FOLLOWING INSTALLATION AND ON AN ANNUAL BASIS.

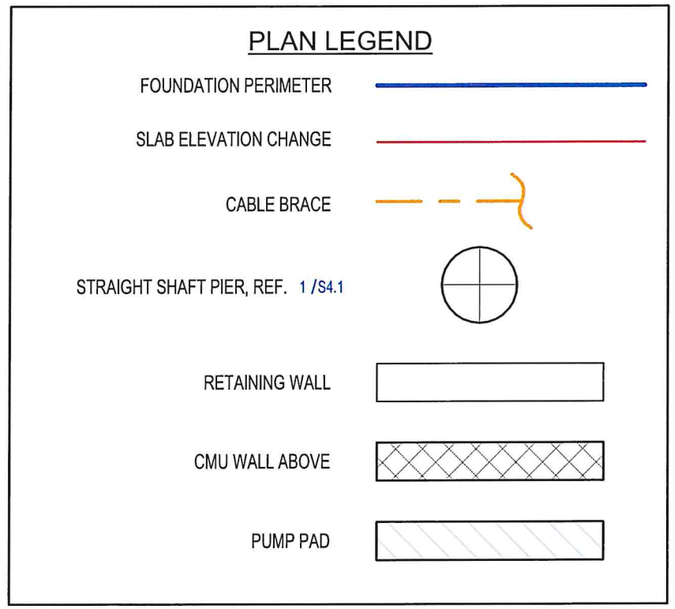
FOUNDATION NOTES

FOUNDATION TYPE:	CONCRETE MAT SLAB
SLAB THICKNESS:	6"
SLAB REINFORCEMENT:	#4 @ 12" OC, REF. 5 /S4.0
DESIGN METHOD:	ACI 318
VAPOR RETARDER:	MINIMUM 10 MIL (UNLESS THICKER REQ'D BY ARCHITECT)

BEAM TYPE[1]	DESCRIPTION	WIDTH	DEPTH[3]	TOP BARS	BOTTOM BARS	STIRRUPS[2]
B1	CONVENTIONAL BEAM	12"	30"	(2) - #6	(3) - #6	#3 @ 24" OC
T1	TURNDOWN	8"	12"	REF. 5 /S4.2		
C1	CORNER PIER CAP	30"	24"	(4) - #4	(4) - #4	#4 @ 12" OC
C2	INTERIOR PIER CAP	60"	24"	(5) - #4	(5) - #4	#4 @ 12" OC
B2	PIPE PENETRATION BEAM 1	12"	REF. 3 /S4.8			
B3	PIPE PENETRATION BEAM 2	12"	REF. 3 /S4.9			

NOTES:
1. BEAMS ARE TYPE B1 UNO.
2. LOCATE THE FIRST STIRRUP A MAXIMUM OF 3" FROM FACE OF SUPPORT.
3. BEAM DEPTH IS A STRUCTURAL MINIMUM. REFERENCE GEOTECHNICAL REPORT FOR MINIMUM GRADE BEAM EMBEDMENT BELOW ADJACENT FINAL GRADE.
4. ENTIRE SLAB SHALL BE POURED MONOLITHICALLY WITHOUT ANY CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE

PLAN LEGEND



PLAN NOTES

1. VERIFY ALL EDGE OF FOUNDATION DIMENSIONS WITH FINAL CIVIL FLOOR PLANS.
2. FORM DIMENSIONS: SLAB DROPS, SLOPES, ETC. SHOWN AS AN AID TO CONTRACTOR ONLY. VERIFY EXACT DIMENSIONS AND LOCATIONS WITH ARCH./OWNER.
3. ALL FACES EXTERIOR AND INTERIOR SHALL BE PAINTED AS FOLLOWS: ONE COAT DEVOE BLOXFIL 4000 INT./EXT. HEAVY DUTY ACRYLIC BLOCK FILLER OR APPROVED EQUIVALENT AT A RATE OF 50-75 SQ FT PER GALLON AT LEAST 30 DAYS AFTER MORTAR JOINTS HAVE CURED; AFTER BLOCK FILLER HAS DRIED, APPLY TWO COATS OF PAINT AT MANUFACTURER'S RECOMMENDATIONS.

DESIGN PARAMETERS

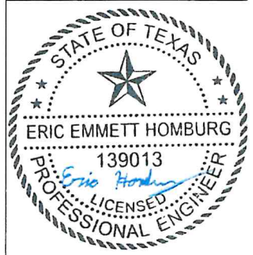
ALLOW. BEARING (PSF)	1,500
MIN BEAM EMBEDMENT	24"

Revision Schedule

Revision Number	Revision Description	Revision Date

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX



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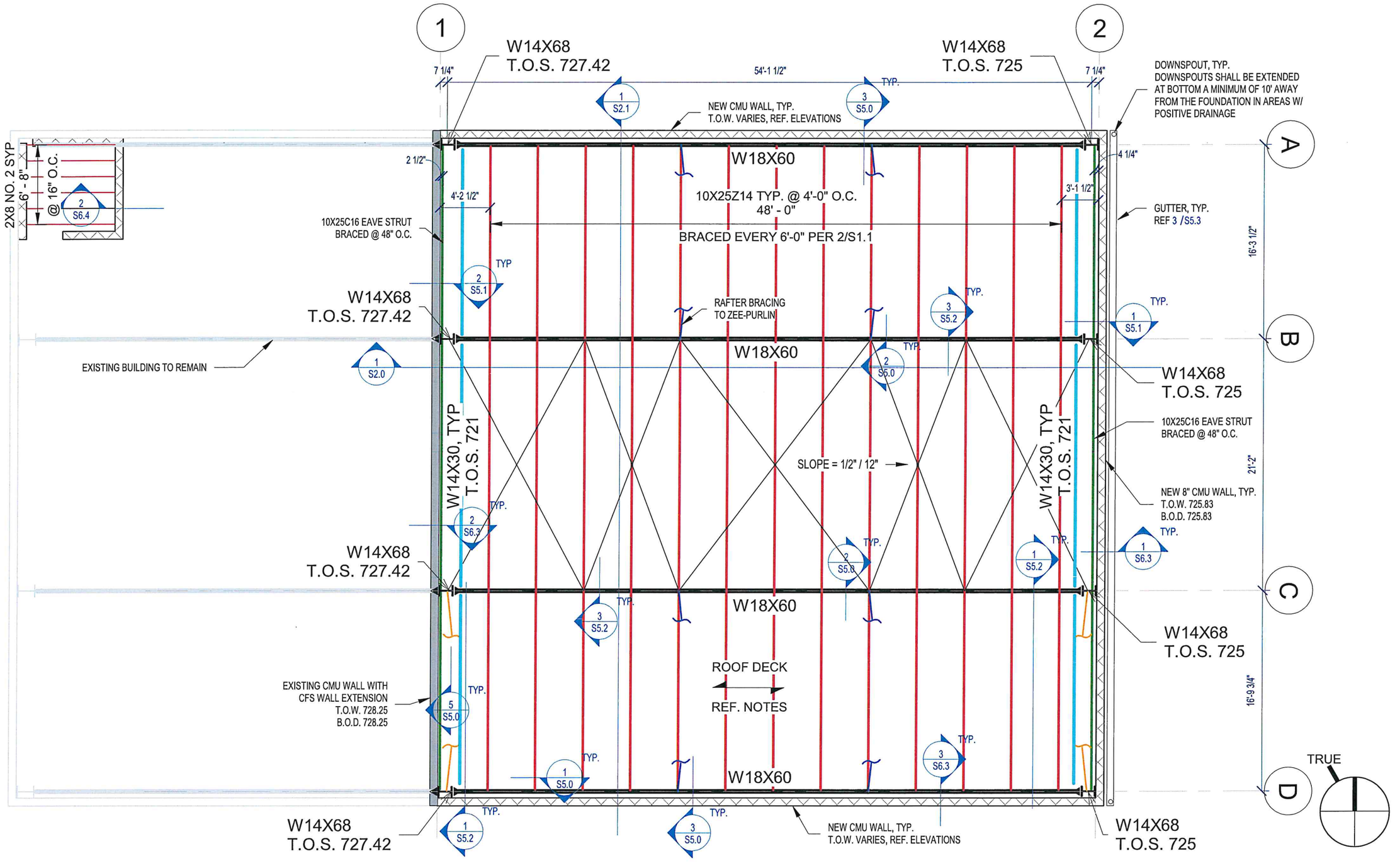
FOUNDATION NOTES

S1.1

Date: 04/14/2022

Project No: 21-139



1 PUMP ROOM FRAMING PLAN
1/8" = 1'-0"

Revision Schedule		
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ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER
4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba DUDLEY
6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0720 | TBPE Firm No. F-18677

PUMP ROOM FRAMING PLAN

S1.2

Date: 04/14/2022

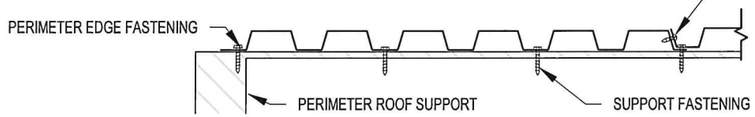
Project No: 21-139

ROOF DECK NOTES

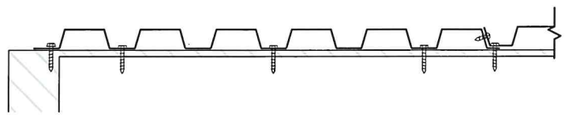
1. DECK TYPE:..... **GALVALUME PLUS PBR ROOF PANEL**
2. GAGE:..... **22**
3. MINIMUM FASTENER SPACING:
   - A. AT INTERMEDIATE SUPPORTS - SEE SCHEDULE
   - B. FASTEN SIDE LAPS AT 16" O.C.
   - C. FASTEN PERIMETER EDGES OF DECK AT 6" OC WHERE DECK IS PARALLEL TO SUPPORT MEMBER AND IN EACH RIB (36/7) WHEN PERPENDICULAR.
4. FASTENERS
   - A. AT SUPPORTS:
     - a. 12-14 x 1 1/4 LONG-LIFE SELF DRILLER W/ WASHER (FASTENER #3)
   - B. AT SIDELAP
     - a. 12-14 x 1 1/4 LONG-LIFE SELF DRILLER W/ WASHER (FASTENER #3)
5. MINIMUM EDGE DISTANCE
   - A. SCREWS IS 1/2".
6. END LAPS TO OCCUR AT SUPPORTS ONLY
7. MINIMUM LAP IS 3"
8. THE ROOF DECK SHALL BE PLACED AS INDICATED ON PLAN WITH THREE SPAN MINIMUM, U.N.O.

ROOF DECK SUPPORT FASTENING AT INTERMEDIATE SUPPORT SCHEDULE	
LOCATION	PATTERN
INTERIOR	**36/5**
EDGE	**36/5**
CORNER	**36/7**

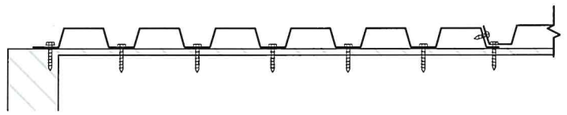
36/4 FASTENING PATTERN



36/5 FASTENING PATTERN



36/7 FASTENING PATTERN



ROOF PLAN LEGEND

STEEL BEAM

BRIDGE CRANE RUNWAY BEAM

COLD-FORMED ZEE-PURLIN

COLD-FORMED EAVE MEMBER

VERTICAL CABLE BRACE

RAFTER BRACE

HORIZONTAL CABLE BRACE

CMU WALL BELOW

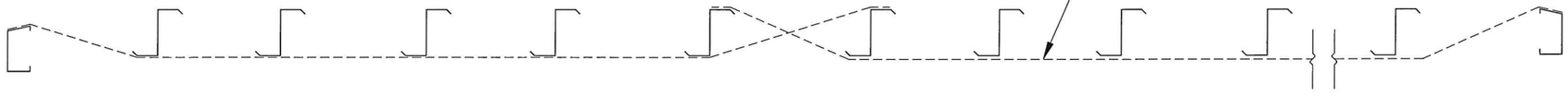
MOMENT CONNECTION

ROOF DECK

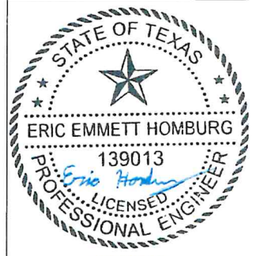
DECK

SLAB

NOTES:
1. NO MORE THAN (4) PURLIN SPACES BEFORE CROSSING
2. PURLINS SHALL BE BRACED AT 6'-0" (MAX.) INTERVALS WITH HORIZONTAL STRAP BRACING AS SHOWN



Revision Schedule		
Revision Number	Revision Description	Revision Date



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
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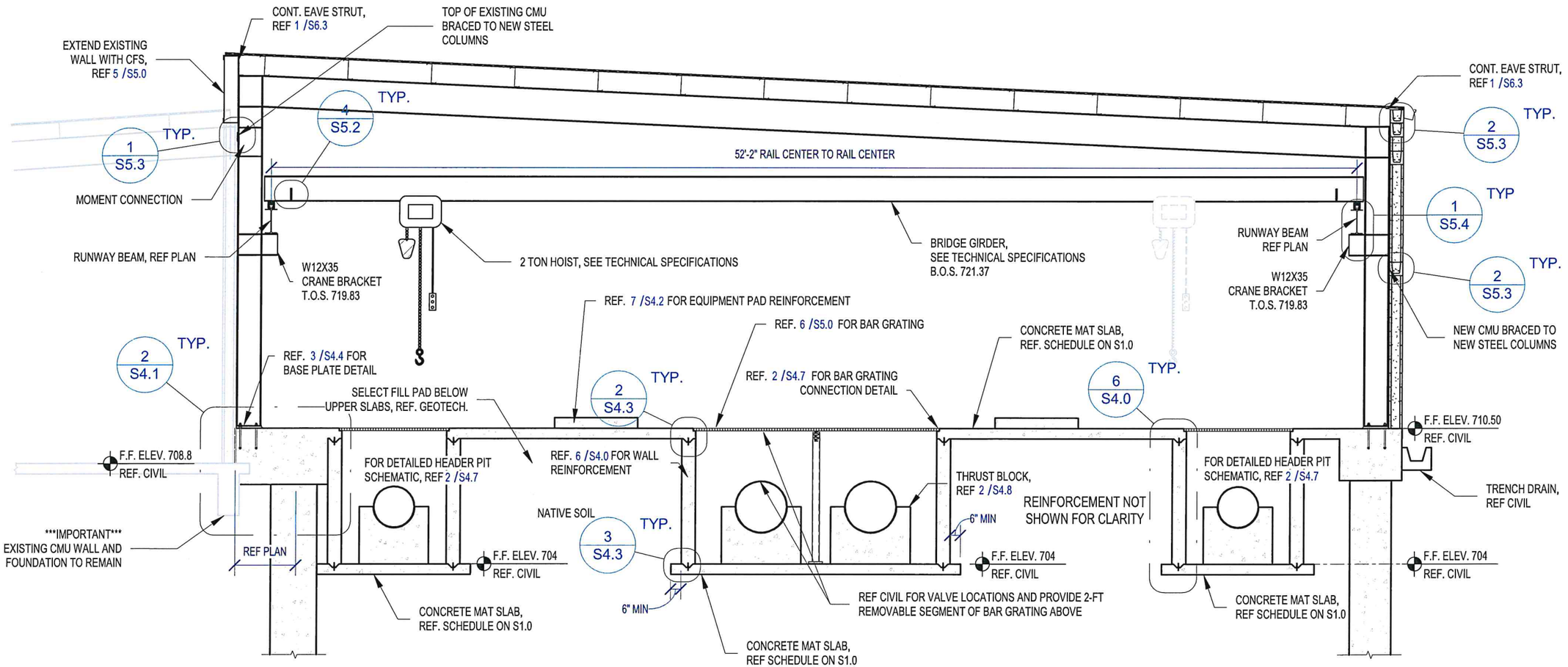
FRAMING NOTES

S1.3

Date:	04/14/2022
Project No:	21-139



1 BUILDING SECTION 1
3/16" = 1'-0"

Revision Schedule		
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TEMPLE, TX

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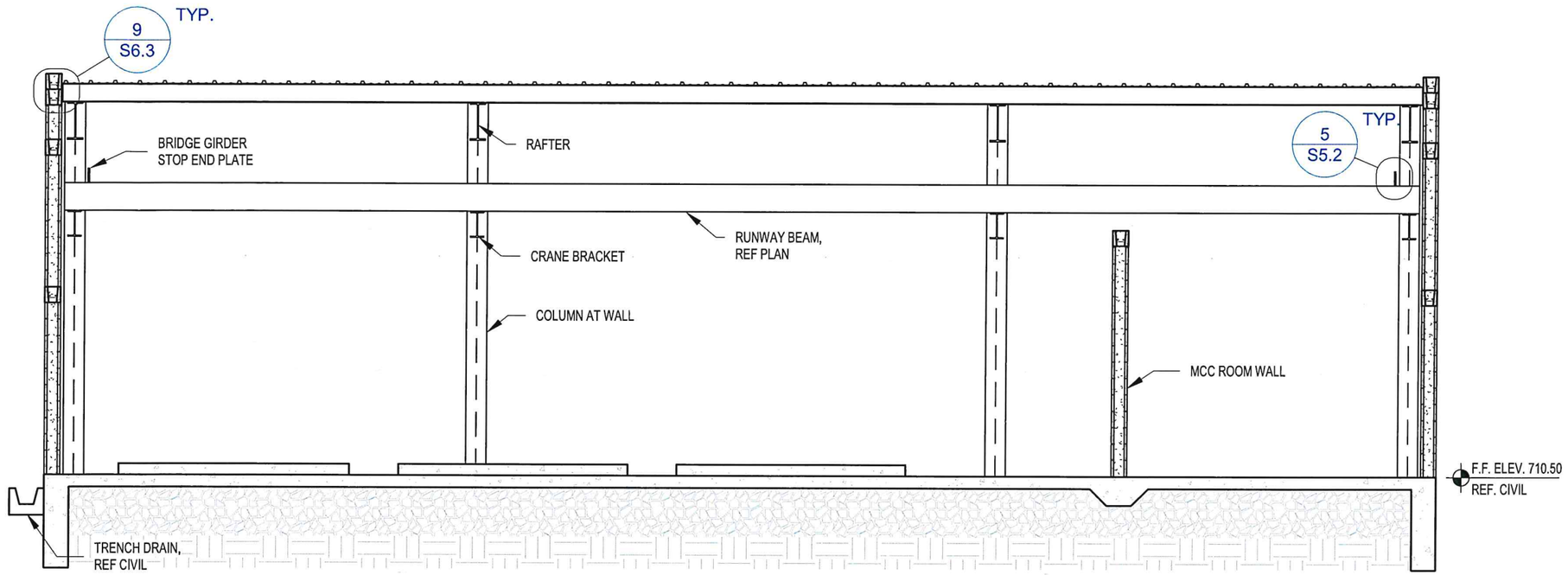
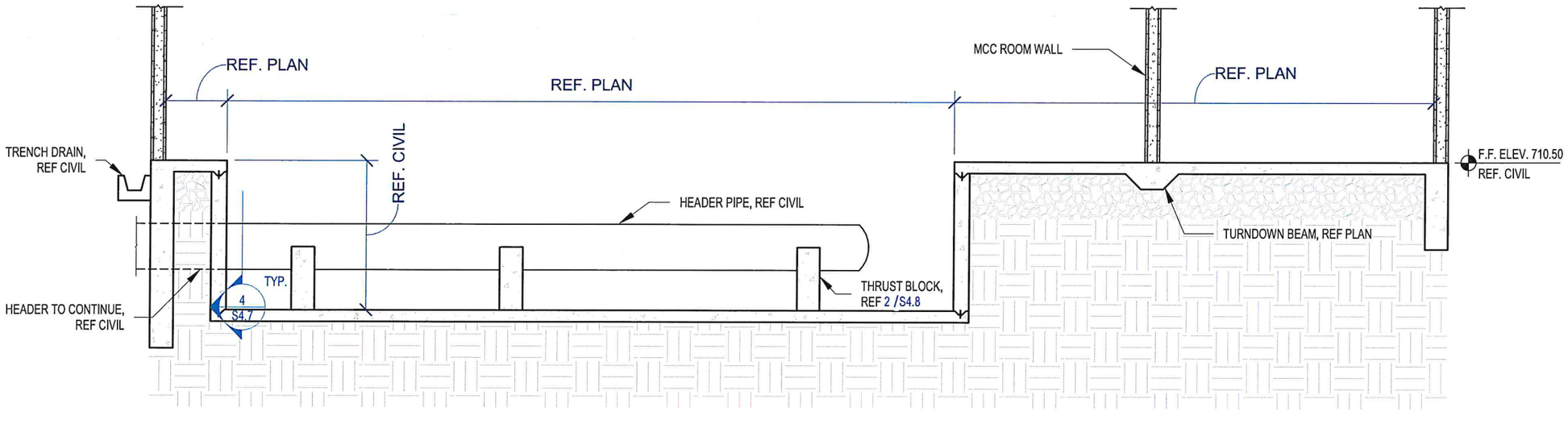
PUMP ROOM BUILDING ELEVATIONS

S2.0

Date:	04/14/2022
Project No:	21-139



1 BUILDING SECTION 2
3/16" = 1'-0"



2 TYPICAL HEADER PIT
3/16" = 1'-0"

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PUMP ROOM BUILDING ELEVATIONS

S2.1

Date:	04/14/2022
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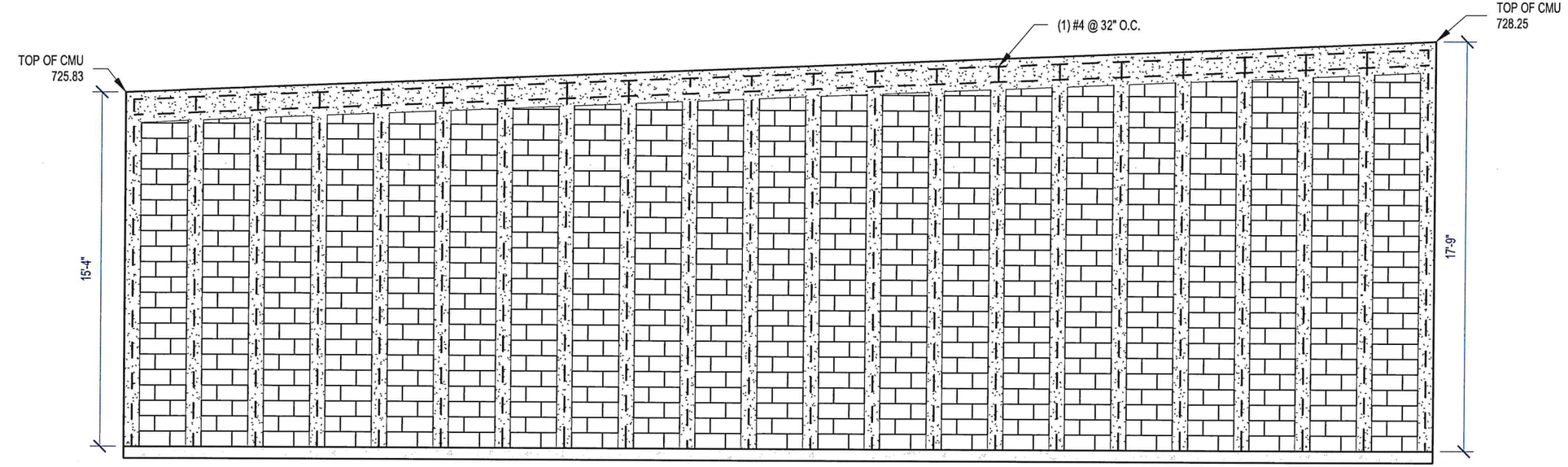
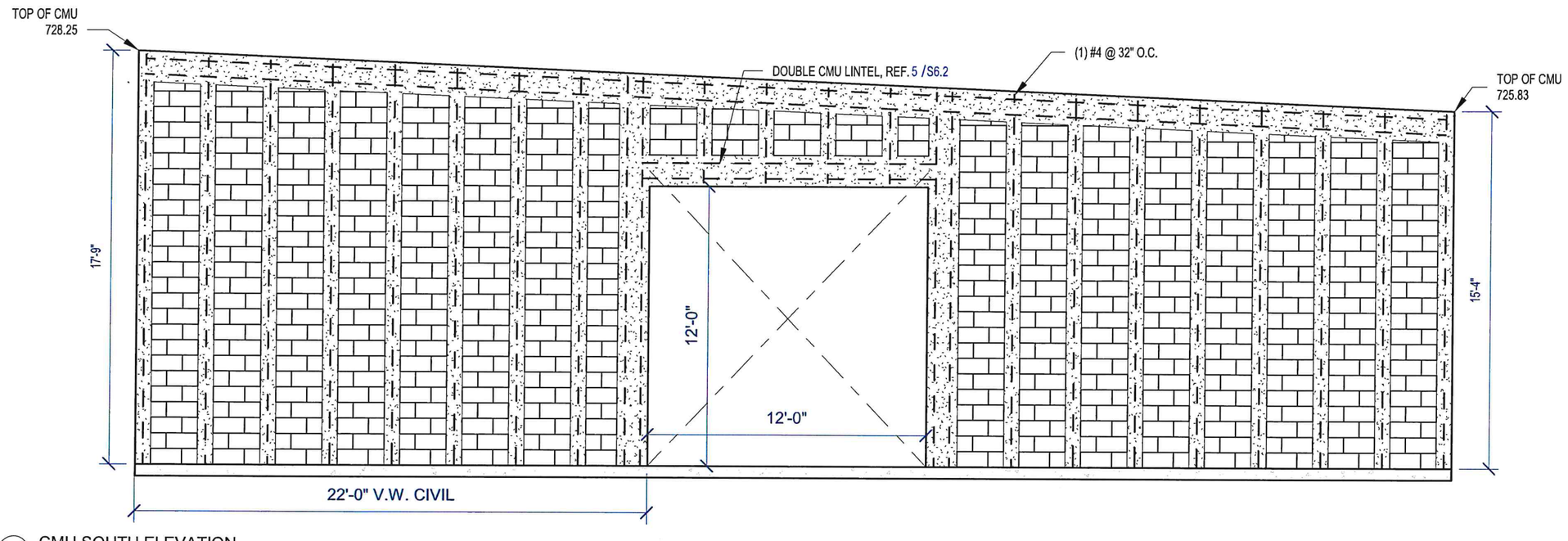


1 CMU NORTH ELEVATION
3/16" = 1'-0"



2 CMU SOUTH ELEVATION
3/16" = 1'-0"

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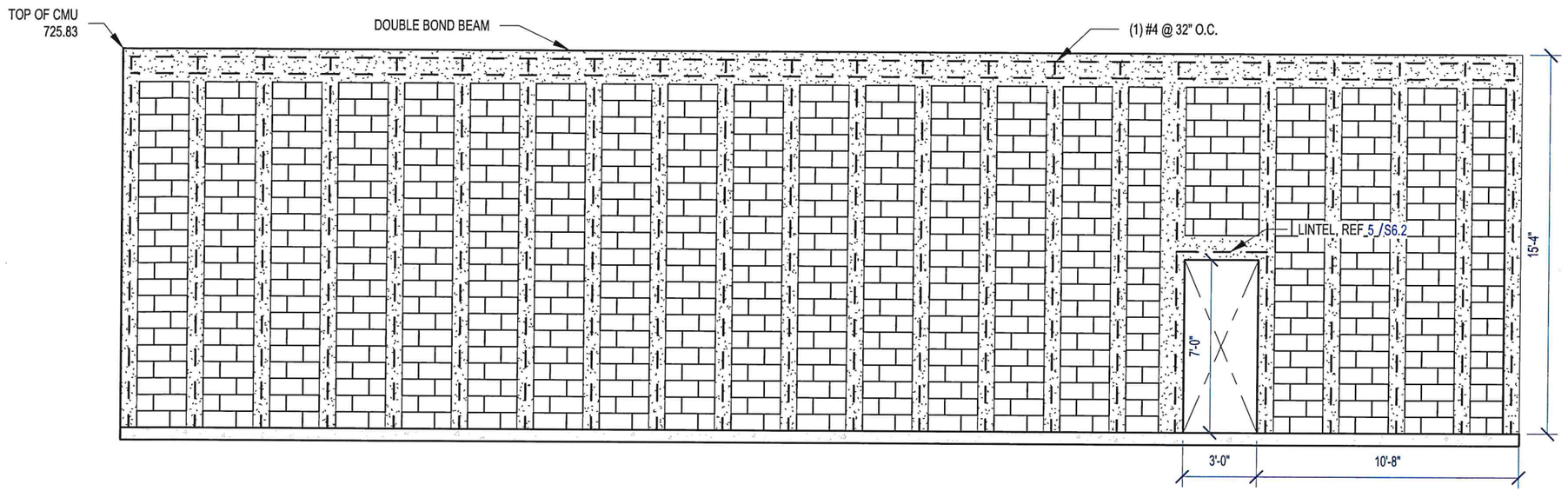
CMU ELEVATIONS

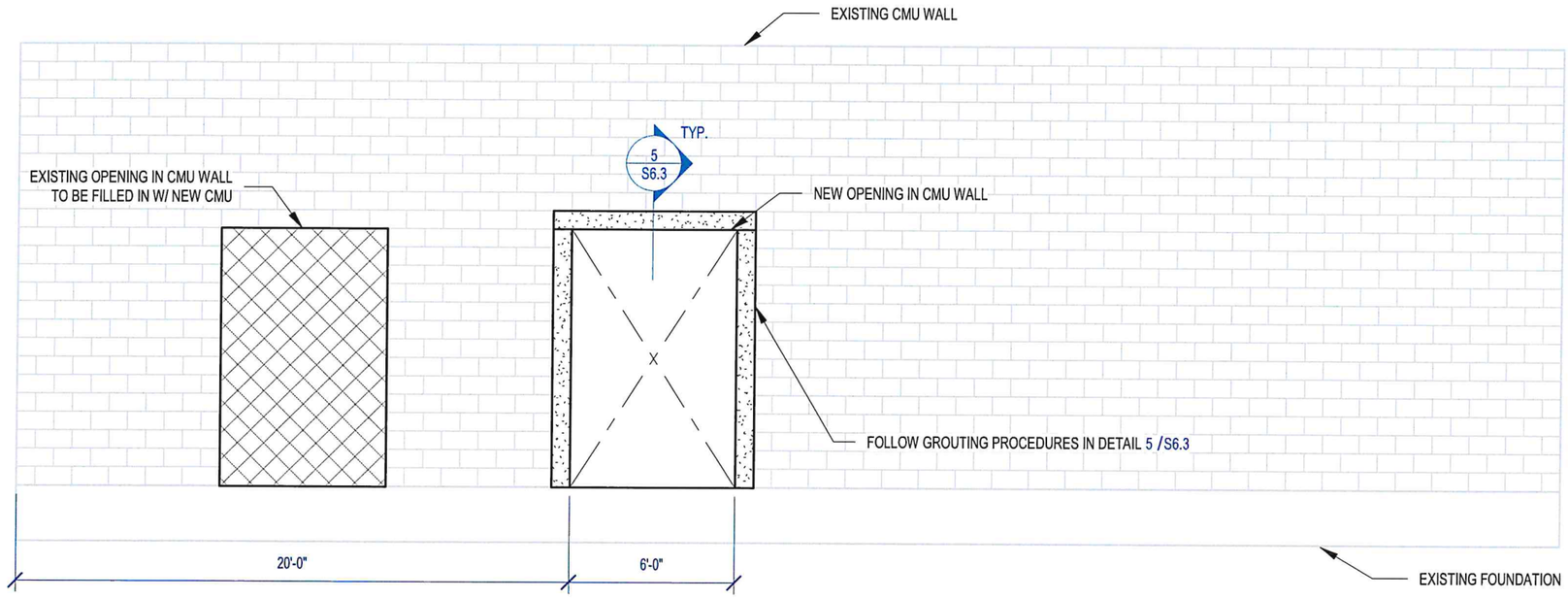
S3.0

Date: 04/14/2022

Project No: 21-139



1 CMU EAST ELEVATION
3/16" = 1'-0"



2 CMU WEST ELEVATION (EXISTING)
3/16" = 1'-0"

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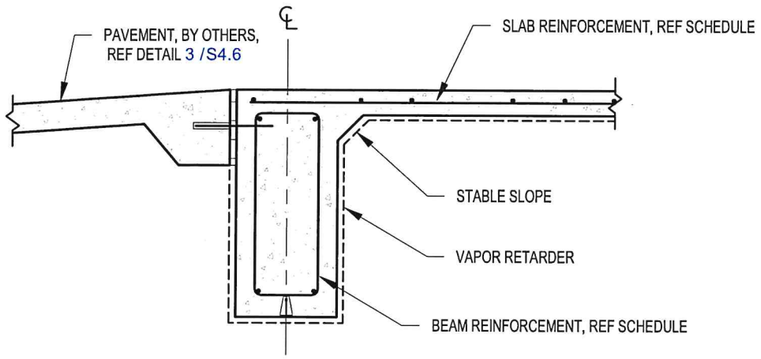
CMU ELEVATIONS

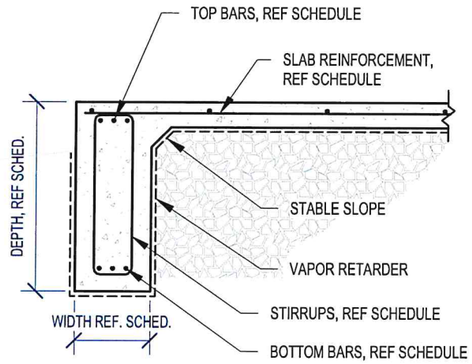
S3.1

Date: 04/14/2022

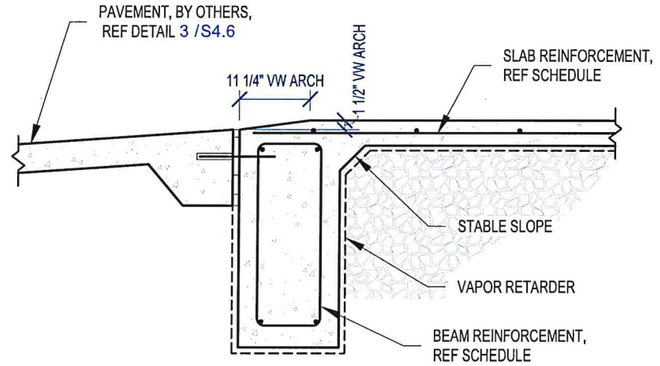
Project No: 21-139



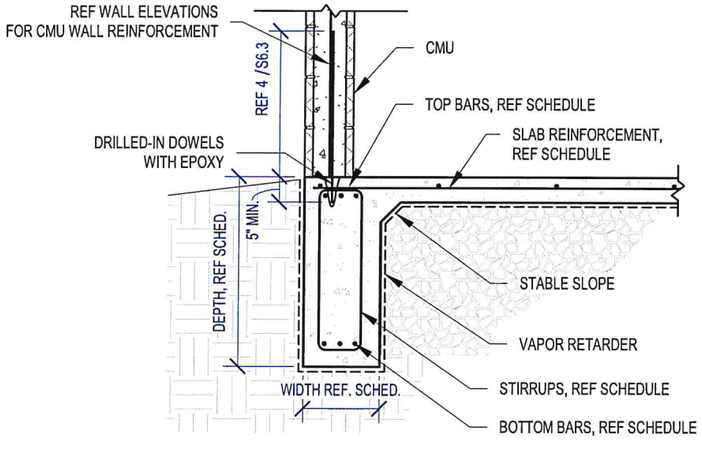
1 TYPICAL EXTERIOR GRADE BEAM @ PAVEMENT
1/2" = 1'-0"



2 TYPICAL EXTERIOR GRADE BEAM
1/2" = 1'-0"

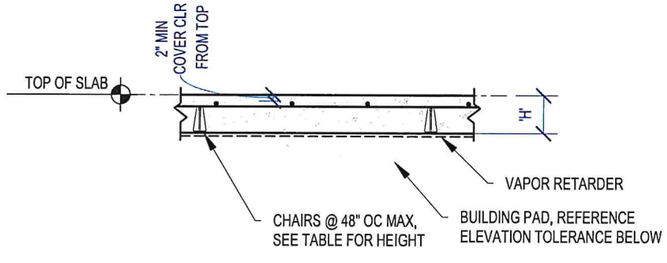


3 TYPICAL EXTERIOR GRADE BEAM AT PAVEMENT AT OVERHEAD DOOR
1/2" = 1'-0"



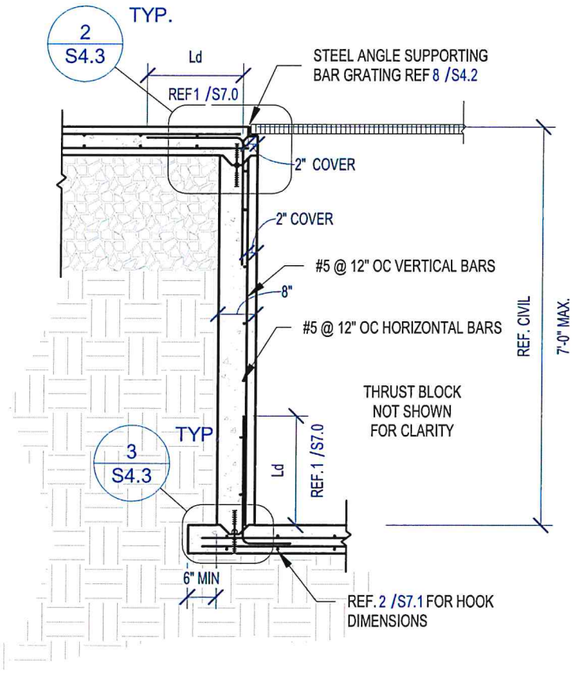
NOTES:
1. FOUNDATION STIFFNESS HAS BEEN PROPORTIONED ASSUMING THAT MASONRY WILL HAVE CONTROL JOINTS AT EACH SIDE
OPENINGS AND AT 15'-0" MAX OR PER ARCHITECTURAL SPECIFICATIONS WHICHEVER IS MORE STRINGENT.

4 CMU WALL AND GRADE BEAM
1/2" = 1'-0"



TOLERANCES FOR SLAB-ON-GRADE CONSTRUCTION (BASED ON ACI 117-10):
1. DEVIATION FROM ELEVATION:
   A. TOP SURFACE OF SLAB: ± 3/4"
   B. FINE GRADE OF SOIL IMMEDIATELY BELOW SLABS-ON-GROUND: ± 3/4"
2. THICKNESS OF SLABS-ON-GROUND:
   A. AVERAGE OF ALL SAMPLE: -3/8"
   B. INDIVIDUAL SAMPLE: -3/4"

5 TYPICAL SLAB-ON-GRADE SECTION
1/2" = 1'-0"



6 TYPICAL HEADER PIT WALL
3/8" = 1'-0"

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FOUNDATION DETAILS

S4.0

Date: 04/14/2022

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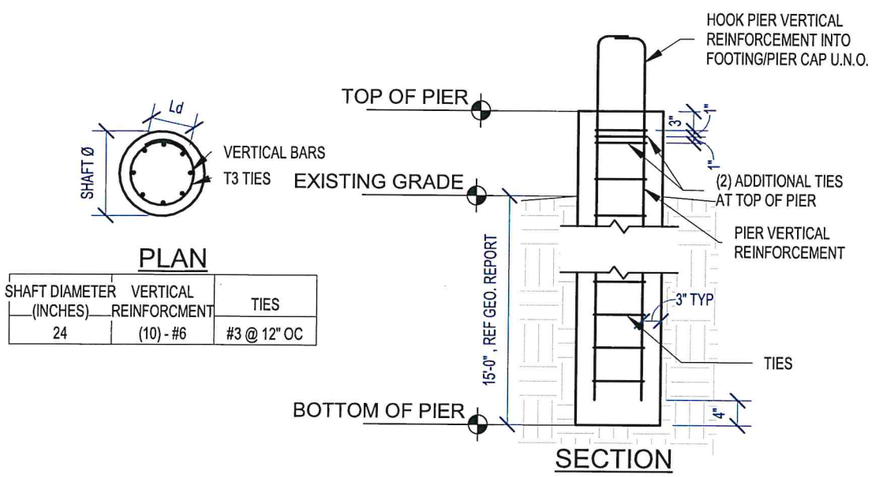


PLAN

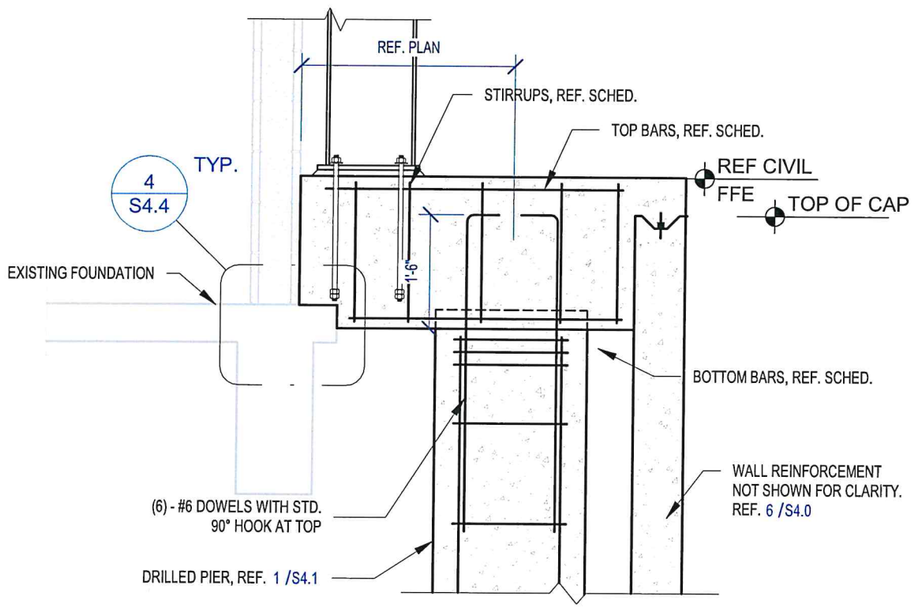
SHAFT DIAMETER (INCHES)	VERTICAL REINFORCMENT	TIES
24	(10) - #6	#3 @ 12" OC

SECTION

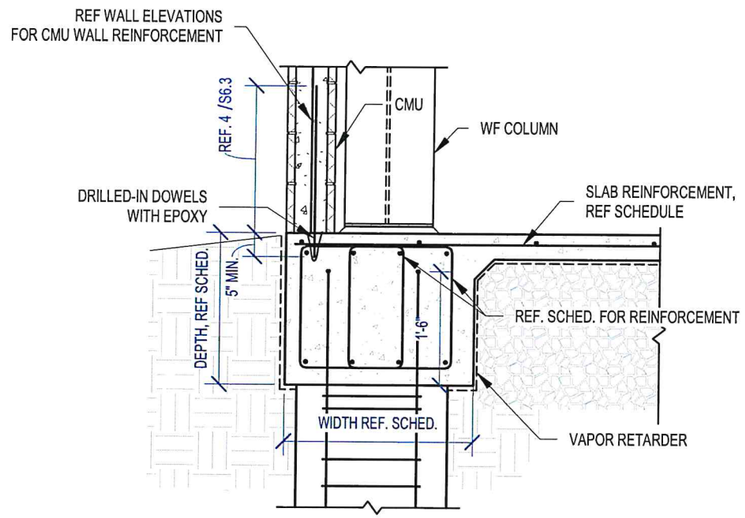
1 TYPICAL STRAIGHT SHAFT DRILLED PIER DETAIL
1/2" = 1'-0"

NOTES:

1. EACH DRILLED PIER EXCAVATION MUST BE EXAMINED BY A REPRESENTATIVE OF THE PROJECT GEOTECHNICAL ENGINEER WHO IS FAMILIAR WITH THE GEOTECHNICAL ASPECTS OF THE SOIL STRATIGRAPHY, THE STRUCTURAL CONFIGURATION, FOUNDATION DESIGN DETAILS AND ASSUMPTIONS PRIOR TO PLACING CONCRETE. RE. THE GENERAL NOTES FOR MORE INFORMATION ON REQUIRED OBSERVATIONS.
2. CONSTRUCTION OF DRILLED PIERS SHALL FOLLOW ACI 336.1-01 (SPECIFICATION FOR THE CONSTRUCTION OF DRILLED PIERS).
3. REFERNECE THE GEOTECHNICAL INFORMATION FOR COMPLETE SUBSURFACE CONDITIONS.
4. THE DRILLED FOOTING EXCAVATIONS SHOULD BE FREE OF LOOSE MATERIALS AND WATER PRIOR TO CONCRETE PLACEMENTS, AND CONCRETE SHOULD BE POURED IMMEDIATELY AFTER DRILLING THE HOLES.
5. TEMPORARY CASINGS:
   A. WHERE NECESSARY, INSTALL WATERTIGHT STEEL CASINGS OF SUFFICIENT LENGTH AND THICKNESS TO PREVENT ENTRY OF SOIL OR WATER SEEPAGE INTO SHAFT; TO WITHSTAND COMPRESSIVE, DISPLACEMENT, AND WITHDRAWAL STRESSES; AND TO MAINTAIN STABILITY OF SHAFT WALLS. THE USE OF MUD SLURRY TO LUBRICATE CASINGS OR SEAL OFF WATER WILL BE ALLOWABLE ONLY WITH THE PRIOR APPROVAL OF THE PROJECT GEOTECHNICAL AND STRUCTURAL ENGINEERS. CASINGS MAY BE LEFT IN PLACE ONLY WITH PRIOR APPROVAL OF THE PROJECT GEOTECHNICAL AND STRUCTURAL ENGINEERS.
   B. CASING REMOVAL: PULL TEMPORARY CASING WITH A SLOW AND SMOOTH VERTICAL MOTION MAINTAINING CASING IN A PLUMB POSITION. CASING SHALL NOT BE PULLED UNTIL CONCRETE HAS BEEN PLACED TO A MINIMUM OF 5 FEET ABOVE EXTERNAL WATER OR SLURRY LEVEL OR LEVEL OF UNSTABLE SOIL. DURING PULLING MAINTAIN CONCRETE LEVEL A MINIMUM OF 5 FEET ABOVE BOTTOM OF CASING. VIBRATE TOP 5 FEET OF PIER AFTER TEMPORARY CASING IS REMOVED
6. PER THE GEOTECHNICAL REPORT, THE BEARING STRATUM IS A BROWN TO TAN LEAN CLAY IN ADDITION TO TAN, FRACTURED WEATHERED LIMESTONE WITH MARLY CLAY LAYERS.
7. PER THE GEOTECHNICAL REPORT, GROUNDWATER WAS ENCOUNTERED IN 0 OF 1 BORINGS DRILLED FOR THIS PROJECT. MEASURES SHOULD BE TAKEN TO PREVENT WATER FROM ENTERING AND ACCUMULATING IN THE DRILLED PIER EXCAVATIONS.



2 DRILLED PIER ADJACENT TO EXISTING FOUNDATION
1/2" = 1'-0"



NOTES:
1. FOUNDATION STIFFNESS HAS BEEN PROPORTIONED ASSUMING THAT MASONRY WILL HAVE CONTROL JOINTS AT EACH SIDE OPENINGS AND AT 15'-0" MAX OR PER ARCHITECTURAL SPECIFICATIONS WHICHEVER IS MORE STRINGENT.

3 PIER CAP AT END COLUMN
1/2" = 1'-0"

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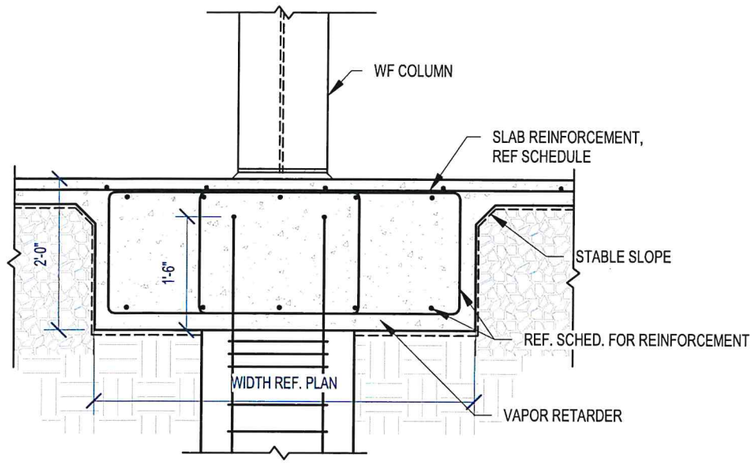
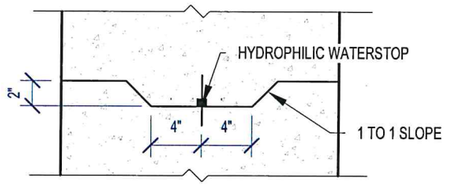
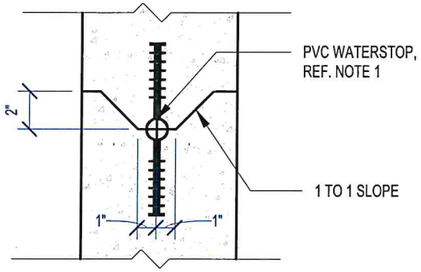


1 PIER CAP AT INTERIOR COLUMN
1/2" = 1'-0"



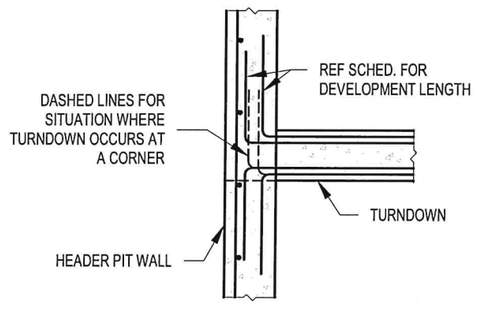
NOTES:.
1. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.

2 SHEAR KEY DETAIL FOR WALLS OF THICKNESS GREATER THAN 1 FOOT
1" = 1'-0"

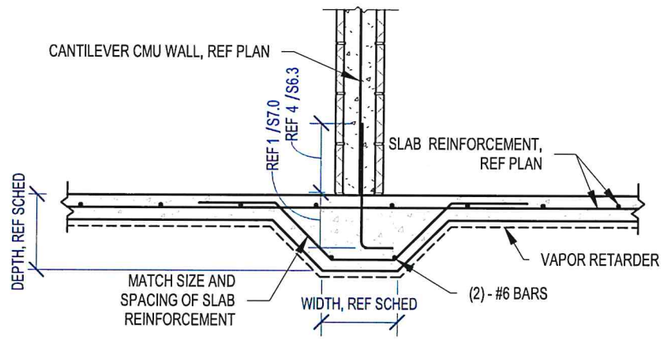


NOTES:.
1. PROVIDE 6" PVC FLAT-RIBBED WATERSTOP, SIKA GREENSTREAK #679 OR APPROVED EQUAL.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.

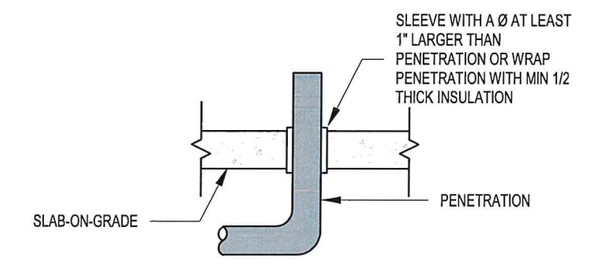
3 SHEAR KEY DETAIL
1 1/2" = 1'-0"



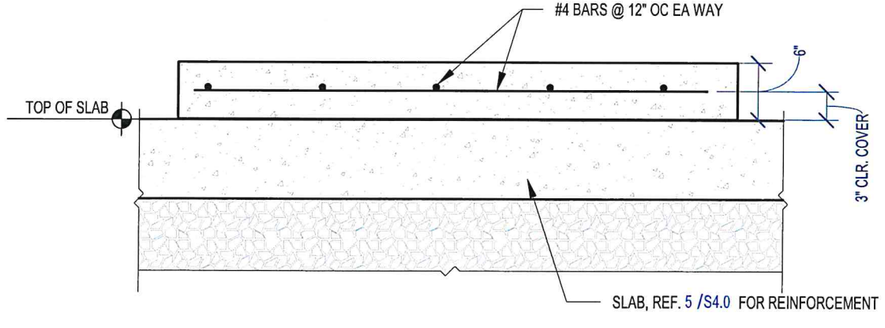
4 REINFORCEMENT ARRANGEMENT AT TURNDOWN AND HEADER PIT WALL CONNECTION
1/2" = 1'-0"



5 TYPICAL TURN DOWN BEAM
1/2" = 1'-0"

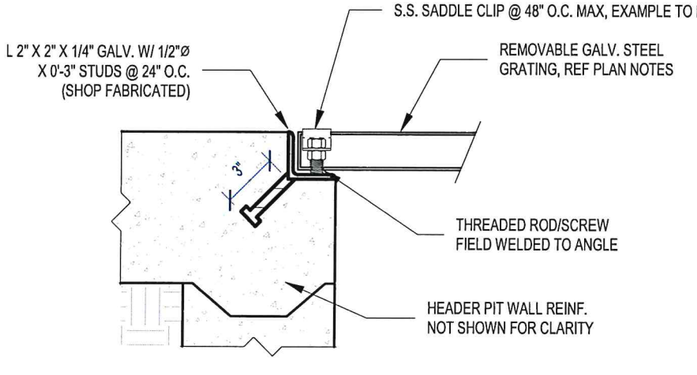


6 VERTICAL PENETRATION THOUGH SLAB-ON-GRADE
3/4" = 1'-0"



NOTE: REF. CIVIL FOR EQUIPMENT PAD LOCATIONS

7 TYPICAL EQUIPMENT PAD
3/4" = 1'-0"



8 ANGLE FOR BAR GRATING SUPPORT
1 1/2" = 1'-0"

EXAMPLE SADDLE CLIP

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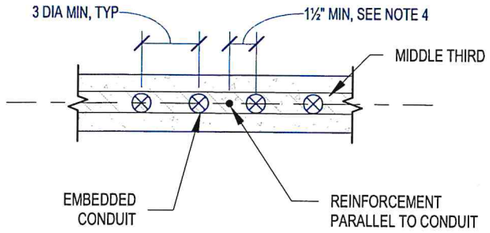
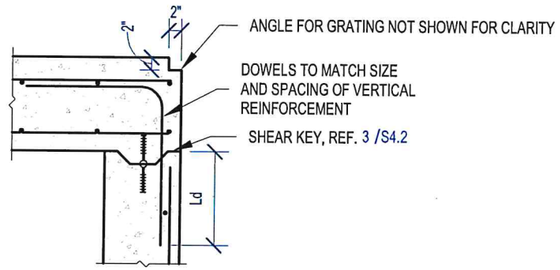
Date: 04/14/2022

Project No: 21-139

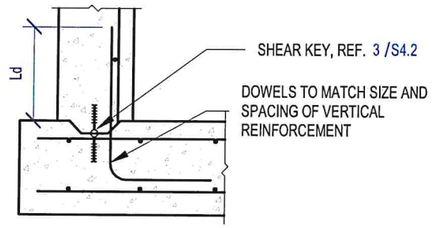


NOTES:
1. EMBEDDED CONDUIT MUST BE PVC OR OTHER PRE-APPROVED PRODUCT THAT WILL NOT CHEMICALLY REACT WITH THE CONCRETE.
2. EMBEDDED CONDUIT MUST BE CHAIRED AND RESTRAINED @ 48" OC MAX IN ORDER TO PREVENT FLOATING OF THE CONDUIT DURING POURING.
3. PLACE ALL CONDUIT WITHIN THE MIDDLE THIRD OF THE OVERALL SLAB DEPTH.
4. DO NOT PLACE CONDUIT ADJACENT TO NOR TIE CONDUIT TO PARALLEL REINFORCEMENT.

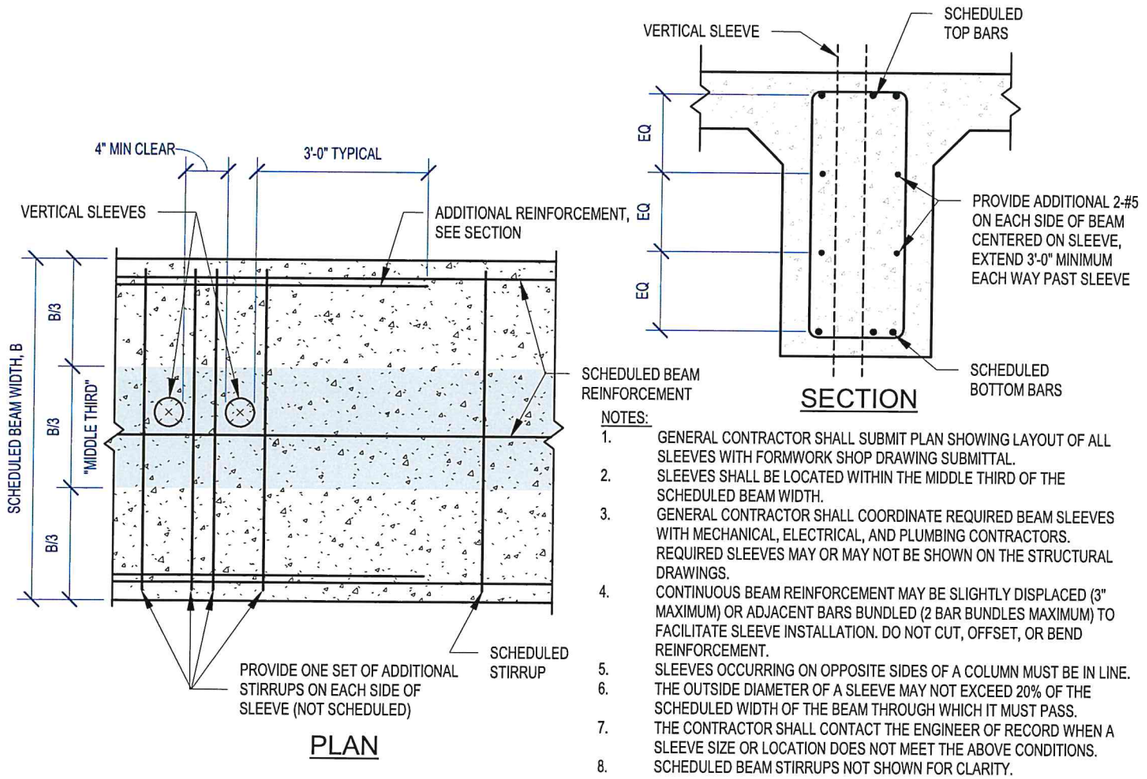
1 TYPICAL CONDUITS EMBEDDED IN SLAB-ON-GRADE
3/4" = 1'-0"



2 CONSTRUCTION JOINT AT TOP OF WALL
1/2" = 1'-0"

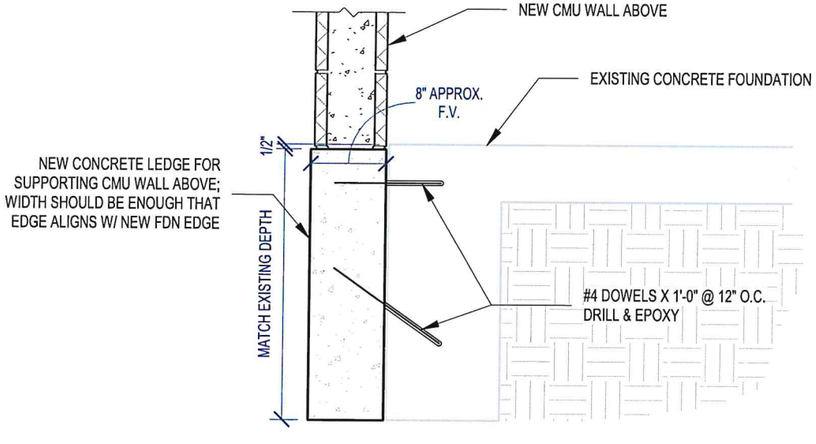


3 CONSTRUCTION JOINT AT BOTTOM OF WALL
1/2" = 1'-0"



NOTES:
1. GENERAL CONTRACTOR SHALL SUBMIT PLAN SHOWING LAYOUT OF ALL SLEEVES WITH FORMWORK SHOP DRAWING SUBMITTAL.
2. SLEEVES SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF THE SCHEDULED BEAM WIDTH.
3. GENERAL CONTRACTOR SHALL COORDINATE REQUIRED BEAM SLEEVES WITH MECHANICAL, ELECTRICAL, AND PLUMBING CONTRACTORS. REQUIRED SLEEVES MAY OR MAY NOT BE SHOWN ON THE STRUCTURAL DRAWINGS.
4. CONTINUOUS BEAM REINFORCEMENT MAY BE SLIGHTLY DISPLACED (3" MAXIMUM) OR ADJACENT BARS BUNDLED (2 BAR BUNDLES MAXIMUM) TO FACILITATE SLEEVE INSTALLATION. DO NOT CUT, OFFSET, OR BEND REINFORCEMENT.
5. SLEEVES OCCURRING ON OPPOSITE SIDES OF A COLUMN MUST BE IN LINE.
6. THE OUTSIDE DIAMETER OF A SLEEVE MAY NOT EXCEED 20% OF THE SCHEDULED WIDTH OF THE BEAM THROUGH WHICH IT MUST PASS.
7. THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD WHEN A SLEEVE SIZE OR LOCATION DOES NOT MEET THE ABOVE CONDITIONS.
8. SCHEDULED BEAM STIRRUPS NOT SHOWN FOR CLARITY.

4 TYPICAL VERTICAL PENETRATION IN GRADE BEAM
3/4" = 1'-0"



5 EXISTING FOUNDATION LEDGE ADDITION
3/4" = 1'-0"

Revision Schedule

Revision Number	Revision Description	Revision Date

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TEMPLE, TX

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STATE OF TEXAS
ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER

4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

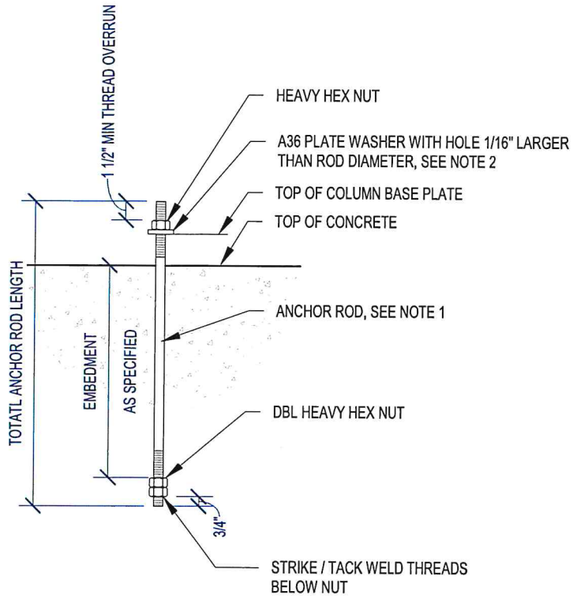
DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba DUDLEY
6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0726 | TBPE Firm No. F-18677

FOUNDATION DETAILS

S4.3

Date: 04/14/2022

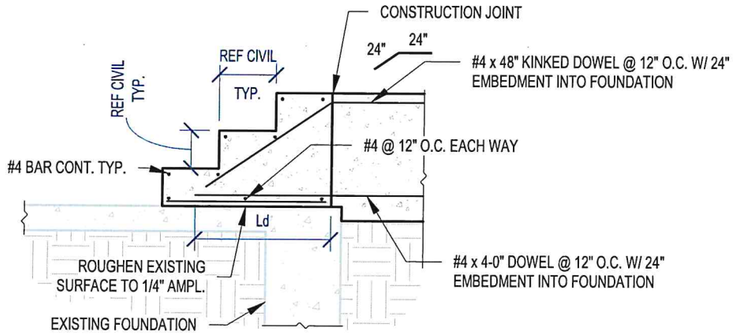
Project No: 21-139



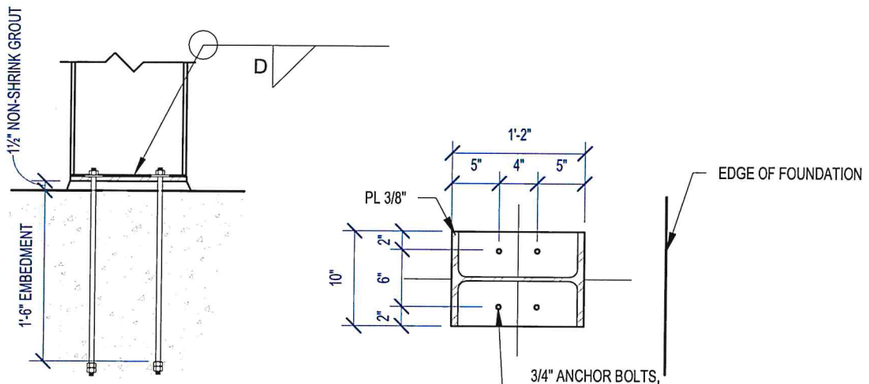
ANCHOR ROD DIAMETER	BASE PLATE HOLE DIAMETER	SQUARE PLATE WASHER SIZE	PLATE WASHER THICKNESS
1/2"	3/4"	1.5"	1/4"
5/8"	1"	2"	1/4"
3/4"	1 5/16"	2½"	5/16"
7/8"	1 9/16"	2½"	5/16"
1"	1 13/16"	3"	3/8"

NOTES:
1. ALL ANCHOR RODS SHALL BE F1554 GRADE 36.
2. PLATE WASHERS MUST BE WELDED TO THE BASE PLATE WITH MINIMUM 3/16" FILLET WELD ALL-AROUND

1 TYPICAL ANCHOR ROD ASSEMBLY
1" = 1'-0"



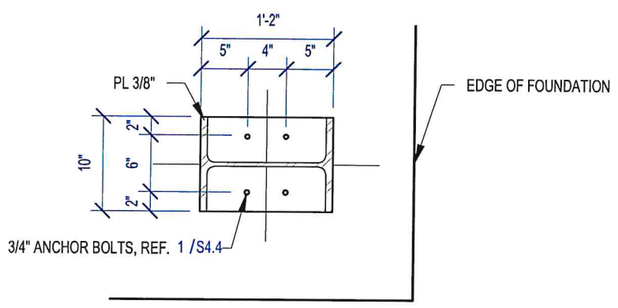
2 CONCRETE STAIRCASE
1/2" = 1'-0"



NOTES:
1. D = 1/16" LESS THAN THICKNESS OF COLUMN

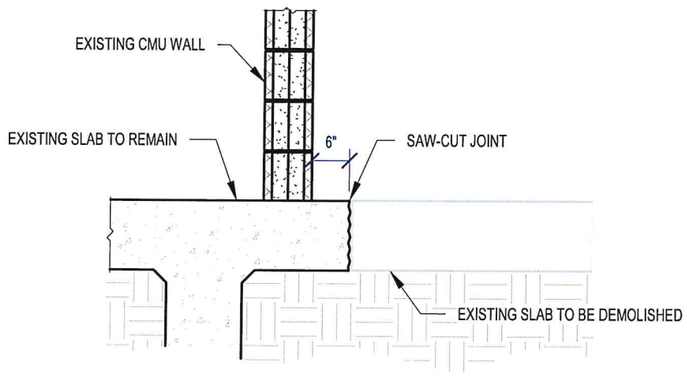
SECTION

EDGE COLUMN



CORNER COLUMN

3 TYPICAL BASE PLATE DETAIL
3/4" = 1'-0"



4 EXISTING SLAB DEMOLITION
1/2" = 1'-0"

Revision Schedule

Revision Number	Revision Description	Revision Date

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

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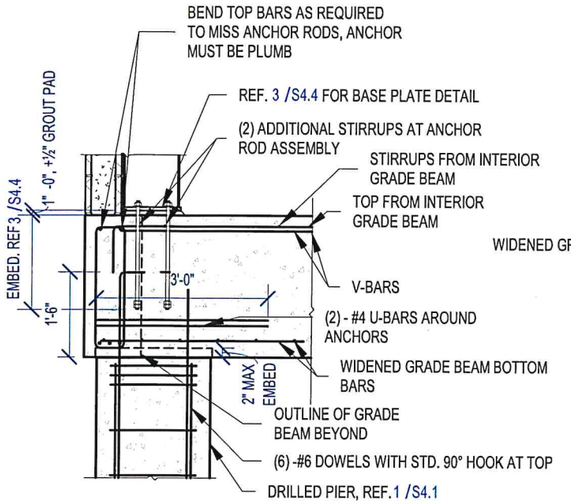
FOUNDATION DETAILS

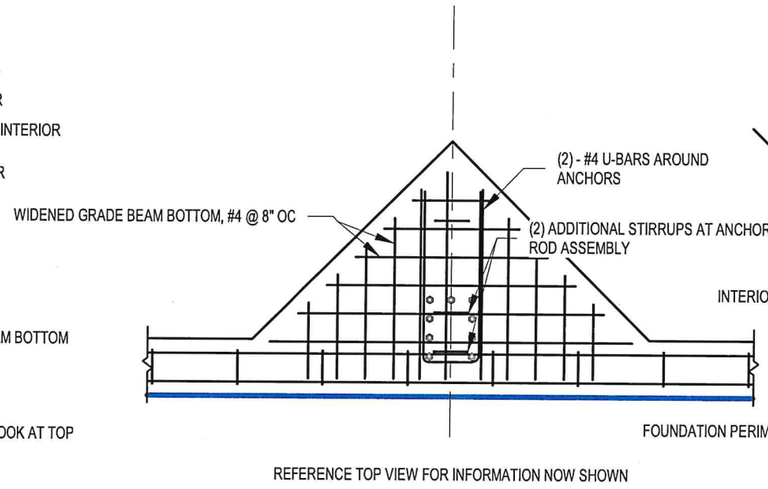
S4.4

Date: 04/14/2022

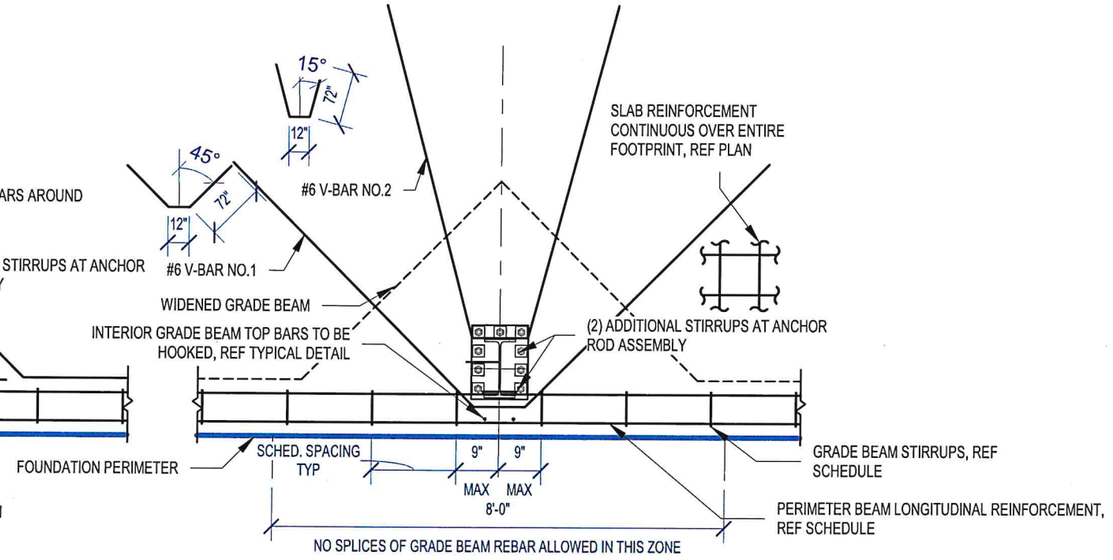
Project No: 21-139



SECTION

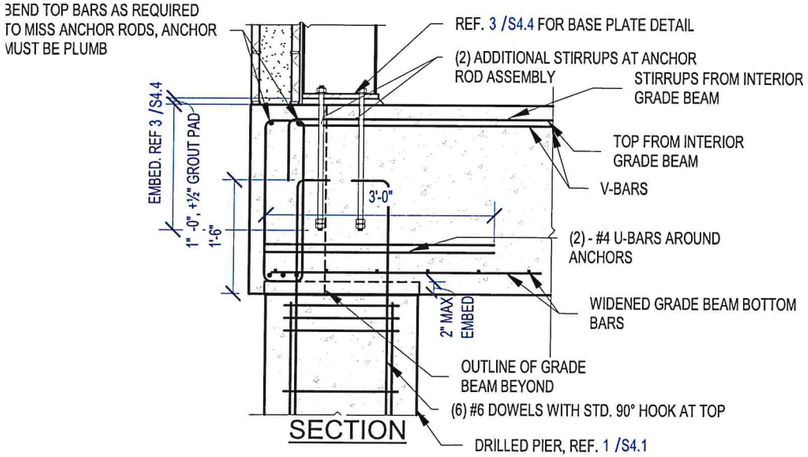


BOTTOM VIEW

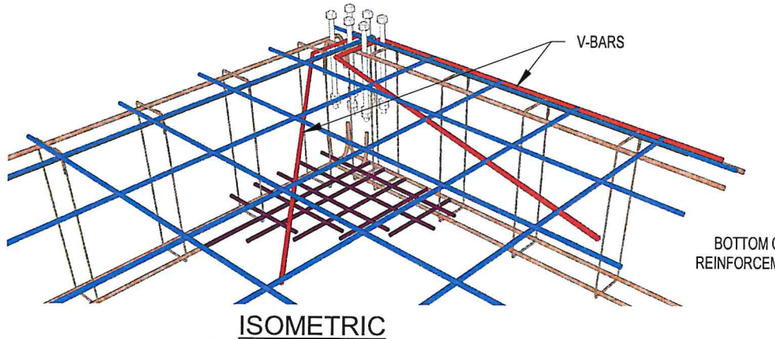


TOP VIEW

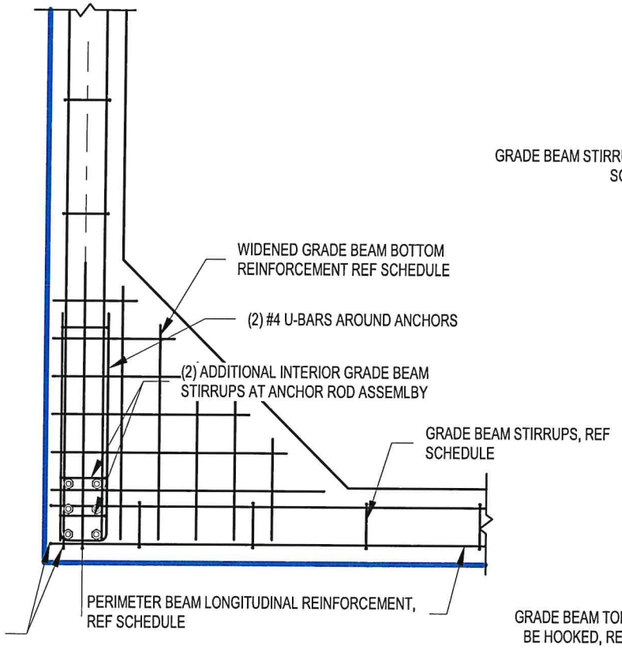
1 MIDDLE COLUMN ANCHORAGE
3/8" = 1'-0"



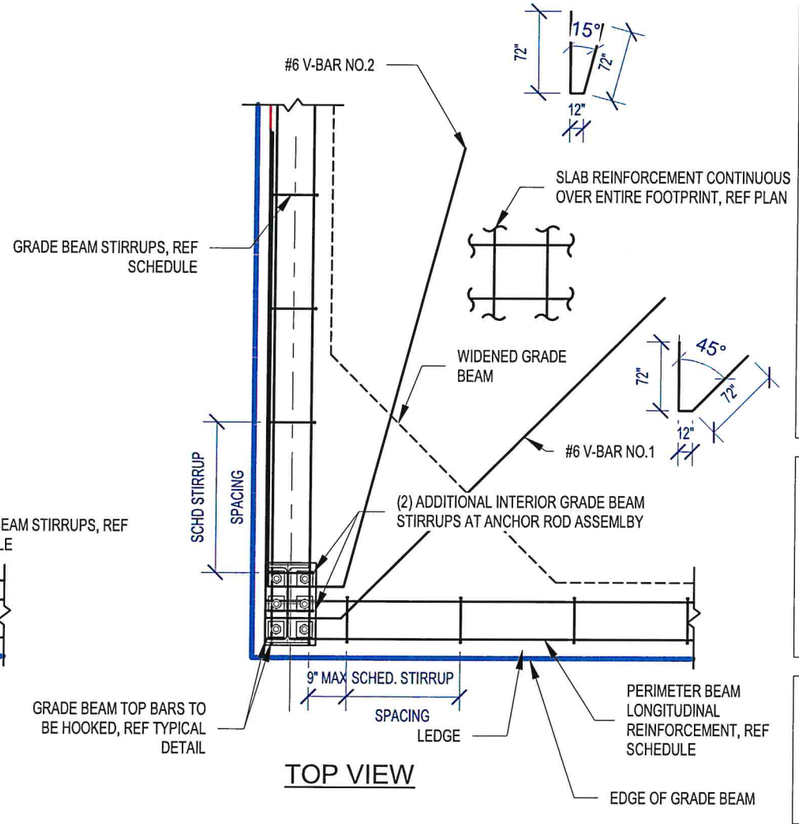
SECTION



ISOMETRIC
FOR VISUAL PURPOSES ONLY



BOTTOM VIEW
REFERENCE TOP VIEW FOR INFORMATION NOW SHOWN



TOP VIEW

2 END COLUMN ANCHORAGE
1/2" = 1'-0"

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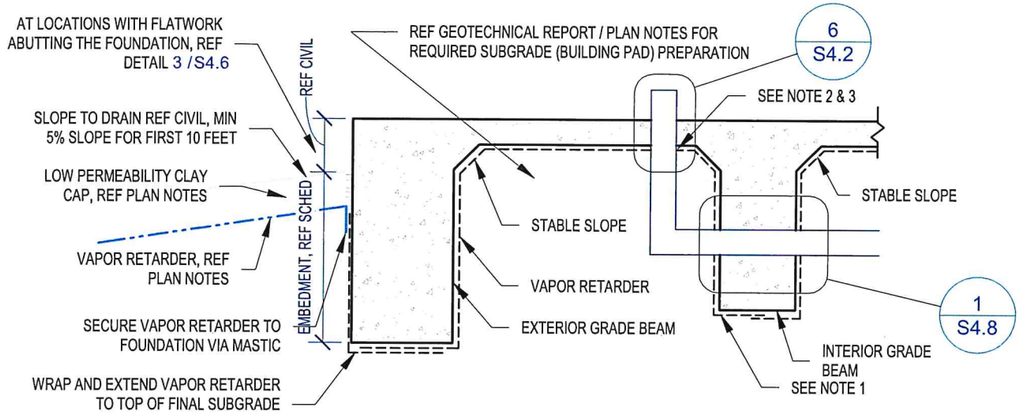
FOUNDATION DETAILS

S4.5

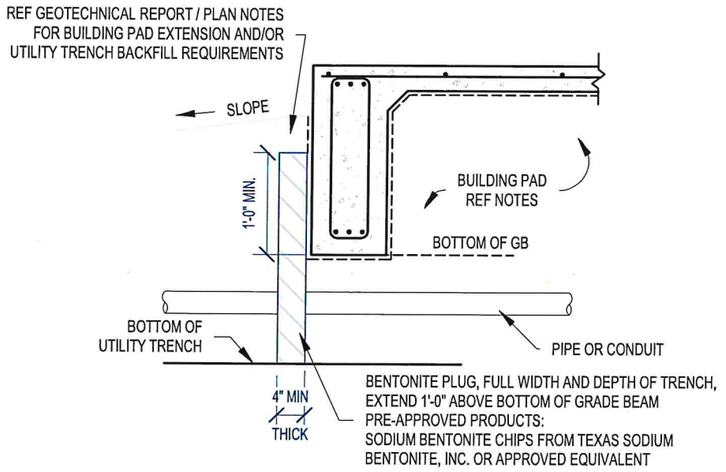
Date: 04/14/2022

Project No: 21-139

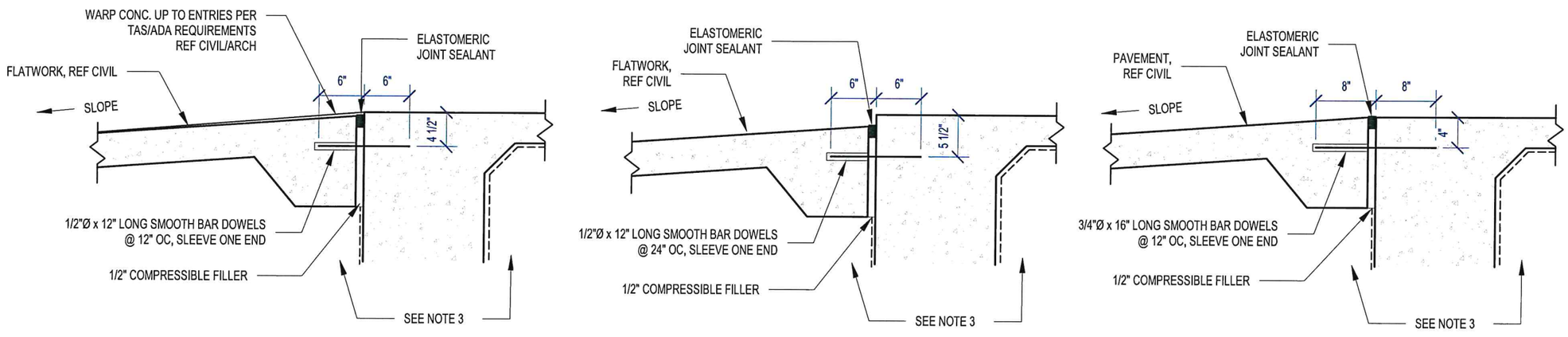


NOTES:
1. CUT AND/OR LAP THE VAPOR RETARDER AT THE BOTTOM OF INTERIOR GRADE BEAMS. THE VAPOR RETARDER SHALL BE SECURED TO THE SIDES OF THE GRADE BEAM. IF LAPS ARE REQUIRED ON TOP OF THE SLAB, THEY MUST BE TAPED PER MFR RECOMMENDATIONS.
2. ALL PIPE, DUCTING, REBAR, WIRE PENETRATIONS AND BLOCK OUTS SHOULD BE SEALED USING MFR RECOMMENDED WRAP, TAPE AND/OR MASTIC
3. IN THE EVENT THAT THE VAPOR RETARDER IS DAMAGED DURING OR AFTER INSTALLATION, REPAIRS MUST BE MADE. FOR HOLES, CUT A PIECE OF VAPOR RETARDER TO A SIZE AND SHAPE THAT COVERS ANY DAMAGE BY A MINIMUM OVERLAP OF 6" IN ALL DIRECTIONS. CLEAN ALL ADHESION AREAS OF DUST, DIRT, MOISTURE, AND FROST. TAPE DOWN ALL EDGES USING MFR RECOMMENDED TAPE.

1 TYPICAL SUBGRADE AND VAPOR RETARDER PREPARATION
1/2" = 1'-0"



2 TYPICAL UTILITY TRENCH UNDER BUILDING PAD BENTONITE PLUG AT EXTERIOR BEAM
1/2" = 1'-0"



FLATWORK AT ENTRY DOOR

FLATWORK **NOT** AT ENTRY DOOR

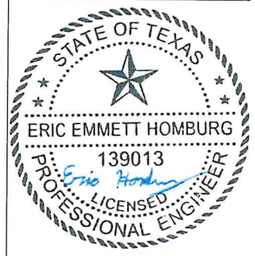
AT PAVEMENT (DRIVE-IN)

NOTES:
1. CONTRACTOR TO SUBMIT TO OWNER, ARCHITECT AND ENGINEER THE PRODUCT DATA FOR THE ELASTOMERIC JOINT SEALANT WHICH MUST INCLUDE A RECOMMENDED MAINTENANCE PROGRAM FOR THE SEALANT.
2. REFERENCE ARCHITECTURE FOR ADA REQUIREMENTS.
3. BUILDING PAD SUBGRADE IMPROVEMENT TO CONTINUE FOR A MINIMUM OF 5' OUTSIDE THE FOUNDATION UNDER FLATWORK / PAVEMENT

3 TYPICAL FLATWORK/PAVEMENT DOWELS AT BUILDING
3/4" = 1'-0"

Revision Schedule

Revision Number	Revision Description	Revision Date



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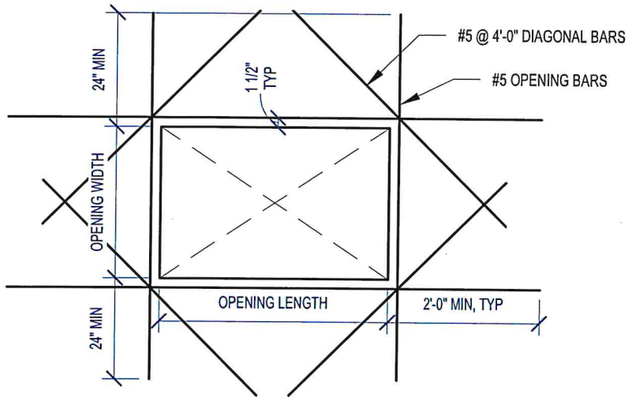
FOUNDATION DETAILS

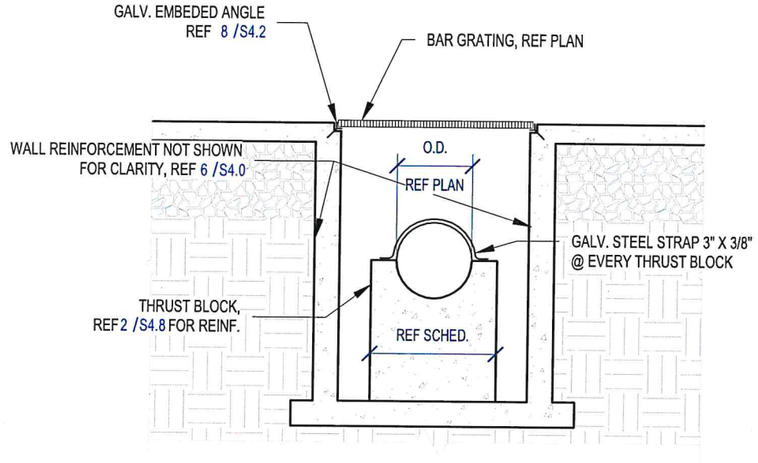
S4.6

Date: 04/14/2022

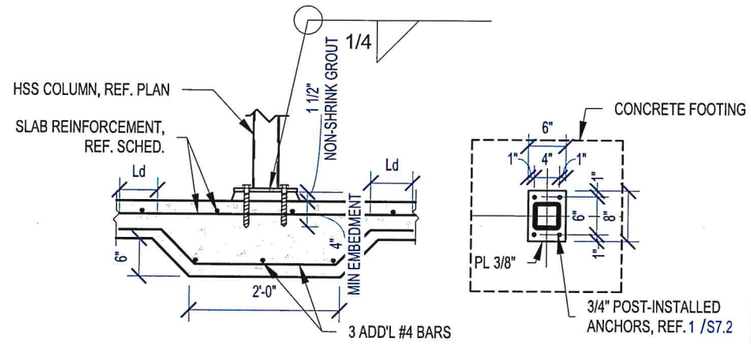
Project No: 21-139



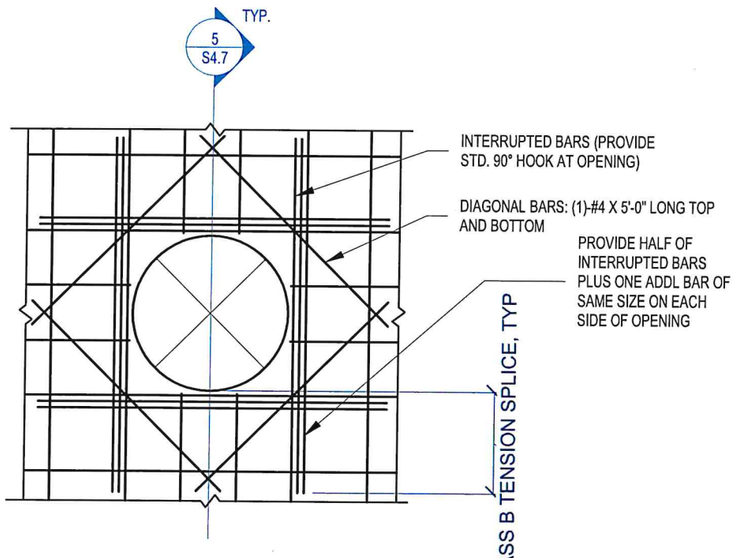
1 TYPICAL REINFORCEMENT AT SLAB BLOCKOUT
1/2" = 1'-0"



2 HEADER PIT CROSS SECTION
1/4" = 1'-0"

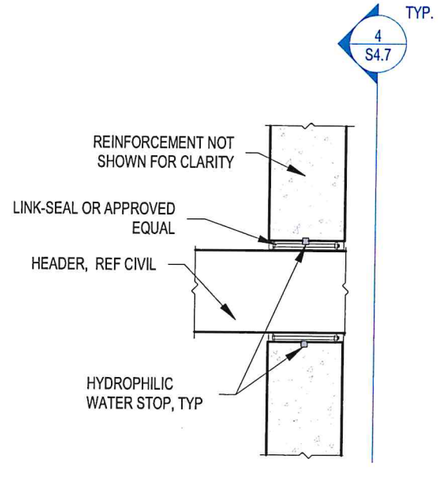


3 TYPICAL BASE PLATE DETAIL FOR BAR GRATING POST
1/2" = 1'-0"

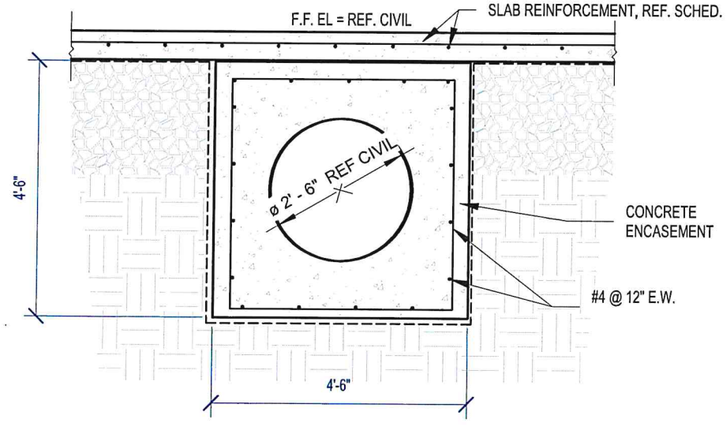


NOTES:
1. WALL OPENINGS ARE ONLY ALLOWED AT HEADER PIPE PENETRATIONS AS INDICATED ON THE STRUCTURAL PLANS.
2. CLEARWELLS AND POTABLE WATER STORAGE TANKS SHALL BE THOROUGHLY TIGHT AGAINST LEAKAGE, SHALL BE LOCATED ABOVE THE GROUND WATR TABLE AND SHALL HAVE NO WALLS IN COMMON WITH ANY OTHER PLANT UNITS CONTAINING WATER IN THE PROCESS OF TREATMENT. ALL ASSOCIATED APPURTENANCES INCLUDING VALVES, PIPES, AND FITTINGS SHALL BE TIGHT AGAINST LEAKAGE.

4 TYPICAL SLAB OPENING REINFORCEMENT
1/2" = 1'-0"



5 WALL STEM SECTION AT PIPE
1/2" = 1'-0"



6 CONCRETE ENCASEMENT DETAIL
3/8" = 1'-0"

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FOUNDATION DETAILS

S4.7

Date: 04/14/2022

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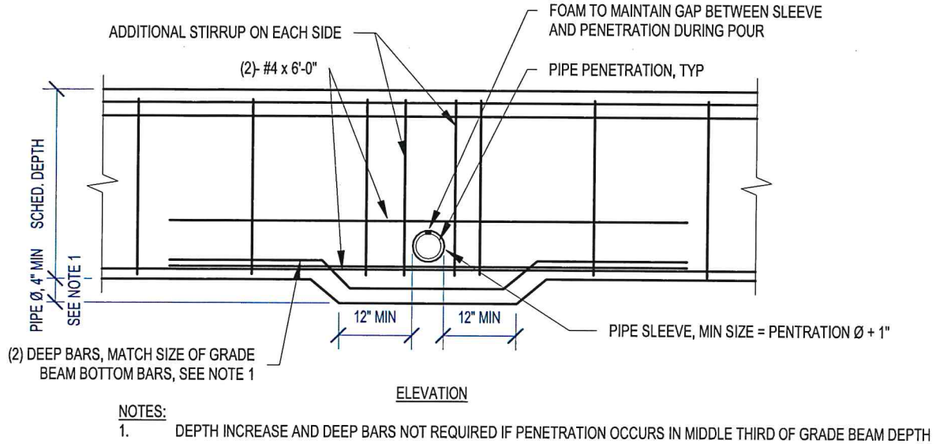
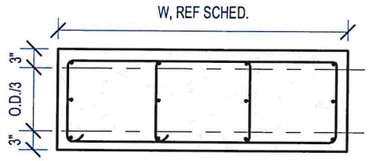


ELEVATION

NOTES:
1. DEPTH INCREASE AND DEEP BARS NOT REQUIRED IF PENETRATION OCCURS IN MIDDLE THIRD OF GRADE BEAM DEPTH

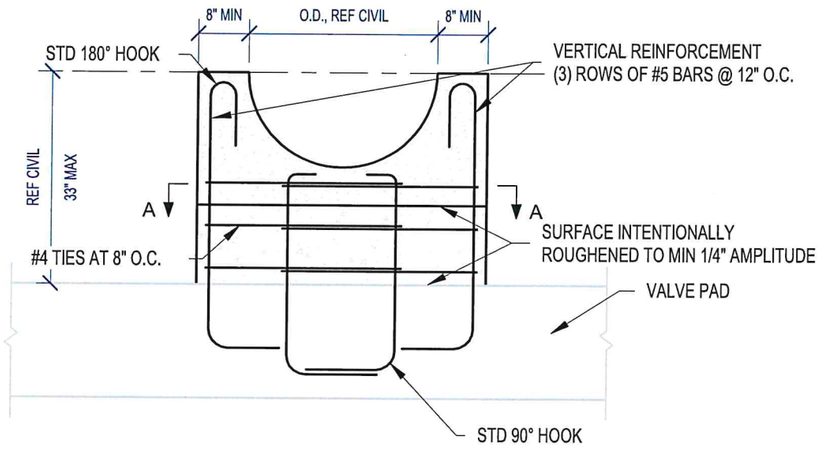
1 TYPICAL HORIZONTAL PENETRATION IN BEAM
1/2" = 1'-0"



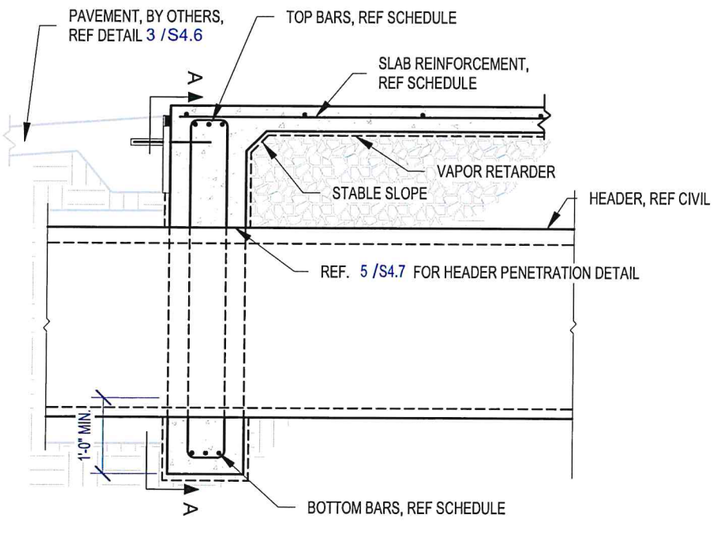
SECTION A-A

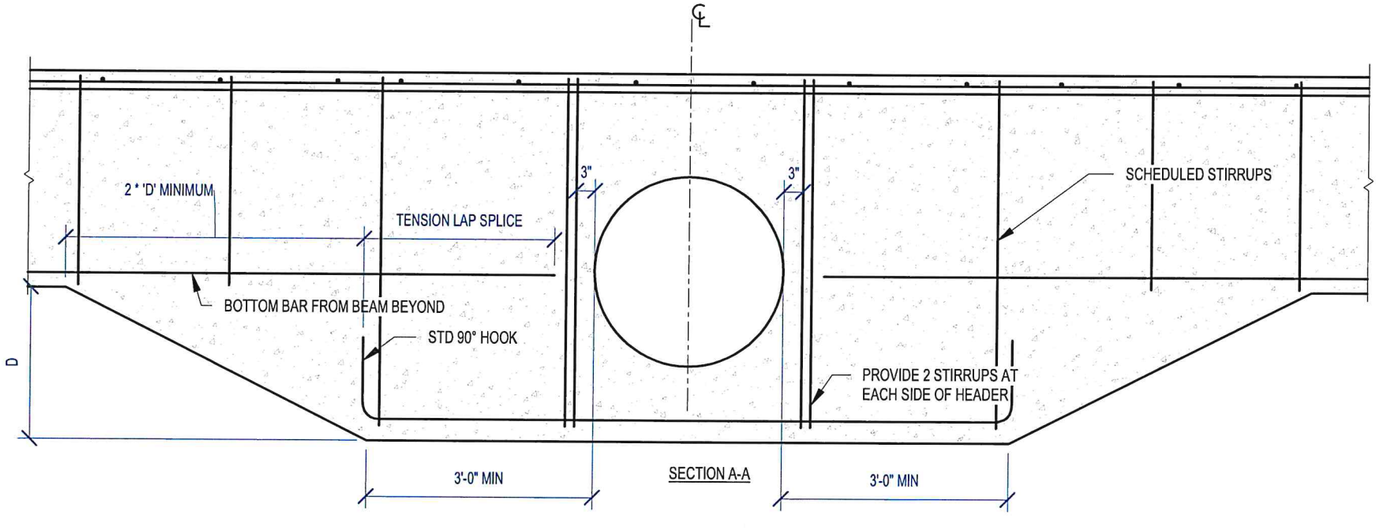
THRUST BLOCK SCHEDULE

PIPE O.D.	THRUST BLOCK WIDTH, W
24"	40"
30"	46"



2 TYPICAL THRUST BLOCK
1/2" = 1'-0"

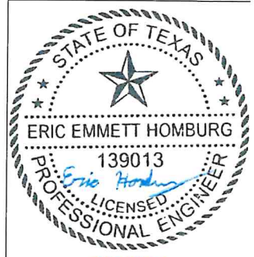




3 EXTERIOR GRADE BEAM AT HEADER INTERSECTION
1/2" = 1'-0"

Revision Schedule

Revision Number	Revision Description	Revision Date



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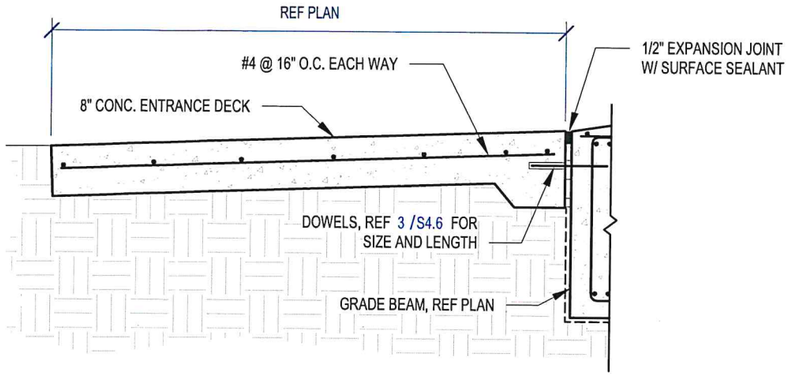
FOUNDATION DETAILS

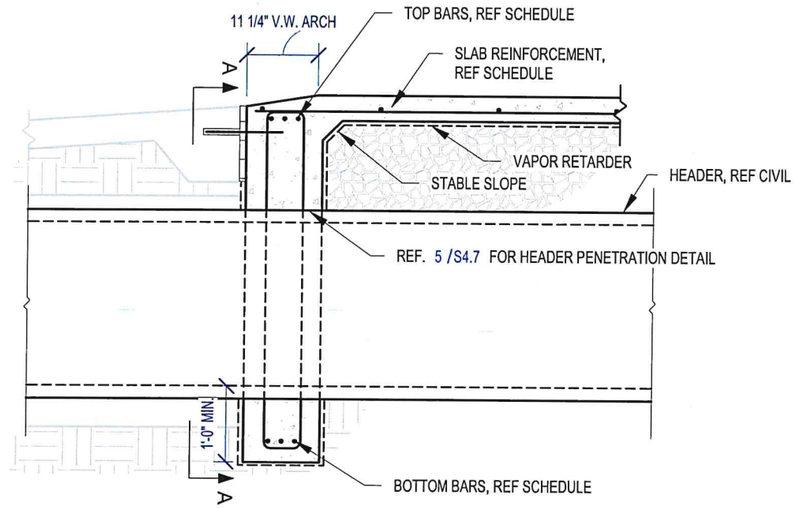
S4.8

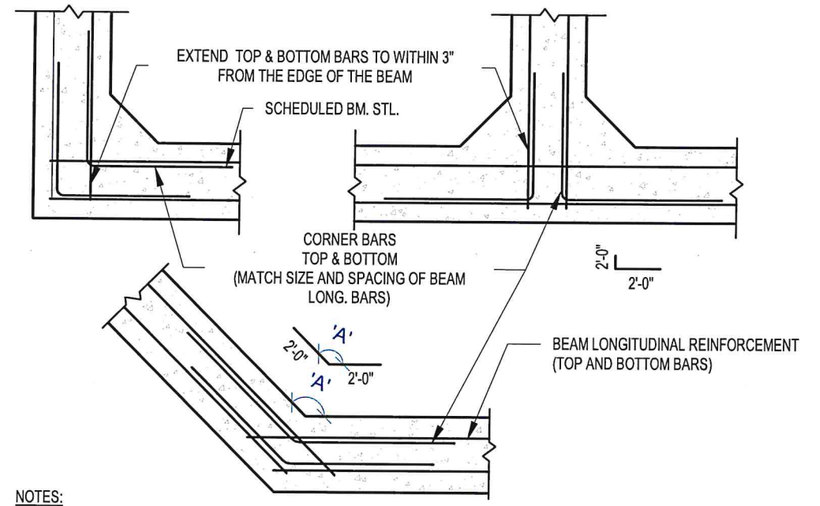
Date: 04/14/2022

Project No: 21-139



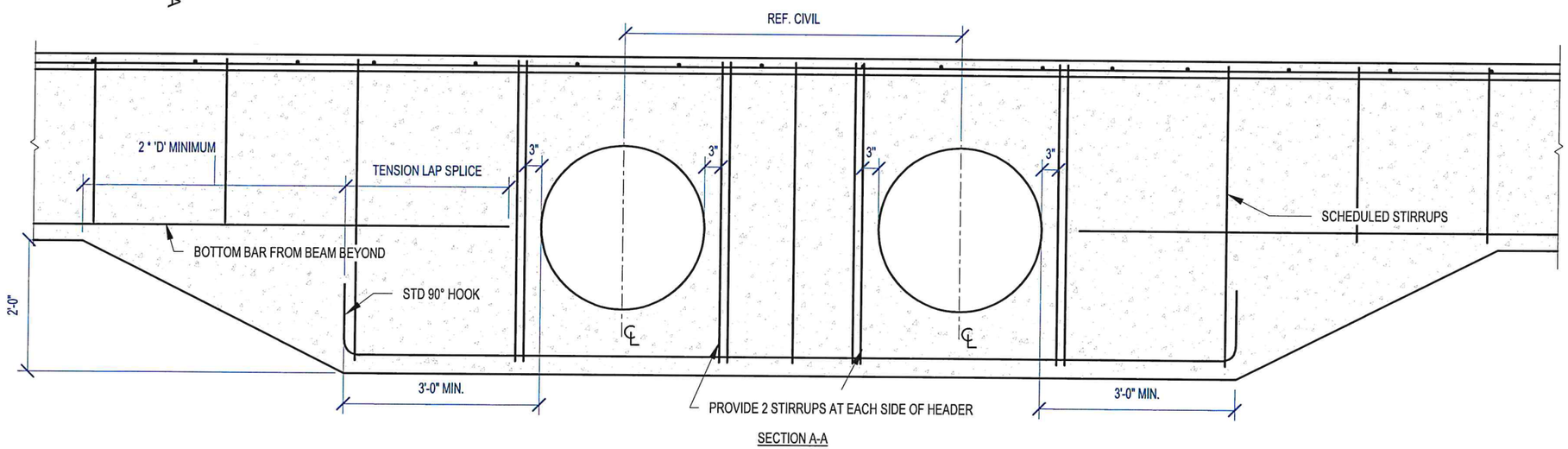
1 DECK ON SOUTHERN SIDE
1/2" = 1'-0"





NOTES:
1. BEAMS SHALL BE POURED MONOLITHICALLY UNLESS JOINTS ARE ALLOWED BY WRITTEN PERMISSION BY THE EOR.
2. UNLESS DETAILED OTHERWISE, ALL BEAM CORNERS AND INTERSECTIONS REQUIRE BENT DOWEL CORNER BARS TOP AND BOTTOM, AS SHOWN IN THIS DETAIL.

2 TYPICAL CORNER BARS
1/2" = 1'-0"



SECTION A-A

3 EXTERIOR GRADE BEAM AT DOUBLE HEADER INTERSECTION
1/2" = 1'-0"

Revision Schedule

Revision Number	Revision Description	Revision Date

STATE OF TEXAS
ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER
4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba DUDLEY
6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0720 | TBPE Firm No. F-18677

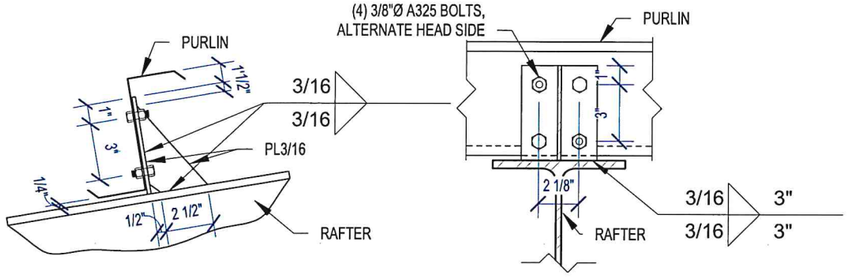
FOUNDATION DETAILS

S4.9

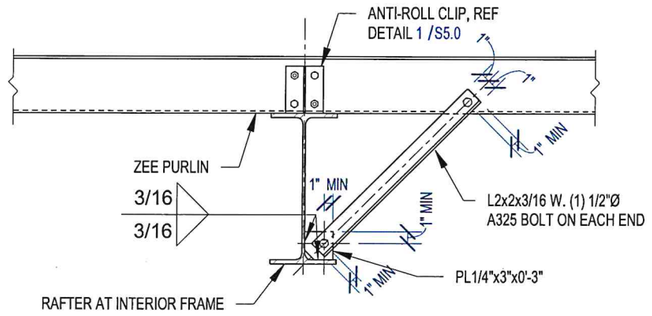
Date: 04/14/2022

Project No: 21-139

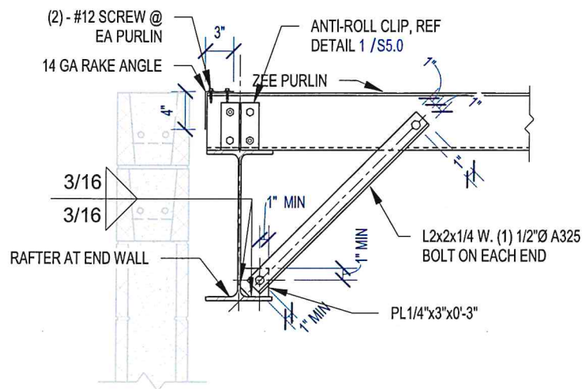
NOTE:
1. FOR PURLIN SPLICE REF DETAIL 4 /S5.0



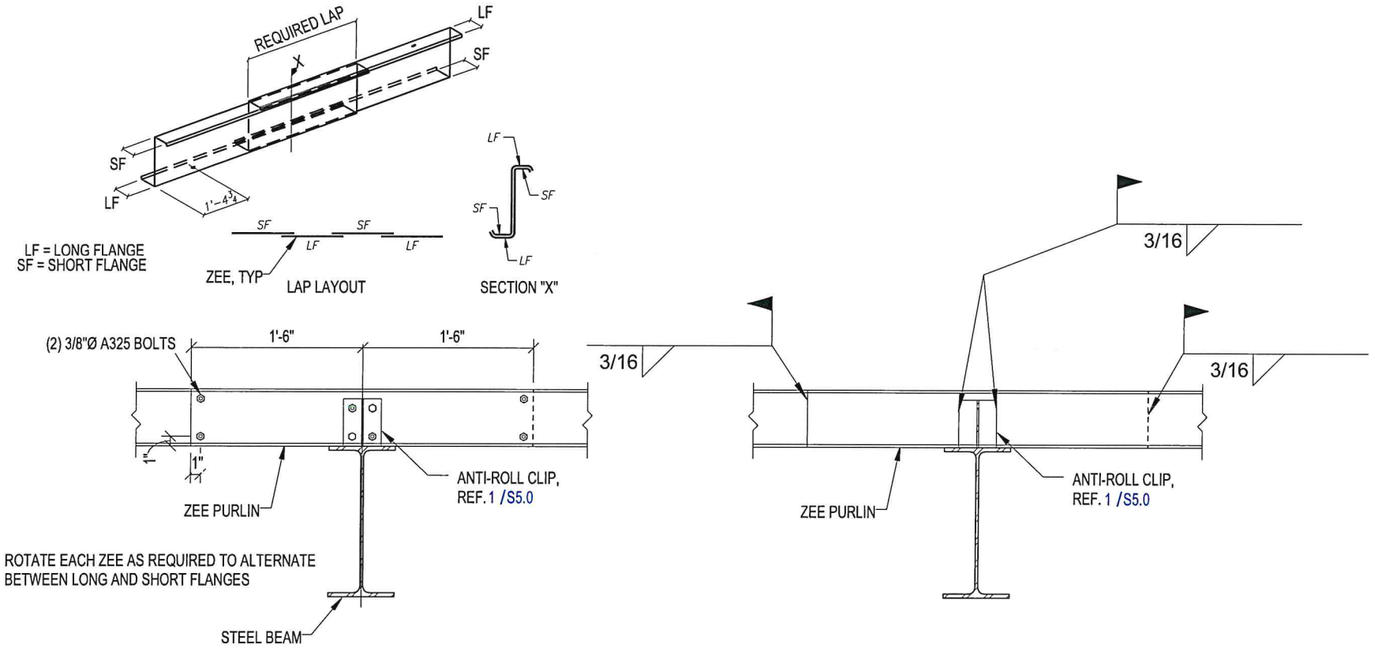
1 TYPICAL ROOF PURLIN ATTACHMENT TO RAFTER
1 1/2" = 1'-0"



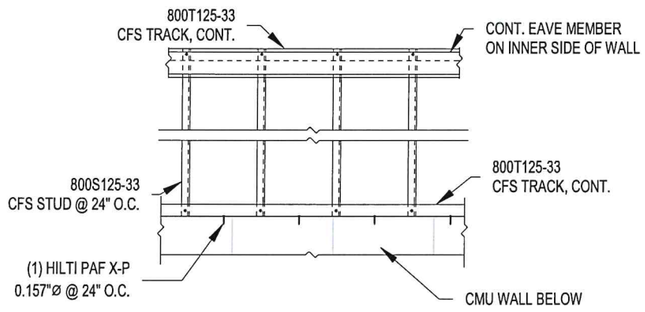
2 TYPICAL FLANGE BRACE AT INTERIOR FRAME RAFTER
3/4" = 1'-0"



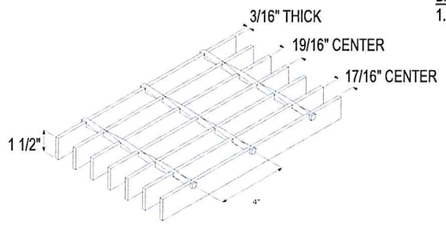
3 TYPICAL FLANGE BRACE AT END WALL RAFTER
3/4" = 1'-0"



4 TYPICAL PURLIN SPLICE
3/4" = 1'-0"



5 CFS WALL EXTENSION ABOVE EXISTING CMU WALL
1/2" = 1'-0"



BAR GRATING NOTES:

1. BAR GRATING SHALL ADHERE TO THE FOLLOWING SPECIFICATIONS:

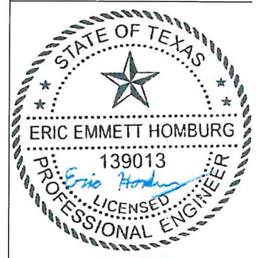
A.	CONSTRUCTION TYPE:	WELDED
B.	SERIES TYPE & NAME:	MCHNICHOLS GW & GW-2 OR APPROVED EQUIV.
C.	PRODUCT SPACING:	19-W-4
D.	PRIMARY MATERIAL:	CARBON STEEL
E.	BEARING BAR SHAPE:	RECTANGULAR
F.	BEARING BAR SURFACE:	SMOOTH
G.	CROSS BAR SPACING:	4" ON-CENTER
H.	FINISH:	GALVANIZED

I. FOR BAR GRATING ATTACHMENT DETAILS REFER TO TYPICAL BAR GRATING ATTACHMENT DETAIL.
J. BAND ALL OPENINGS IN GRATING WITH A BAR EQUIVALENT TO THE TYPICAL BAR GRATING BAR SIZE. AT A MINMUM PROVIDE A 1/8" FILLET WELD ON EACH SIDE CONNECTING THE GRATING BARS TO THE BAND.

6 BAR GRATING SPECIFICATIONS
3/8" = 1'-0"

Revision Schedule

Revision Number	Revision Description	Revision Date



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

DUDLEY
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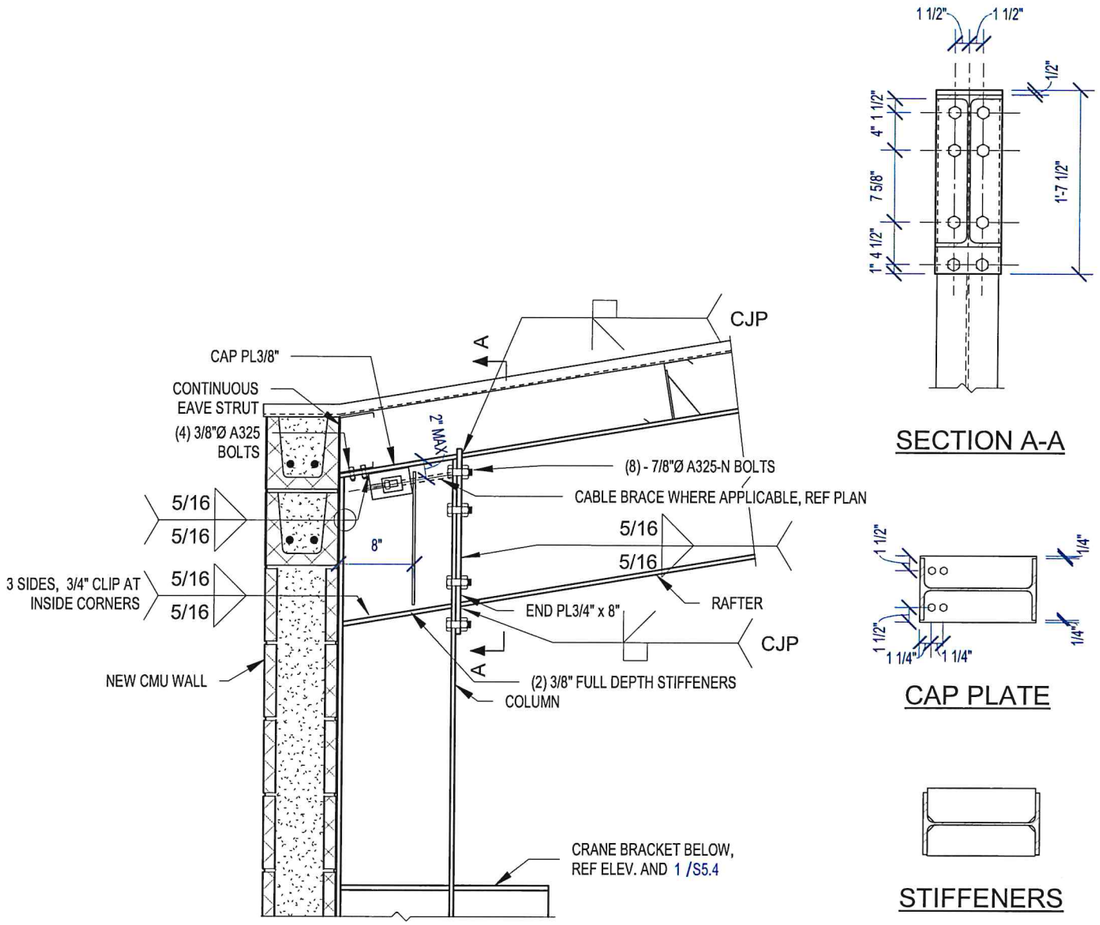
(o) 979.777.0720 | TBPE Firm No. F-18677

STEEL DETAILS

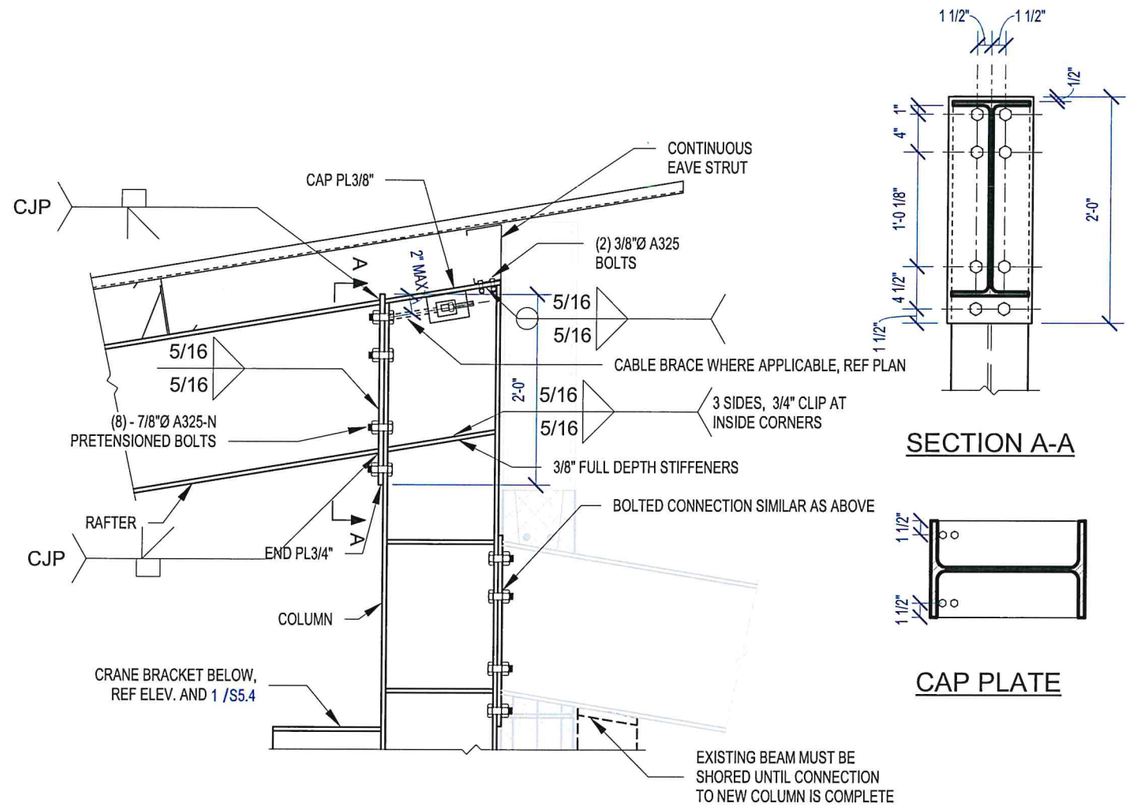
S5.0

Date: 04/14/2022

Project No: 21-139



1 TYPICAL RAFTER / COLUMN CONNECTION - LOW END
3/4" = 1'-0"



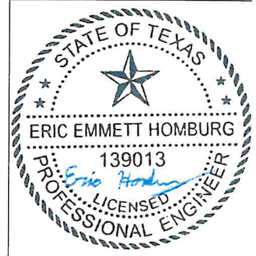
2 TYPICAL RAFTER / COLUMN CONNECTION - HIGH END
3/4" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

THESE DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY FOR THE FOLLOWING PROJECT:

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX



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AVENUE G PUMP STATION IMPROVEMENTS

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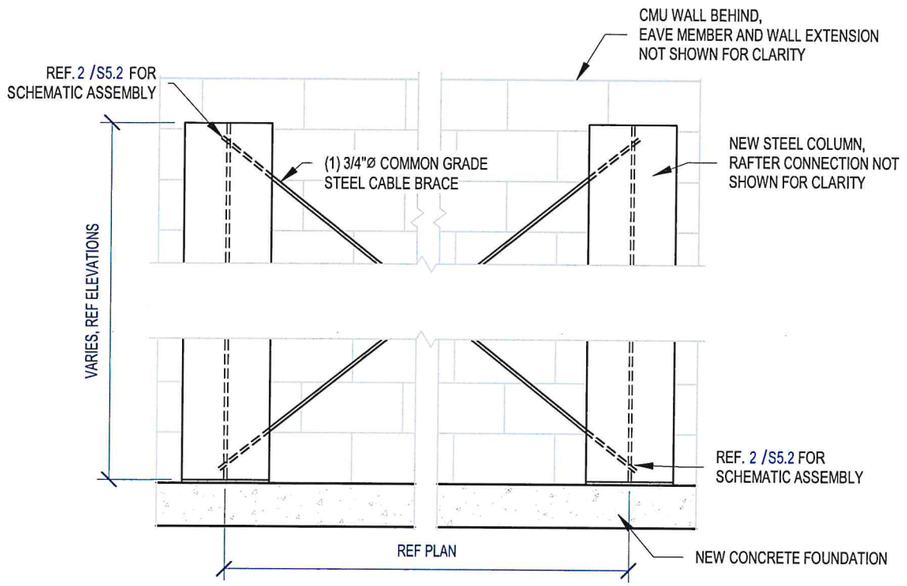
STEEL DETAILS

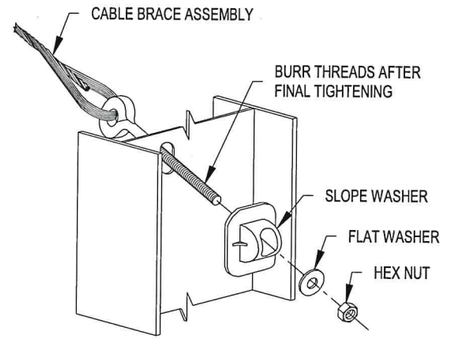
S5.1

Date:	04/14/2022
Project No:	21-139

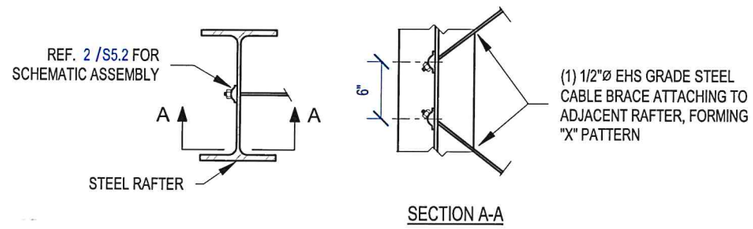


NOTES:
1. COMMON GRADE PER ASTM A475
2. REF 2 /S5.2 FOR DETAILED WEB ATTACHMENT INFORMATION

1 COLUMN CABLE ATTACHMENTS
1/2" = 1'-0"



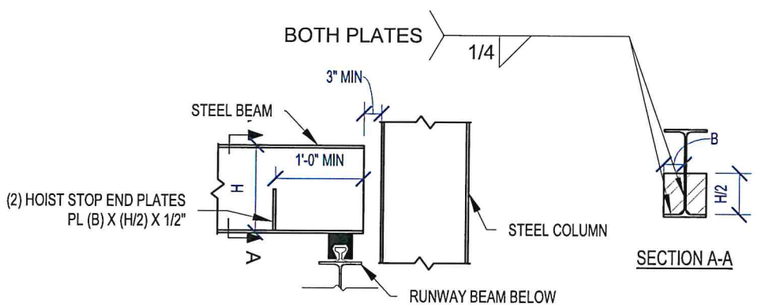
2 TYPICAL CABLE BRACE TO WEB ASSEMBLY
1/2" = 1'-0"



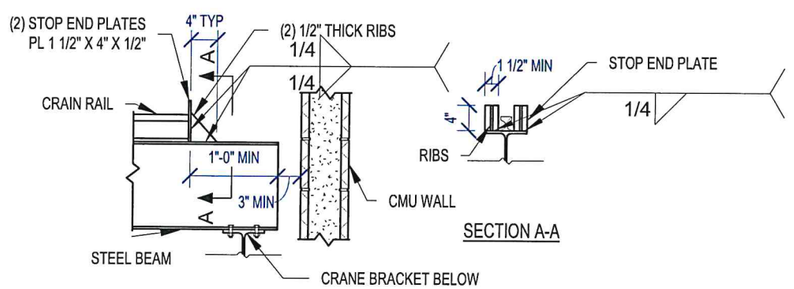
SECTION A-A

NOTES:
1. EHS GRADE - EXTRA HIGH STRENGTH GRADE PER ASTM A475
2. REF. 2 /S5.2 FOR DETAILED ATTACHMENT INFORMATION

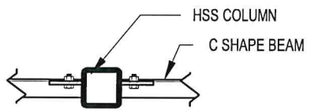
3 RAFTER ROOF CABLE BRACES
3/4" = 1'-0"



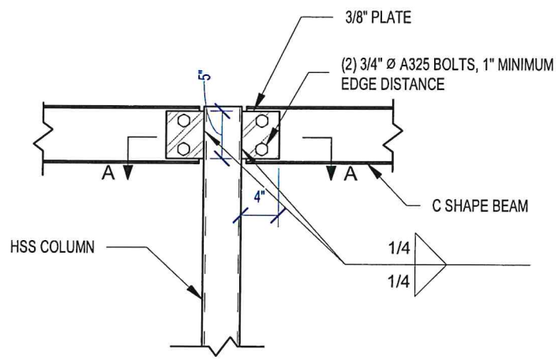
4 HOIST STOP END PLATE
1/2" = 1'-0"



5 BRIDGE GIRDER STOP END PLATE
1/2" = 1'-0"



SECTION A-A



6 HSS POST TO CHANNEL CONNECTION
3/4" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

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AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

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STATE OF TEXAS
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4/14/2022

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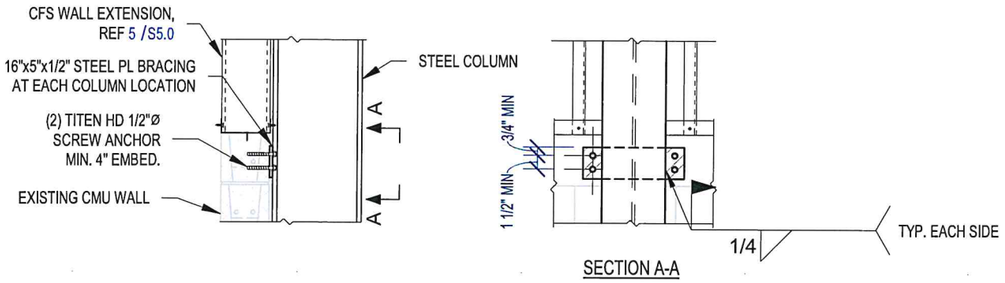
STEEL DETAILS

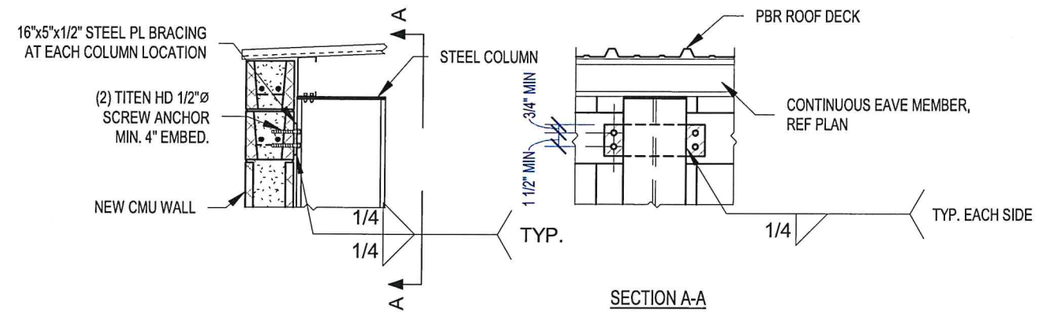
S5.2

Date: 04/14/2022

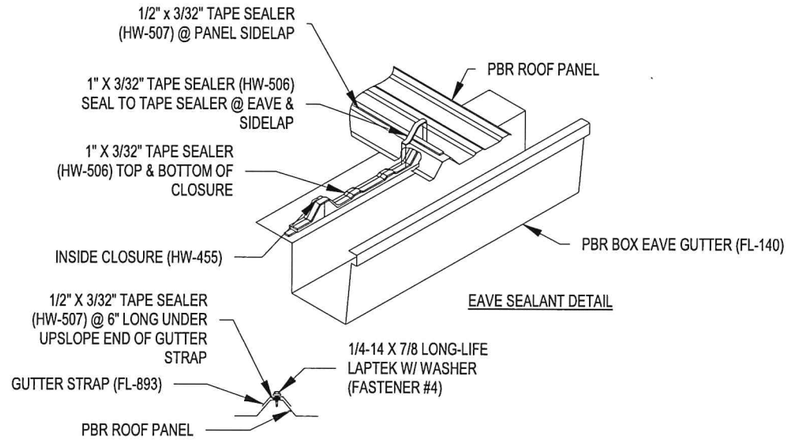
Project No: 21-139



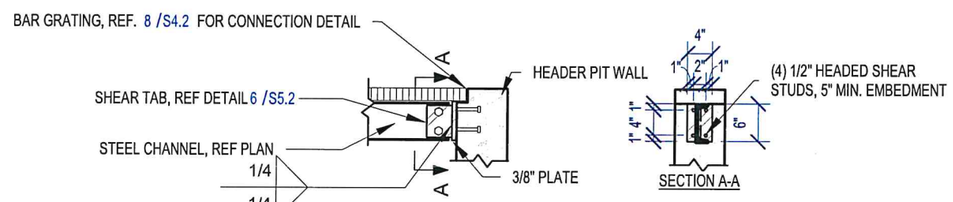
1 EXISTING CMU BRACED TO WESTERN COLUMNS
1/2" = 1'-0"



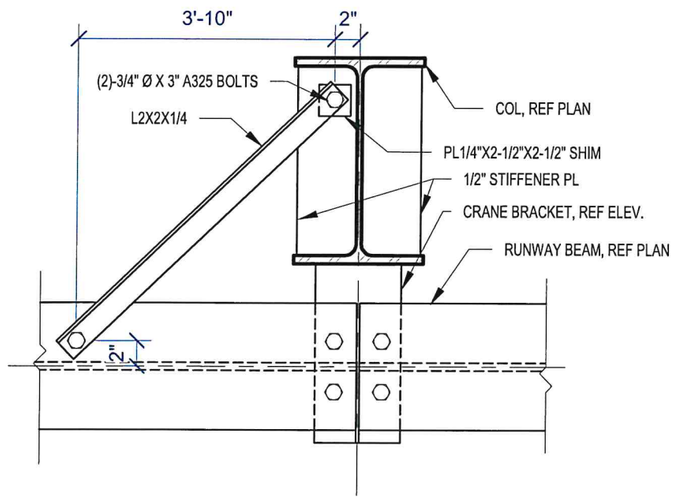
2 NEW CMU BRACED TO EASTERN COLUMNS
1/2" = 1'-0"



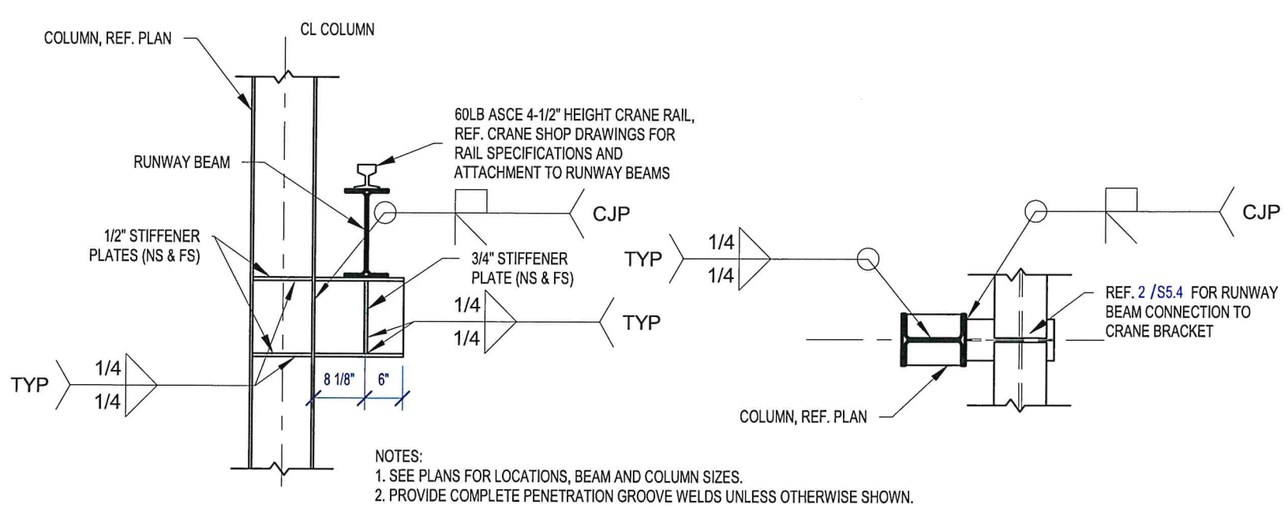
3 PBR ROOF PANEL EAVE SEALANT
1" = 1'-0"



4 STEEL BEAM TO CONCRETE WALL CONNECTION
1/2" = 1'-0"



5 TYPICAL RUNWAY BEAM BRACE
1" = 1'-0"



6 CRANE BRACKET TO COLUMN CONNECTION
1/2" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

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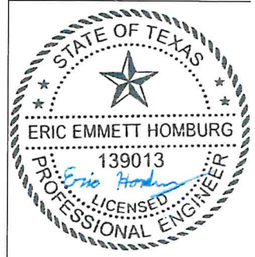

4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

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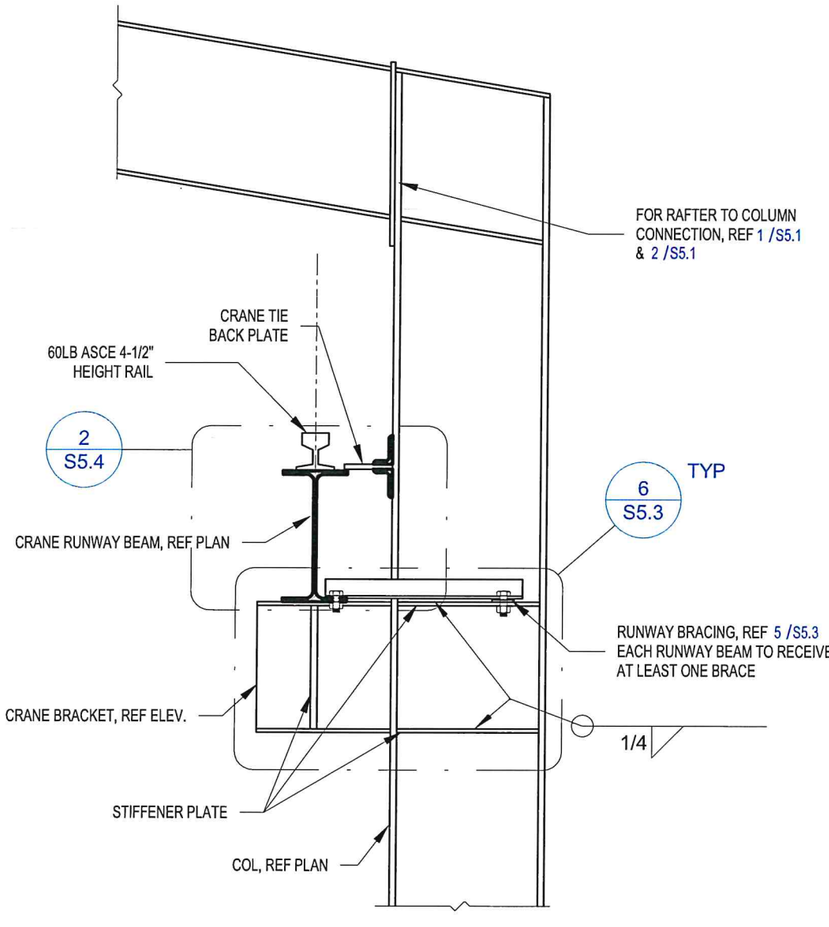
(o) 979.777.0726 | TBPE Firm No. F-18677

STEEL DETAILS

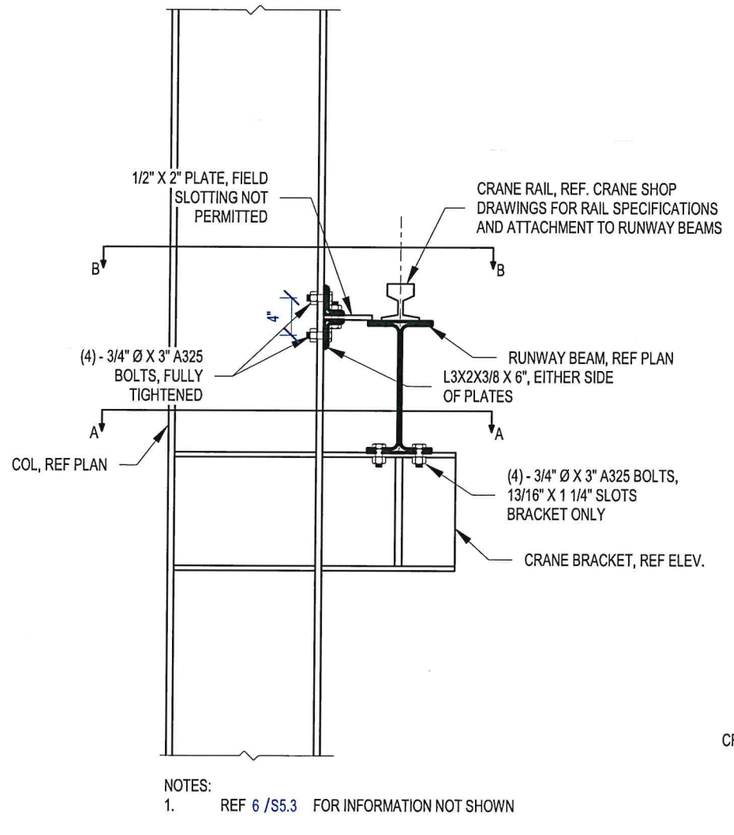
S5.3

Date: 04/14/2022

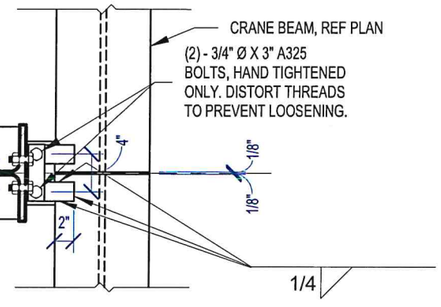
Project No: 21-139



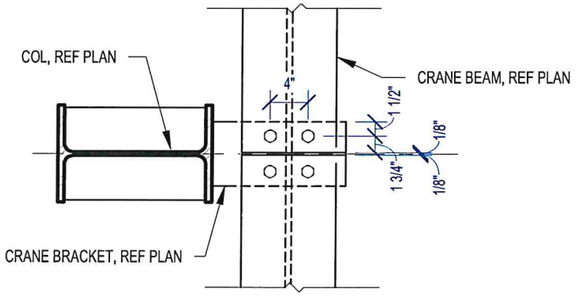
1 RUNWAY BEAM AT COLUMN
3/4" = 1'-0"



2 RUNWAY BEAM CONNECTION DETAIL
3/4" = 1'-0"



SECTION B-B



SECTION A-A

Revision Schedule		
Revision Number	Revision Description	Revision Date

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TEMPLE, TX

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STEEL DETAILS

S5.4

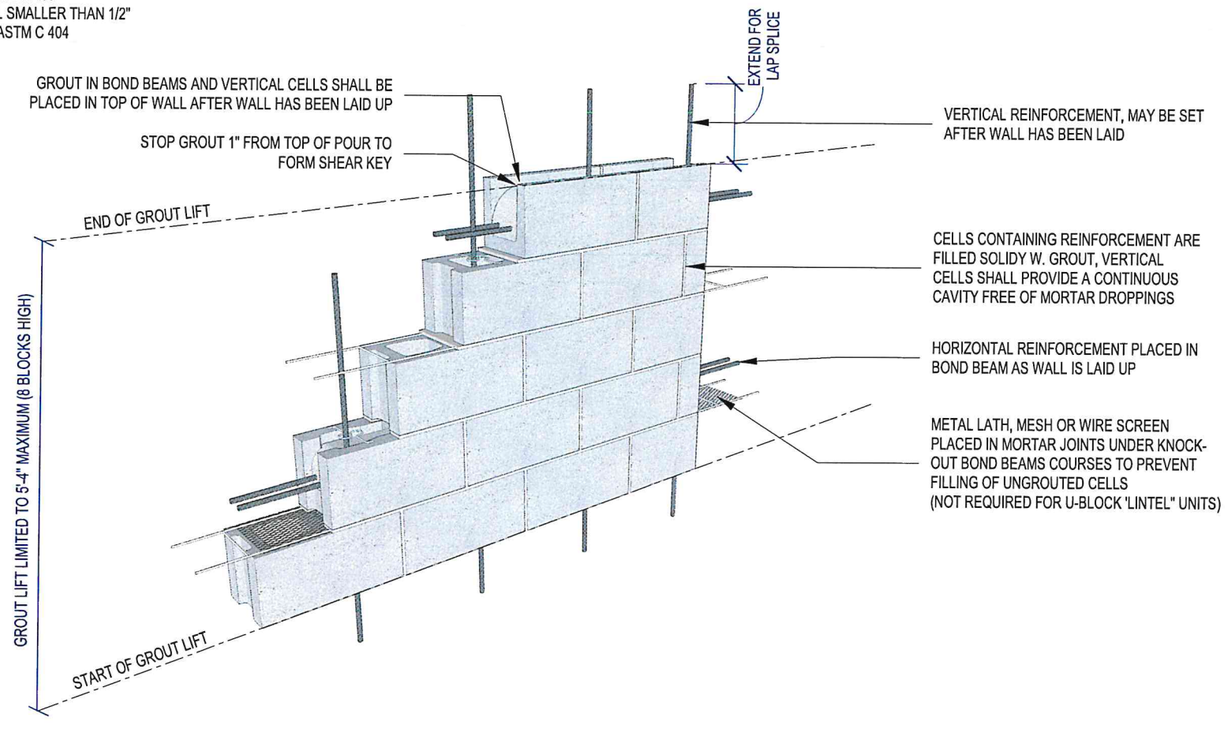
Date: 04/14/2022

Project No: 21-139

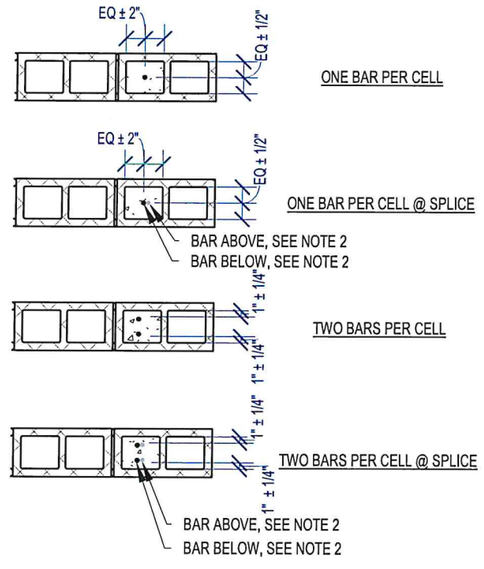
GROUT PROPORTIONS BY VOLUME				
TYPE	PARTS BY VOLUME OF PORTLAND CEMENT OR BLENDED CEMENT	PARTS BY VOLUME OF HYDRATED LIME OR LIME PUTTY	AGGREGATE MEASURED IN A DAMP, LOOSE CONDITION	
			FINE AGGREGATE	COARSE AGGREGATE
FINE	1	0 TO 1/10	2¼ - 3 TIMES THE SUM OF THE VOLUMES OF CEMENTITIOUS MATERIALS	NONE
COURSE	1	0 TO 1/10	2¼ - 3 TIMES THE SUM OF THE VOLUMES OF CEMENTITIOUS MATERIALS	1-2 TIMES THE SUM OF THE VOLUMES OF CEMENTITIOUS MATERIALS

FINE AGGREGATE = SAND SMALLER THAN 3/8"
COURSE AGGREGATE = PEA GRAVEL SMALLER THAN 1/2"
ALL AGGREGATE MUST ADHERE TO ASTM C 404

NOTES:
1. IF LOW LIFT GROUTING PROCEDURES ARE FOLLOWED THEN NO CLEAN-OUTS ARE REQUIRED.
2. EACH GROUT LIFT MUST BE CONSOLIDATED AND RECONSOLIDATED BY MECHANICAL VIBRATION UNLESS SELF-CONSOLIDATING GROUT IS USED.
3. GROUT FOR MASONRY CONSTRUCTION SHALL HAVE A HIGH SLUMP (8" - 11") WITH A FLOWABLE CONSISTENCY TO EASY PLACEMENT AND FACILITATE CONSOLIDATION.
4. THE MINIMUM COMPRESSIVE STRENGTH FOR ALL GROUT IS 2,000 PSI, UNLESS NOTED OTHERWISE.
5. GROUT MIXTURES MAY EITHER CONFORM WITH THE PROPORTIONS LISTED IN TABLE 1 OR BY COMPRESSIVE STRENGTH TESTING . WRITTEN ACCEPTANCE OF THE GROUT MIX SUBMITTALS IS REQUIRED PRIOR TO THE COMMENCEMENT OF GROUTING OPERATIONS.
6. ALL GROUT SHALL CONFORM TO ASTM C 1019



1 CMU WALL LOW LIFT GROUTING PROCEDURE
3/4" = 1'-0"



NOTES:
1. VERTICAL BAR POSITIONERS MUST BE PROVIDED AT THE TOP AND BOTTOM OF EACH VERTICAL BAR AND AT INTERVALS NOT EXCEEDING 8'-0". POSITIONERS SHALL BE MIN 9 GA DIAMETER PREFABRICATED FROM COLD-DRAWN STEEL WIRE CONFORMING TO ASTM A 1064, ASTM A 82 AND SHALL BE HOT-DIP GALVANIZED PER ASTM A 153.
2. BARS MUST BE IN CONTACT AND TIED TOGETHER OVER SPLICE LENGTH, REF SCHEDULE FOR MINIMUM SPLICE OVERLAP
3. THIS DETAIL DOES NOT APPLY TO RETAINING / BASEMENT WALLS.

3 TYPICAL CMU VERTICAL BAR PLACEMENT
1/2" = 1'-0"

Revision Schedule		
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AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

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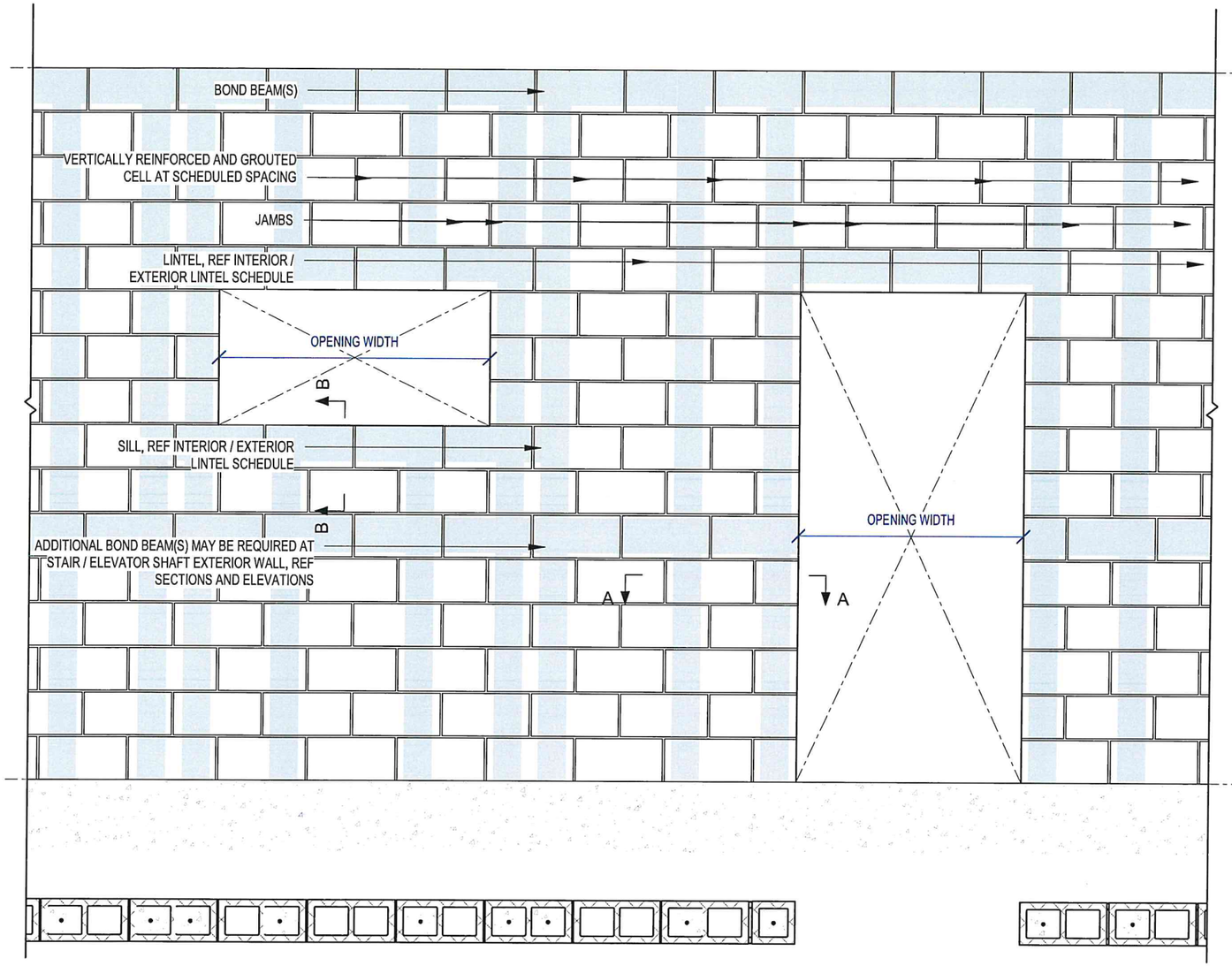
CMU DETAILS

S6.0

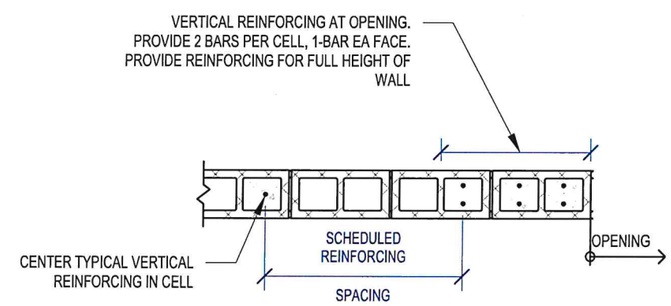
Date: 04/14/2022

Project No: 21-139

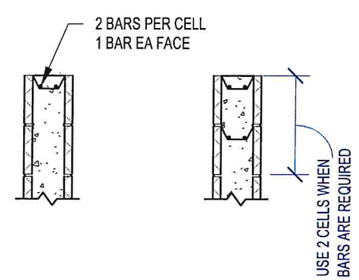


TYPICAL WALL REINFORCING		JAMB REINFORCING AT OPENING (EACH SIDE)			
WALL HEIGHT	VERT REINF	OPENING SIZE			
		<= 8'-0"	10'-0"	12'-0"	14'-0"
<=10'	#4 @48"	2-#4	2-#4	2-#4	2-#5
<=12'	#4 @40"	2-#5	2-#5	2-#6	2-#6
<=15'	#5 @40"	2-#6	2-#7	2-#7	4-#5
<=18'	#5 @32"	2-#7	2-#8	4-#5	4-#7
<=20'	#5 @16"	N/A	N/A	N/A	N/A
<=24'	#5 @8"	N/A	N/A	N/A	N/A

SILL REINFORCING				
SILL OPENING	<= 8'-0"	10'-0"	12'-0"	14'-0"
REINFORCING	2-#4	2-#5	2-#5	4-#5



SECTION A-A



SECTION B-B

NOTES:
1. SEE PLAN AND DETAILS FOR REINFORCING IN WALLS TALLER THAN 24'-0".
2. GROUT REINFORCED CELLS WITH 2000 PSI GROUT
3. REFER TO ARCH DRAWINGS FOR SIZES AND LOCATIONS OR DOOR AND WINDOW OPENINGS. REFER TO MECHANICAL, ELECTRICAL AND PLUMBING DRAWING FOR OTHER REQUIRED OPENINGS
4. SEE 5 /S6.2 FOR LINTELS IN LOAD BEARING OR EXTERIOR WALLS

1 TYPICAL NON-LOAD BEARING CMU WALL SCHEDULE (FOR WALLS NOT SHOWN ON ELEVATIONS)
1/2" = 1'-0"

Revision Schedule

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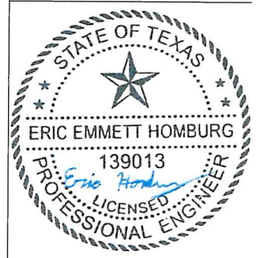
AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

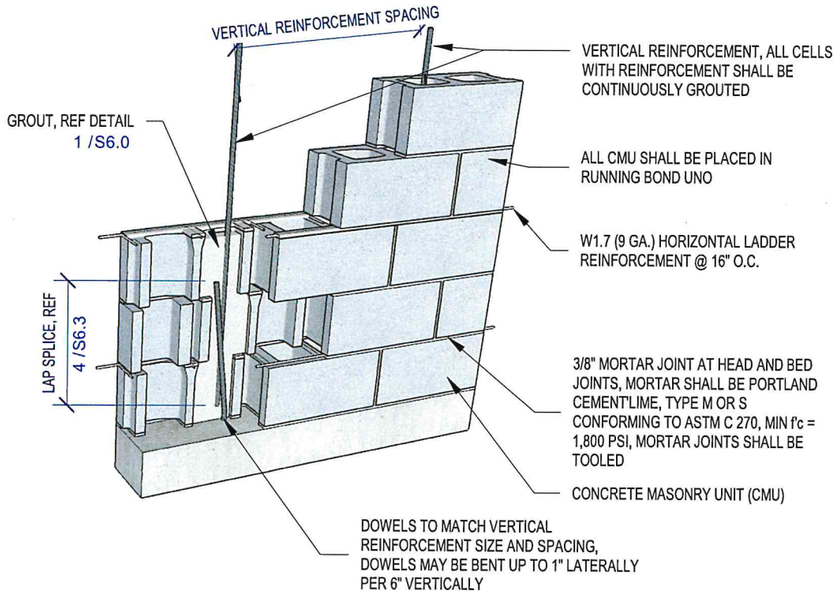
DUDLEY
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba DUDLEY
6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0720 | TBPE Firm No. F-18677

CMU DETAILS

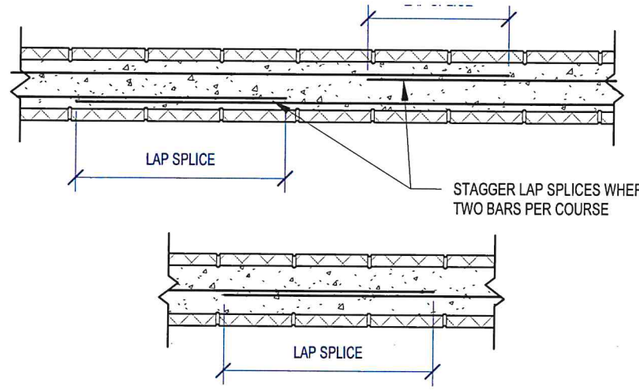
S6.1

Date: 04/14/2022

Project No: 21-139



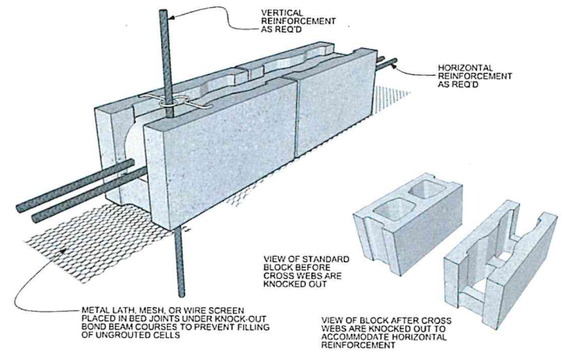
1 TYPICAL CMU WALL
3/8" = 1'-0"



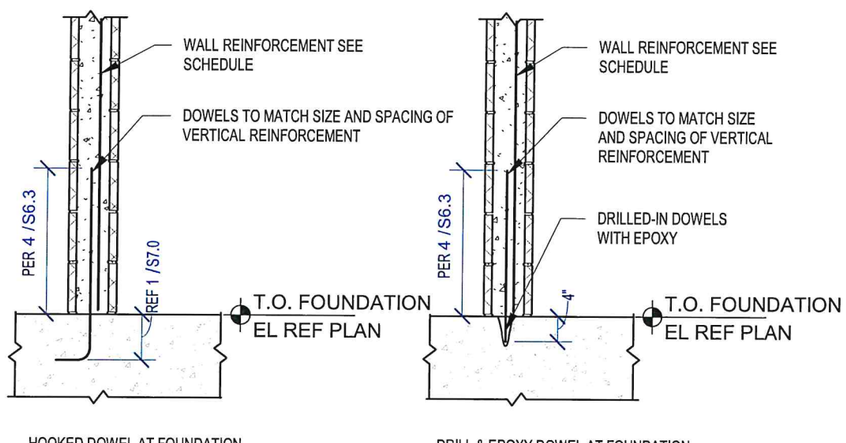
HORIZONTAL LAP SPLICE LENGTHS		
BAR SIZE	1 BAR IN COURSE	2 BARS IN COURSE
#3	18"	28"
#4	24"	36"
#5	26"	45"
#6	40"	54"

NOTES:
1. FOR 6" AND 8" WALLS WITH ONE HORIZONTAL BAR IN COURSE, USE SPLICE LENGTHS FOR TWO BARS IN COURSE.
2. SPLICES OF REINFORCEMENT WTH 2 BARS PER COURSE SHALL BE STAGGERED.

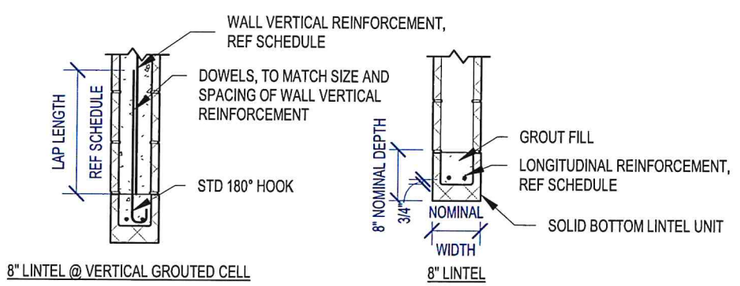
2 CMU HORIZONTAL BAR LAP SPLICE LENGTH
3/4" = 1'-0"



3 TYPICAL BOND BEAM UNITS
1/2" = 1'-0"



4 TYPICAL BASE OF CMU WALL
1/2" = 1'-0"



NOTES:
1. LINTEL SIZES SHOWN ABOVE INDICATE NOMINAL WIDTH x NOMINAL DEPTH. E.G. 8X16 INDICATES A LINTEL WITH A NOMINAL WIDTH OF 8" AND A NOMINAL DEPTH OF 16".
2. PROVIDE 1" OF BEARING AT EACH JAMB FOR EACH FOOT OF CLEAR SPAN BUT NOT LESS THAN 7 5/8".
3. REINFORCEMENT SHALL TERMINATE NO LESS THAN 1½ FROM THE END OF THE LINTEL.
4. CMU MUST BE STACKED IN RUNNING BOND.

5 TYPICAL CMU LINTEL
1/2" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

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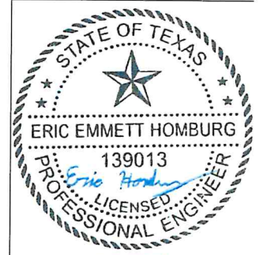
AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX



4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

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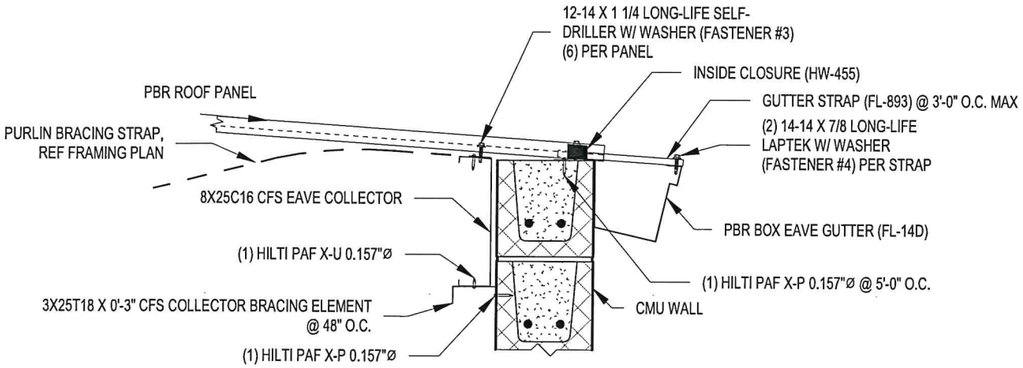
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba DUDLEY
6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0726 | TBPE Firm No. F-18677

CMU DETAILS

S6.2

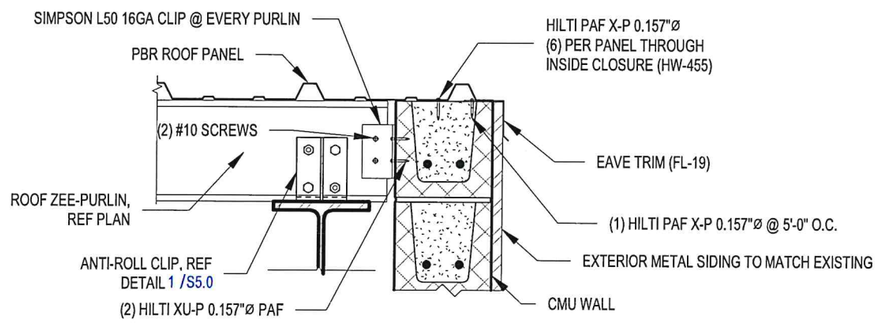
Date: 04/14/2022

Project No: 21-139



NOTES:
1. REF 3 /S5.3 FOR PBR EAVE SEALANT INFORMATION

1 CMU WALL W/ CFS EAVE STRUT, PBR DECK, AND EAVE GUTTER - LOW END
1" = 1'-0"



NOTES:
1. REF 3 /S5.3 FOR PBR EAVE SEALANT INFORMATION

3 CMU WALL W/ CFS EAVE TRIM
1" = 1'-0"

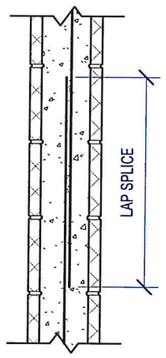
1 BAR PER CELL - MINIMUM LAP SPLICE LENGTHS			
BAR SIZE	6" CMU	8" CMU	10" CMU
#3	16	16	16
#4	25	21	21
#5	40	27	26
#6	NP	51	40
#7	NP	63	52
#8	NP	72	72

NP = NOT PERMITTED

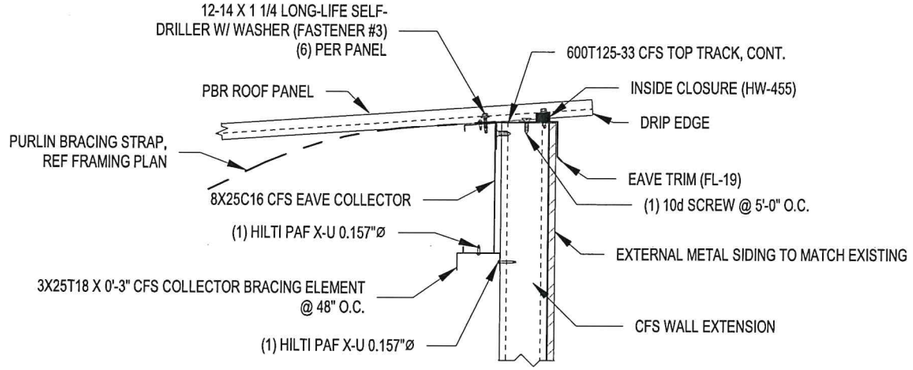
2 BARS PER CELL - MINIMUM LAP SPLICE LENGTHS			
BAR SIZE	6" CMU	8" CMU	10" CMU
#3	19	17	17
#4	34	29	29
#5	45	45	45
#6	NP	54	54
#7	NP	63	63
#8	NP	NP	72

NP = NOT PERMITTED

NOTES:
1. ALL LAP SPLICE LENGTHS ARE IN INCHES.
2. WHEN LAP SPLICING BARS OF DIFFERENT SIZES, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR



4 CMU VERTICAL BAR LAP SPLICE LENGTH
3/4" = 1'-0"

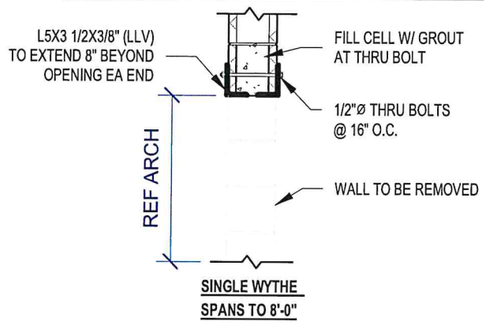


NOTES:
1. REF 3 /S5.3 FOR PBR EAVE SEALANT INFORMATION

2 CFS WALL EXTENSION W/ CFS EAVE STRUT AND PBR DECK - HIGH END
1" = 1'-0"

LINTEL INSTALLATION PROCEDURE:

1. CONTRACTOR TO VERIFY THAT JAMB CELLS ON EITHER SIDE OF FUTURE OPENING ARE FULLY GROUTED. IF NOT, CONTRACTOR TO BREAK SIDE WALL ABOVE EACH JAMB AND POUR GROUT INTO HOLE TO COMPLETELY FILL CORE. IF GROUT IS POURED IN JAMBS, 7 DAYS MUST ELAPSE BEFORE STEP 2 IS STARTED.
2. CUT A 5/8" GROOVE IN ONE FACE OF MASONRY WALL FOR ENTIRE LENGTH OF PROPOSED OPENING PLUS EIGHT INCHES AT EACH END.
3. INSTALL ANGLE WHICH IS 16 INCHES LONGER THAN PROPOSED OPENING WIDTH IN GROOVE AS SHOWN IN DETAIL.
4. DRILL HOLES THROUGH MASONRY USING ANGLE AS A TEMPLATE.
5. CUT GROOVE IN OPPOSITE FACE OF MASONRY AND INSTALL ANGLE WITH BOLT HOLES ALIGNED WITH FIRST ANGLE AND INSTALL BOLTS.
6. BREAK SIDE WALL OF BLOCK AT EACH END OF OPENING JUST BELOW ANGLE AND POUR GROUT INTO HOLE TO COMPLETELY FILL CORE.
7. BREAK SIDE WALL OF BLOCK ABOVE EACH BOLT AND POUR GROUT INTO HOLE TO COMPLETELY FILL CORE WITH BOLT.
8. AFTER A MINIMUM OF 7 DAYS, BLOCK IN OPENING BELOW ANGLES MAY BE REMOVED.



5 NEW OPENING IN EXISTING STRUCTURE - SINGLE WYTHE 8' MAX OPENING
1/2" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

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TEMPLE, TX

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ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER

4/14/2022

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TEMPLE, TX

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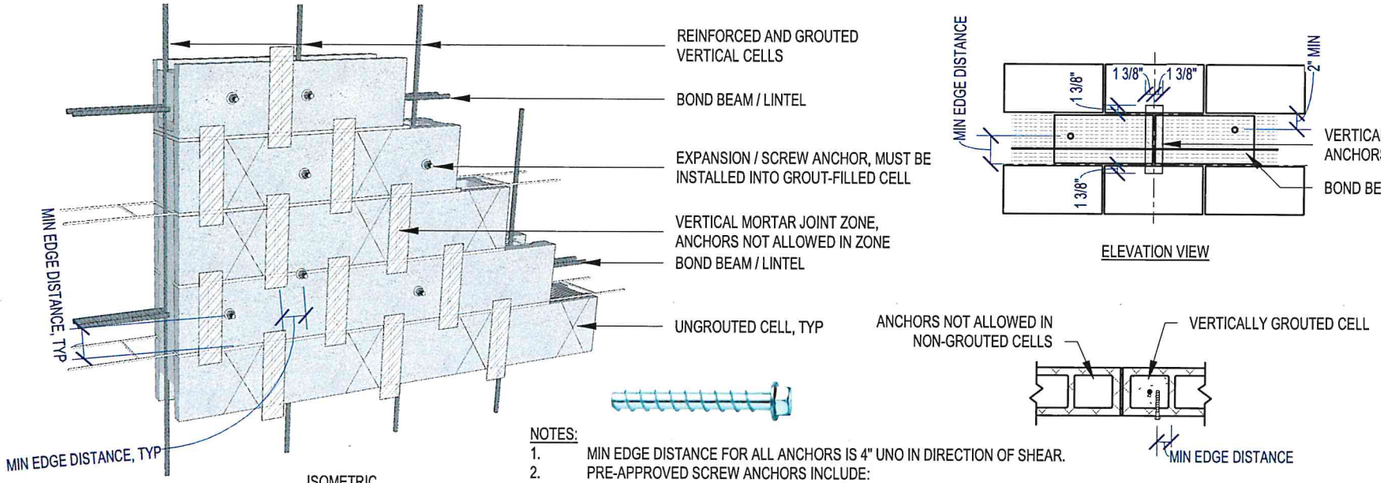
(o) 979.777.0726 | TBPE Firm No. F-18677

CMU DETAILS

S6.3

Date: 04/14/2022

Project No: 21-139



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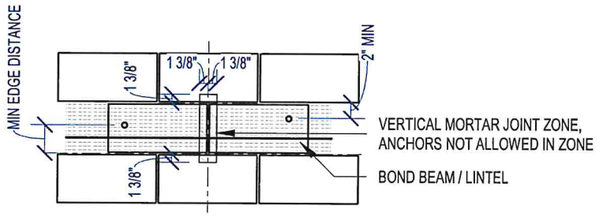


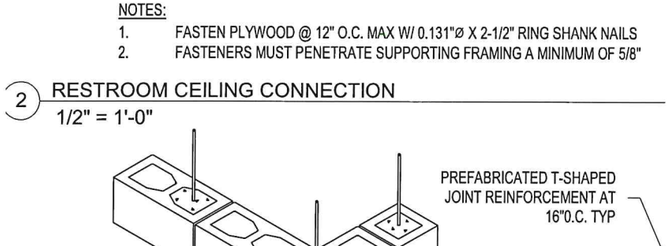
ELEVATION VIEW

PLAN VIEW

NOTES:
1. MIN EDGE DISTANCE FOR ALL ANCHORS IS 4" UNO IN DIRECTION OF SHEAR.
2. PRE-APPROVED SCREW ANCHORS INCLUDE:
   A. SIMPSON STRONG-TIE TITEN HD
   B. HILTI KIWK HUS-EZ

1 TYPICAL SCREW ANCHORS INTO GROUT-FILLED CMU

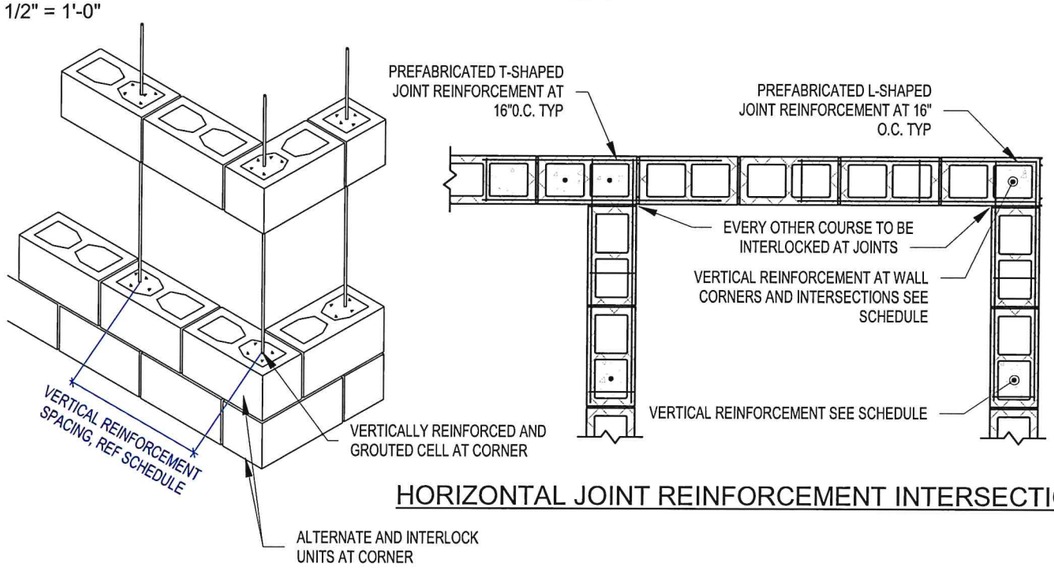
1/2" = 1'-0"



NOTES:
1. FASTEN PLYWOOD @ 12" O.C. MAX W/ 0.131"ø X 2-1/2" RING SHANK NAILS
2. FASTENERS MUST PENETRATE SUPPORTING FRAMING A MINIMUM OF 5/8"

2 RESTROOM CEILING CONNECTION

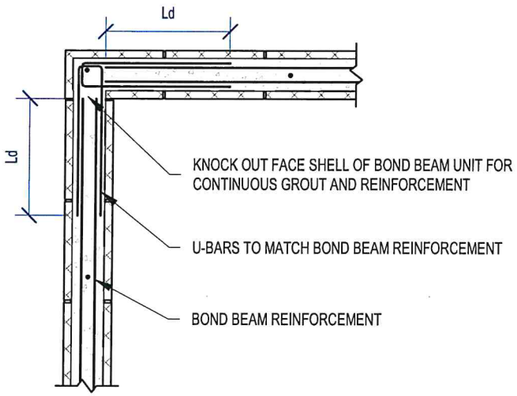
1/2" = 1'-0"



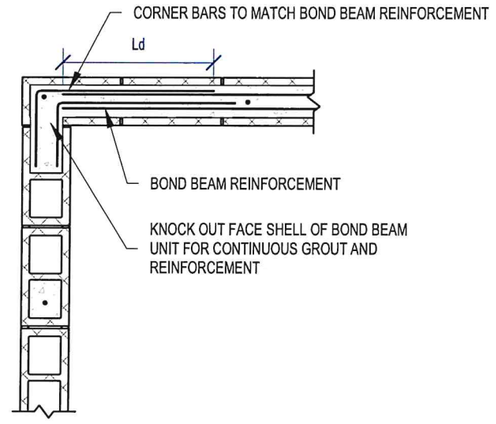
HORIZONTAL JOINT REINFORCEMENT INTERSECTION DETAIL

3 TYPICAL WALL CORNER ARRANGEMENT

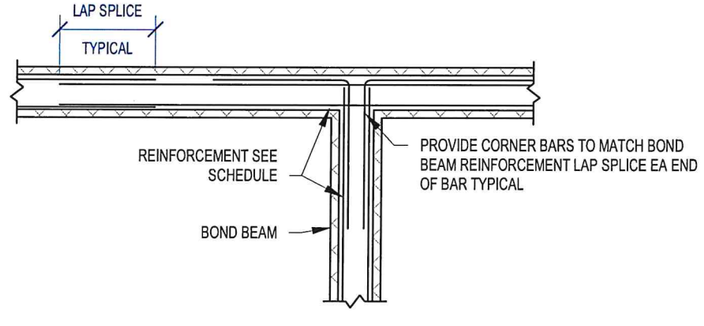
1/2" = 1'-0"



BOND BEAM CONTINUOUS AROUND CORNER



BOND BEAM DISCONTINUOUS AT CORNER



INTERSECTION

4 TYPICAL BOND BEAM CORNER DETAILS

1/2" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

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TEMPLE, TX

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STATE OF TEXAS
ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER

4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

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6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0720 | TBPE Firm No. F-18677

CMU DETAILS

S6.4

Date:	04/14/2022
Project No:	21-139

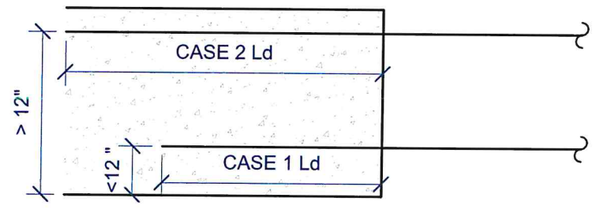
CASE 1: DEVELOPMENT LENGTHS OF REINFORCEMENT IN TENSION, Ld (IN) FY = 60,000 PSI NORMALWEIGHT CONCRETE, f'c (PSI)					
BAR SIZE	db (IN)	f'c = 3,000	f'c = 4,000	f'c = 5,000	f'c = 5,000
#3	0.375	16	14	13	12
#4	0.5	22	19	17	15
#5	0.625	27	24	21	19
#6	0.75	33	28	25	23
#7	0.875	48	42	37	34
#8	1.00	55	47	42	39
#9	1.128	62	54	48	44
#10	1.27	70	60	54	49
#11	1.41	77	67	60	55

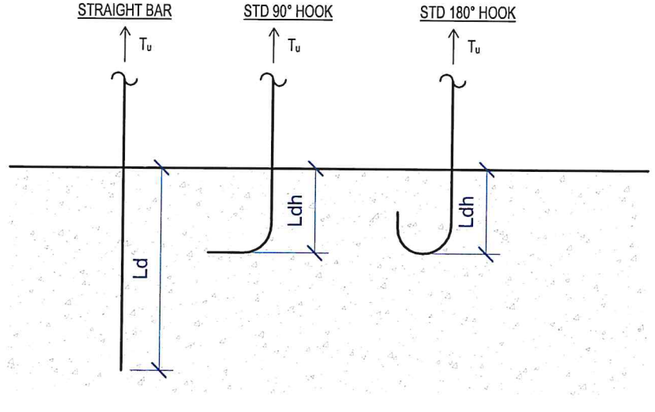
CASE 2: DEVELOPMENT LENGTHS OF REINFORCEMENT IN TENSION, Ld (IN) FY = 60,000 PSI NORMALWEIGHT CONCRETE, f'c (PSI)					
BAR SIZE	db (IN)	f'c = 3,000	f'c = 4,000	f'c = 5,000	f'c = 5,000
#3	0.375	21	18	17	15
#4	0.5	28	25	22	20
#5	0.625	36	31	28	25
#6	0.75	43	37	33	30
#7	0.875	62	54	48	44
#8	1.00	71	62	55	50
#9	1.128	80	70	62	57
#10	1.27	90	78	70	64
#11	1.41	100	87	78	71

DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION, Ldh (IN) FY = 60,000 PSI NORMALWEIGHT CONCRETE, f'c (PSI)					
BAR SIZE	db (IN)	f'c = 3,000	f'c = 4,000	f'c = 5,000	f'c = 6,000
#3	0.375	9	8	7	6
#4	0.5	11	10	9	8
#5	0.625	14	12	11	10
#6	0.75	17	15	13	12
#7	0.875	20	17	15	14
#8	1.00	22	19	17	16
#9	1.128	25	22	20	18
#10	1.27	28	25	22	20
#11	1.41	31	27	24	22

NOTES:
1. THE HOOK SHALL BE LOCATED WITHIN THE CONFINED CORE OF A COLUMN OR BOUNDARY ELEMENT, WITH THE HOOK BENT INTO THE JOINT.
2. THE DEVELOPMENT LENGTH SHALL BE MULTIPLIED BY A FACTOR OF 1.2 FOR EPOXY-COATED REINFORCING BARS.

NOTES:
1. CASE 1 APPLIES TO REINFORCEMENT THAT HAS LESS THAN 12" OF FRESH CONCRETE PLACED BELOW HORIZONTAL REINFORCEMENT. ALL VERTICAL REINFORCEMENT FALLS UNDER CASE 1.
2. CASE 2 APPLIES TO REINFORCEMENT THAT HAS MORE THAN 12" OF FRESH CONCRETE PLACED BELOW HORIZONTAL REINFORCEMENT.
3. CLEAR SPACING OF BARS BEING DEVELOPED MUST BE AT LEAST
4. 2db (DIA OF BAR) & CLEAR COVER AT LEAST db, INCREASE DEVELOPMENT LENGTH BY 1.5 IF OTHERWISE.
5. FOR EPOXY COATED REINFORCEMENT INCREASE THE LENGTH BY A FACTOR OF 1.2.





DEVELOPMENT LENGTH, Ld IS THE BONDED LENGTH REQUIRED TO ACHIEVE THE DESIGN STRENGTH OF A BAR (TO PRECLUDE THE BAR FROM SLIPPING OUT OF THE CONCRETE)

1 TENSION DEVELOPMENT LENGTH
1" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

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TEMPLE, TX

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AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

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6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0720 | TBPE Firm No. F-18677

REINFORCEMENT DETAILS

S7.0

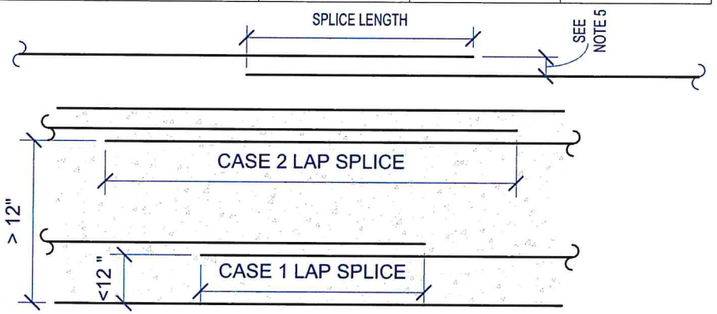
Date: 04/14/2022

Project No: 21-139

CASE 1: CLASS B SPLICE LENGTHS OF REINFORCEMENT IN TENSION, Ld (IN) FY = 60,000 PSI NORMALWEIGHT CONCRETE, f'c (PSI)					
BAR SIZE	db (IN)	f'c = 3,000	f'c = 4,000	f'c = 5,000	f'c = 5,000
#3	0.375	21	18	17	15
#4	0.5	28	25	22	20
#5	0.625	36	31	28	30
#6	0.75	43	37	33	44
#7	0.875	62	54	48	44
#8	1.00	71	62	55	50
#9	1.128	80	70	62	57
#10	1.27	90	78	70	64
#11	1.41	100	87	78	71

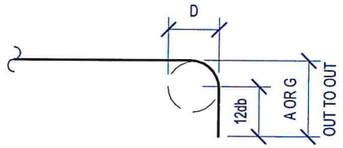
CASE 2: CLASS B SPLICE LENGTHS OF REINFORCEMENT IN TENSION, Ld (IN) FY = 60,000 PSI NORMALWEIGHT CONCRETE, f'c (PSI)					
BAR SIZE	db (IN)	f'c = 3,000	f'c = 4,000	f'c = 5,000	f'c = 5,000
#3	0.375	28	24	22	20
#4	0.5	37	32	29	26
#5	0.625	46	40	36	33
#6	0.75	56	48	43	39
#7	0.875	81	70	63	57
#8	1.00	93	80	72	65
#9	1.128	104	90	81	74
#10	1.27	118	102	91	83
#11	1.41	131	113	101	92

NOTES:
1. CASE 1 APPLIES TO REINFORCEMENT THAT HAS LESS THAN 12" OF FRESH CONCRETE PLACED BELOW HORIZONTAL REINFORCEMENT. ALL VERTICAL REINFORCEMENT FALLS UNDER CASE 1.
2. CASE 2 APPLIES TO REINFORCEMENT THAT HAS MORE THAN 12" OF FRESH CONCRETE PLACED BELOW HORIZONTAL REINFORCEMENT.
3. CLEAR SPACING OF BARS BEING DEVELOPED MUST BE AT LEAST 2db (DIA OF BAR) & CLEAR COVER AT LEAST db, INCREASE DEVELOPMENT LENGTH BY 1.5 IF OTHERWISE.
4. FOR EPOXY COATED REINFORCEMENT INCREASE THE LENGTH BY A FACTOR OF 1.2.
5. ADJACENT BARS THAT ARE TO BE SPLICED SHALL BE IN CONTACT AND TIED TOGETHER WHERE POSSIBLE. WHERE CONTACT IS NOT POSSIBLE, THE MAXIMUM OFFSET SHALL BE ONE-FIFTH THE REQUIRED LAP SPLICE LENGTH OR 6", WHICHEVER IS LESS.

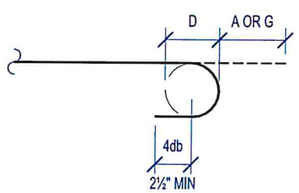


1 TENSION LAP SPLICE LENGTH
1" = 1'-0"

STANDARD END HOOK DIMENSIONS (IN)				
BAR SIZE	D	180° HOOKS		90° HOOKS
		A or G	J	A or G
#3	2 1/4	5	3	6
#4	3	6	4	8
#5	3 3/4	7	5	10
#6	4 1/2	8	6	12
#7	5 1/4	10	7	14
#8	6	11	8	16
#9	9 1/2	15	11 3/4	19
#10	10 3/4	17	13 1/4	22
#11	12	19	14 3/4	24



STD 90° HOOK



STD 180° HOOK

2 STANDARD END HOOK DIMENSIONS
1" = 1'-0"

Revision Schedule		
Revision Number	Revision Description	Revision Date

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4/14/2022

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TEMPLE, TX

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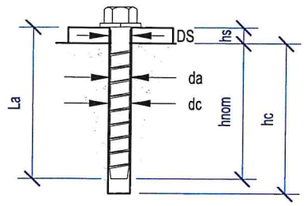
GEOTECHNICAL | STRUCTURAL | ENVIRONMENTAL
Dudley Engineering LLC dba DUDLEY
6102 Imperial Loop Drive | College Station, Texas 77845
(o) 979.777.0720 | TBPE Firm No. F-18677

REINFORCEMENT DETAILS

S7.1

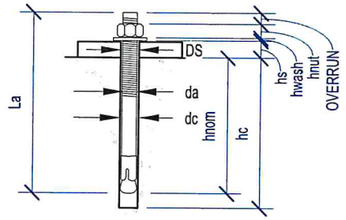
Date: 04/14/2022

Project No: 21-139



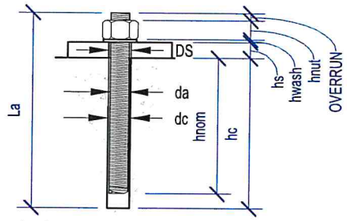
La ≥ La, min = hnom + hs

SCREW



La ≥ La, min = hnom + hs + hwash + hnut + OVERRUN

EXPANSION AND UNDERCUT



La ≥ La, min = hnom + hs + hwash + hnut + OVERRUN

ADHESIVE

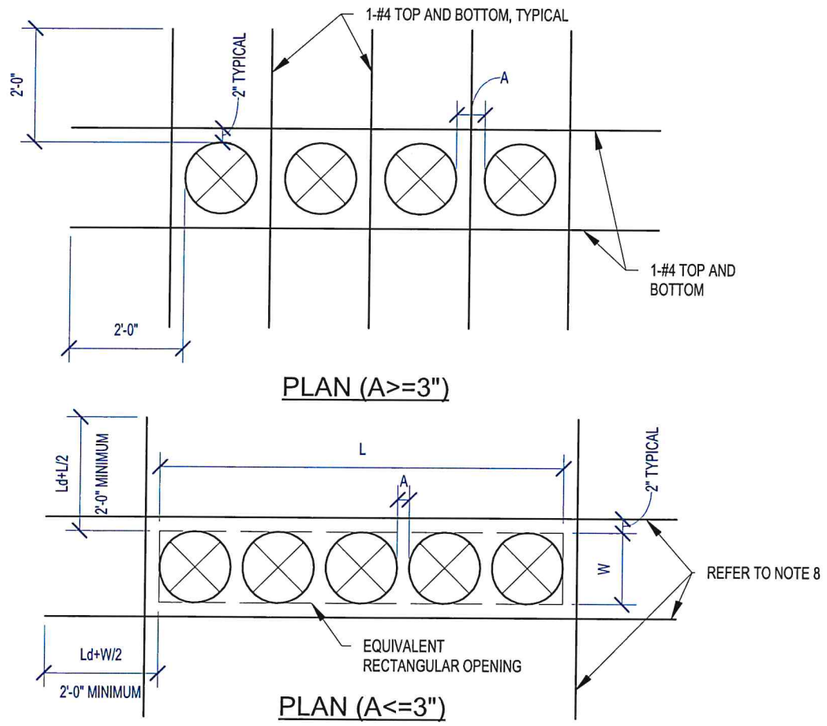
CONTRACTOR AND INSTALLER NOTES:

1. ONLY POST-INSTALLED ANCHOR PRODUCTS SPECIFIED IN THE CONTRACT DOCUMENTS SHALL BE USED WHERE SPECIFIED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL PROVIDE SIGNED AND SEALED CALCULATIONS TO THE ENGINEER OF RECORD (EOR) FOR ANCHOR PRODUCTS SUBSTITUTED FOR THOSE INDICATED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE EOR PRIOR TO USING POST-INSTALLED ANCHORS
2. **ANCHOR LENGTHS SPECIFIED IN THE CONTRACT DOCUMENTS INDICATE THE NOMINAL EMBEDMENT DEPTH.** REFER TO THE ANCHOR TYPE FOR THE DEFINITION OF NOMINAL EMBEDMENT DEPTH "hnom". IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE CORRECT ANCHOR LENGTH "La" FOR ORDER BASED ON THE SPECIFIED NOMINAL EMBEDMENT DEPTH, ATTACHMENT THICKNESS AND OTHER ANCHOR CHARACTERISTICS NOTED.
3. MINIMUM ANCHOR LENGTH "La,min" IS DETERMINED AS SHOWN FOR EACH ANCHOR. ORDER AND INSTALL AN ANCHOR LENGTH EQUAL TO OR GREATER THAN THIS VALUE. INSTALLED ANCHOR LENGTHS SHALL NOT HAVE NOMINAL EMBEDMENT DEPTHS THAT EXCEED THEIR CORRESPONDING MINIMUM CONCRETE THICKNESS LIMITS. REFER TO ANCHOR'S ICC-ES EVALUATION SERVICE REPORT (ESR).
4. REFER TO THE ANCHOR'S ICC=ES EVALUATION SERVICE REPORT (ESR) FOR DRILL BIT TYPE AND DIAMETER, AND DEPTH OF HOLE TO BE DRILLED IN THE CONCRETE.
5. FOLLOW THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).

DEFINITIONS:

da =	DIAMETER OF ANCHOR (IN)
dc =	DIAMETER OF HOLE IN CONCRETE = DIAMETER OF DRILL BIT (IN)
ds =	DIAMETER OF HOLE IN STEEL ATTACHMENT (IN)
La,min =	MINIMUM LENGTH OF ANCHOR (IN)
La =	ORDERED LENGTH OF ANCHOR (IN)
hnom =	NOMINAL EMBEDMENT DEPTH (IN)
hc =	DEPTH OF HOLE IN CONCRETE (IN)
hs =	THICKNESS OF STEEL ATTACHMENT (IN)
hwash =	THICKNESS OF WASHER (IN)
hnut =	HEIGHT OF HEX NUT (IN)
OVERRUN =	1/4" UNLESS NOTED OTHERWISE

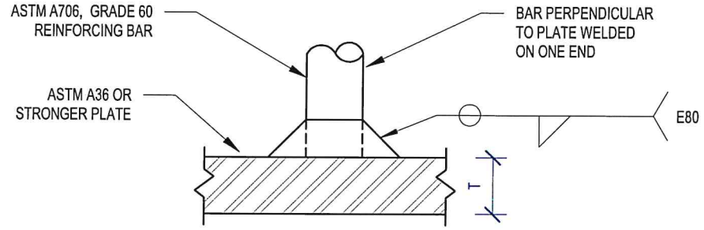
1 TYPICAL POST-INSTALLED ANCHOR INFORMATION
3" = 1'-0"



NOTES:

1. WHERE CLEAR SPACING BETWEEN ADJACENT SLEEVES IS LESS THAN 3", THE SLEEVE GROUP SHALL BE TREATED AS AN EQUIVALENT RECTANGULAR OPENING WITH LENGTH "L" AND WIDTH "W" AS SHOWN
2. WHERE CLEAR SPACING BETWEEN ADJACENT SLEEVES IS GREATER THAN OR EQUAL TO 3", SCHEDULED SLAB BAR REINFORCEMENT SHALL BE OFFSET AS REQUIRED TO MISS SLEEVES.
3. REINFORCEMENT SHOWN IS IN ADDITION TO SCHEDULED SLAB REINFORCEMENT
4. SCHEDULED SLAB MESH REINFORCEMENT MAY BE CUT AS REQUIRED TO MISS PIPE SLEEVES
5. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATION AND SIZE OF SLEEVES
6. ISOLATED PIPE SLEEVES THAT ARE SMALLER THAN 5" AND DO NOT INTERRUPT REINFORCEMENT DO NOT REQUIRE THE USE OF THIS DETAIL
7. THIS DETAIL SHOULD NOT BE USED FOR OPENING GROUPS WITH DIAMETERS LARGER THAN 12". CONSULT STRUCTURAL ENGINEER FOR FRAMING OF SUCH CONDITIONS
8. PROVIDE HALF OF INTERRUPTED REINFORCEMENT PLUS ONE ADDITIONAL BAR OF SAME SIZE ON EACH SIDE OF EQUIVALENT RECTANGULAR OPENING. PROVIDE A MINIMUM OF 1-#4 TOP AND BOTTOM EACH OF OPENING

2 TYPICAL ADDITIONAL REINFORCEMENT AROUND PIPE SLEEVES
3/8" = 1'-0"



DEVELOPMENT OF WELDABLE REINFORCEMENT GRADE 60 REINFORCEMENT, E80 ELECTRODE		
BAR SIZE	NOMINAL WELD SIZE (INCHES)	MINIMUM PLATE THINCKNESS, T (INCHES)
#3	3/16	1/4
#4	1/4	1/4
#5	5/16	5/16
#6	5/16	7/16
#7	3/8	1/4
#8	7/16	1/4
#8	1/2	1/4
#10	9/16	1/4
#11	5/8	1/4

3 DEVELOPMENT OF WELDABLE REINFORCEMENT
3/4" = 1'-0"

Revision Schedule

Revision Number	Revision Description	Revision Date

THESE DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY FOR THE FOLLOWING PROJECT:

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TX

THEY ARE NOT SUITABLE FOR USE ON OTHER PROJECTS OR IN OTHER LOCATIONS WITHOUT THE APPROVAL AND PARTICIPATION OF THE ENGINEER. REPRODUCTION IS PROHIBITED.

STATE OF TEXAS
ERIC EMMETT HOMBURG
139013
LICENSED PROFESSIONAL ENGINEER

4/14/2022

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TX

DUDLEY
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Date: 04/14/2022

Project No: 21-139

ELECTRICAL SYMBOL LEGEND

NOT ALL SYMBOLS SHOWN MAY BE USED

PLAN LEGEND

SYMBOL	DESCRIPTION
	JUNCTION BOX
	DISCONNECT SWITCH
	MOTOR STARTER OR LIGHTING CONTACTOR, SURFACE MOUNTED
	COMBINATION MOTOR STARTER, AND DISCONNECT SWITCH, SURFACE MOUNTED
1 M	MANHOLE, NUMBER OF MANHOLE SHOWN NEXT TO SYMBOL
1 C	COMMUNICATIONS MANHOLE, NUMBER OF MANHOLE SHOWN NEXT TO SYMBOL
MH 23A	TELECOMMUNICATIONS MANHOLE, NUMBER OF MANHOLE SHOWN NEXT TO SYMBOL
W	KEYED NOTE, NUMBER IN POSITION "W" MATCHES NOTE NUMBER
$	SWITCH, TOGGLE, WALL MOUNTED, (SINGLE POLE THROW) MOUNT 48" AFF, UON
$ 3	SWITCH, TOGGLE, WALL MOUNTED, THREE WAY, (SINGLE POLE DOUBLE THROW) MOUNT 48" AFF, UON
$ EP	EXPLOSION PROOF SWITCH, TOGGLE, WALL MOUNTED, (SINGLE POLE THROW) MOUNT 48" AFF, UON
$ M	SWITCH, MOTOR RATED, WITH THERMAL OVERLOADS
	TERMINAL BOARD
	TELEPHONE OUTLET, PRIVATE, MOUNTED 12" AFF, UON
WH	WATTHOUR METER
	POLE
	TRANSFORMER, PAD MOUNTED, kVA RATING MAY BE DISPLAYED NEXT TO SYMBOL
T	TRANSFORMER, DRY TYPE, kVA RATING MAY BE DISPLAYED INSIDE OF SYMBOL
	ANTENNA
W-X, Y, Z	CONDUIT AND/OR WIRING HOMERUN TO PANEL, TERMINAL BOARD, OR CONTROLLER, USED WITH THE FOUR PRECEDING SYMBOLS. DESTINATION EQUIPMENT IDENTIFIER SHOWN IN POSITION "W" CIRCUIT NUMBER SHOWN IN POSITIONS "X", "Y", OR "Z". THESE CIRCUITS MAY ONLY SHOW ONE CIRCUIT NUMBER
	WIRING CONTINUATION
	FLEXIBLE CONDUIT
	HOMERUN
	CONDUIT CAPPED FOR FUTURE USE
	CONDUIT GOING DOWN
	CONDUIT GOING UP
	CONDUIT RUN UNDERGROUND OR CONCEALED
	CONDUIT RUN EXPOSED
	120V RECEPTACLE FLUSH MOUNTED
	250V RECEPTACLE FLUSH MOUNTED
	WELDING OUTLET
T	THERMOSTAT
	PANELBOARD SURFACE MOUNTED

GROUNDING LEGEND

SYMBOL	DESCRIPTION
A OR B	GROUNDING RECEPTACLE = A, GROUND TEST WELL = B
B	CONDUCTOR BARE UON
	GROUNDING CONNECTION
G	GROUND BUS BAR LENGTH AS SHOWN BY SYMBOL LENGTH UON
	COPPERCLAD GROUND ROD

SYMBOL MODIFIERS

(E)	EXISTING	PT	PAINTTIGHT
WP	WEATHERPROOF	P	PRIMARY
EP	EXPLOSION PROOF	O	OVERHEAD
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	U	UNDERGROUND
		S	SECONDARY
T	TELEPHONE	FT	FIXED TEMPERATURE
P	POWER	R	RECESSED
F	FIRE ALARM	G	GROUNDED
VT	VAPORTIGHT	UNG	UNGROUNDED
WT	WATERTIGHT		

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CONDUIT AND WIRING LEGEND

————	NEW
— — — —	EXISTING TO BE REMOVED
	EXISTING TO REMAIN
—— UE —— UE ——	UNDERGROUND ELECTRICAL
—— UF —— UF ——	UNDERGROUND FIBER OPTIC
—— UT —— UT ——	UNDERGROUND TELEPHONE
—— UG —— UG ——	UNDERGROUND GROUNDING
—— OE —— OE —— OE ——	OVERHEAD ELECTRICAL

ONE LINE AND CONTROL SCHEMATIC LEGEND

SYMBOL	DESCRIPTION
	GROUNDING CONNECTION, WHEN USED WITH TRANSFORMER SYMBOL IT DENOTES A NEUTRAL GROUNDING CONNECTION
	GROUNDED WYE WINDING CONNECTION
	DELTA WINDING CONNECTION
	RELAY OR CONTACTOR CONTACTS
	SEPARABLE CONNECTOR OR CONNECTION FOR DRAWOUT ASSEMBLIES
	CONDUCTOR CONNECTION
	CIRCUIT BREAKER, MOLDED CASE, TRIP CURRENT AND QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL
	SWITCH, DISCONNECT, NON-FUSED, LOAD BREAK, CONTINUOUS CURRENT RATING AND QUANTITY OF POLES SHOWN NEXT TO SYMBOL
	SWITCH, DISCONNECT, FUSED, LOAD BREAK, FUSED AMPERE RATING AND FUSE TYPE SHOWN NEXT TO SYMBOL
	FUSE, AMPERE RATING AND FUSE TYPE SHOWN NEXT TO SYMBOL
	MOTOR THERMAL OVERLOAD PROTECTOR
M	MOTOR STARTER MAIN CONTACTOR
CR	CONTACTOR OR RELAY COIL, LETTER(S) INSIDE OF SYMBOL MATCH CONTACTS CONTROLLED
PT	PRESSURE TRANSMITTER
	EQUIPMENT ENCLOSURE
VS	VOLTMETER SWITCH
AS	AMMETER SWITCH
A	AMMETER
V	VOLTMETER
	CURRENT TRANSFORMER WITH RATIO SHOWN
10	MOTOR, 10 HORSEPOWER SHOWN
	LIMIT SWITCH NORMALLY CLOSED
	LIMIT SWITCH NORMALLY OPEN
	MOTOR OPERATED VALVE GEARED LIMIT SWITCH
	PRESSURE SWITCH NORMALLY CLOSED OPENS ON INCREASING PRESSURE
	PRESSURE SWITCH NORMALLY OPEN CLOSES ON INCREASING PRESSURE
	LEVEL SWITCH NORMALLY CLOSED OPENS ON INCREASING LEVEL
	LEVEL SWITCH NORMALLY OPEN CLOSES ON INCREASING LEVEL
	FLOW SWITCH NORMALLY CLOSED OPENS WITH FLOW
	FLOW SWITCH NORMALLY OPEN CLOSES ON LOSS OF FLOW
	SPACE HEATER
PF	PHASE FAILURE RELAY
	DRAW-OUT CIRCUIT BREAKER
50 51	INSTANTANEOUS/TIME OVERCURRENT RELAY
51N	NEUTRAL TIME OVERCURRENT RELAY
	CABLE TERMINATOR
27 47	UNDERVOLTAGE/PHASE-SEQUENCE RELAY
86	LOCKOUT RELAY
DO	DESOLVED OXYGEN SENSOR
FS	FLOW SWITCH
AI	ANALYTIC INDICATOR
LT	LEVEL TRANSDUCER
FM	FLOW METER

ONE LINE AND CONTROL SCHEMATIC LEGEND (CONT'D)

SYMBOL	DESCRIPTION
	INSTRUMENT TRANSFORMER PT-POTENTIAL TRANSFORMER
480V / 120V	CONTROL POWER TRANSFORMER. VOLTAGE AS SHOWN
	LIGHTNING ARRESTOR
	SWITCH
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	MOMENTARY PUSHBUTTON
HAND / OFF / AUTO	THREE POSITION MAINTAINED CONTACT SWITCH
MOV	MOTOR OPERATED VALVE
	SOLENOID VALVE
ETM	ELAPSED TIME METER
TD 0-10 MIN. TOE	TIME DELAY RELAY. TIMES OUT AFTER ENERGIZATION
TD 0-10 MIN. TOD	TIME DELAY RELAY. TIMES OUT AFTER DENERGIZATION
R	PILOT LIGHT R=RED B=BLUE G=GREEN A=AMBER Y=YELLOW
LSHH	HIGH LEVEL FLOAT SWITCH
LSLL	LOW LEVEL CUTOFF FLOAT SWITCH
MCP / SIZE 1 / FVNR	MOTOR STARTER FVNR=FULL VOLTAGE NON-REVERSING; VFD=VARIABLE FREQUENCY DRIVE WITH BYPASS; SOFT START=ELECTRONIC SOFT START; RVNR=REDUCED VOLTAGE NON-REVERSING; FVR=FULL VOLTAGE REVERSING; MCP=MOTOR CIRCUIT PROTECTOR; SIZE=NEMA STARTER SIZE
STE	LEVEL SENSOR TERMINATION ENCLOSURE
TS	TEMPERATURE SWITCH
MP	MOISTURE PROBE
SOV	SOLENOID VALVE
LS	LIMIT SWITCH
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
PS	PRESSURE SWITCH
LC	LIGHTING CONTACTOR

ELECTRICAL DRAWING INDEX

ABBREVIATIONS

A	AMPERES OR TRIP AMPERES
AC	ALTERNATING CURRENT
ACT	ABOVE COUNTER TOP
A/C	AIR CONDITIONING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	SYMMETRICAL AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAGE
BD	BOARD
BLDG	BUILDING
C	CONDUIT
CAB	CABINET
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CURRENT LIMITING
CONN	CONNECT OR CONNECTION
CONT'D	CONTINUED
CONTR	CONTRACTOR
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DBL	DOUBLE
DIM	DIMENSION
DISC SW	DISCONNECT SWITCH
DC	DIRECT CURRENT
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRICAL
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONDUIT
FIX	FIXTURE
GC	GENERAL CONTRACTOR
GALV	GALVANIZED
GEN	GENERATOR

ABBREVIATIONS (CONT'D)

GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HT	HEIGHT
HTR	HEATER
HZ	HERTZ
JB	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILLS
kVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOURS
LA	LIGHTNING ARRESTOR
L-L	LINE TO LINE
L-N	LINE TO NEUTRAL
LTG	LIGHT OR LIGHTING
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MTD	MOUNTED
MTG	MOUNTING
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT	NEUTRAL
NIC	NOT IN THIS CONTRACT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OH	OVERHEAD
OL	OVERLOAD
ø	PHASE
P	POLE
PC	PHOTOELECTRIC

ABBREVIATIONS (CONT'D)

PEN	PENDANT
PNL	PANELBOARD
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
R	RELOCATED
RECP	RECEPTACLE
REQ'D	REQUIRED
REQ'MTS	REQUIREMENTS
RM	ROOM
SCH	SCHEDULE
SE	SERVICE ENTRANCE
SM	SURFACE MOUNT
SN	SOLID NEUTRAL
SOV	SOLENOID OPERATED VALVE
SPACE	SPACES(S) ONLY (NO BREAKER OR DEVICE)
SPARE	SPARE BREAKER OR DEVICE
SPD	SURGE PROTECTIVE DEVICE
SPECS	CONTRACT SPECIFICATIONS
SS	STAINLESS STEEL HARDWARE
SWBD	SWITCHBOARD
SW	SWITCH
SWGR	SWITCH GEAR
TB	TELEPHONE BACKBOARD
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UT	UNDERGROUND TELEPHONE
VA	VOLT AMPERES
W	WATTS
W/	WITH
WH	WATER HEATER
WP	WEATHER PROOF
XFMR	TRANSFORMER
XMTR	TRANSMITTER
1/C	SINGLE CONDUCTOR CABLE
3/C	THREE CONDUCTOR CABLE

GENERAL NOTES: (APPLICABLE TO ALL ELECTRICAL SHEETS)

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ALL CITY, COUNTY, AND STATE REGULATIONS, NFPA, ANSI, UL, IEEE, AND THE LOCAL CODE AUTHORITY HAVING JURISDICTION. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND INSPECTIONS.
2. ALL ELECTRICIANS SHALL BE LICENSED BY THE APPROPRIATE CITY, STATE, OR LOCAL CODE AUTHORITY HAVING JURISDICTION.
3. THE ELECTRICAL CONTRACTOR SHALL FOLLOW ALL OSHA AND OWNER SAFETY RULES AS REQUIRED TO WORK ON THIS SITE.
4. ALL INSTALLATIONS SHALL BE DONE IN A NEAT AND WORKMAN LIKE MANNER.
5. ALL POWER OUTAGES SHALL BE PERFORMED DURING NON-BUSINESS HOURS. COORDINATE ALL POWER OUTAGES WITH THE OWNER. NOTIFY THE OWNER IN WRITING 10 DAYS PRIOR TO SCHEDULING ANY POWER OUTAGES.
6. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL TEMPORARY ELECTRICAL POWER AND LIGHTING REQUIRED FOR THIS PROJECT.
7. THE DEMOLITION DRAWINGS (IF APPLICABLE) ARE DIAGRAMMATIC IN NATURE. THE ELECTRICAL CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH THE PROJECT SCOPE OF WORK PRIOR TO SUBMITTING THEIR BID.
8. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT AND SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
9. ALL WORK SHOWN ON DRAWINGS IS NEW UNLESS OTHERWISE NOTED.
10. ALL GROUNDING SHALL BE PER NEC AND LOCAL CODES.
11. ALL ELECTRICAL CONSTRUCTION ON THE PROJECT SHALL CONFORM TO THE NEC AND ALL OTHER AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED AND PAY ALL FEES.
12. ALL WIRING SHALL BE FREE OF SHORTS AND GROUNDS. NO CIRCUIT WIRING SHALL BE LOADED BEYOND THE PERMITTED AMPACITIES ALLOWED BY THE NEC. ALL WIRE SIZES ARE FOR COPPER.
13. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BID.
14. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND MATERIALS NECESSARY TO MAKE A COMPLETE AND WORKABLE JOB INCLUDING FINAL HOOK-UP OF ALL EQUIPMENT.
15. FIRE STOP SHALL BE PROVIDED AT ALL LOCATIONS WHERE ELECTRICAL EQUIPMENT OR SYSTEMS PENETRATE FIRE RATED WALLS. SEE ARCHITECTURAL PLANS FOR RATED WALL LOCATIONS. CONTROL WIRING TO MECHANICAL EQUIPMENT IS NOT SHOWN ON THESE SHEETS.
16. RISER AND ONE-LINE DIAGRAMS ARE MEANT TO SHOW ONLY VERTICAL AND ELECTRICAL RELATIONSHIPS AND THEREFORE MAY NOT INCLUDE ALL REQUIRED EQUIPMENT, DEVICES AND ACCESSORIES.
17. EQUIPMENT INTERRUPTING CAPACITIES SPECIFIED IN THE CONTRACT DOCUMENTS ARE BASED UPON EQUIPMENT CHARACTERISTICS AND IMPEDANCES SHOWN ON THE DRAWINGS. IF ACTUAL INSTALLED EQUIPMENT DEVIATES FROM THESE CHARACTERISTICS OR HAS LOWER IMPEDANCES THE CONTRACTOR SHALL INCREASE THE INTERRUPTING CAPACITIES OF ALL ITEMS ON THE LOAD SIDE OF THE DEVIANT EQUIPMENT IN DIRECT PROPORTION TO THE CHANGED CHARACTERISTICS. INTERRUPTING CAPACITIES SHALL NOT BE REDUCED TO VALUES LESS THAN THOSE REQUIRED BY THE CONTRACT DOCUMENTS.
18. EQUIPMENT SIZES ARE AS DESIGNED. CIRCUIT BREAKERS, CONDUIT, MOTOR STARTERS, DISCONNECT SWITCHES, PLUG-IN'S, ETC., SHALL BE ADJUSTED TO THE EQUIPMENT SUBMITTED AND APPROVED FOR INSTALLATION ON THIS PROJECT.
19. REFER TO ARCHITECTURAL OR CIVIL DRAWINGS FOR SITE INFORMATION.
20. LIGHT FIXTURE MOUNTING HEIGHTS ARE MEASURED BETWEEN THE FLOOR AND THE BOTTOM OF THE FIXTURE.

STRUCTURAL DRAWING INDEX

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AVENUE G PUMP STATION IMPROVEMENTS
605 S. 31ST STREET
TEMPLE, TEXAS 76504

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SKE PROJECT # 3740121

Filename:
Scale: AS NOTED
Drawn By: AH
Checked By: SK
Date: 07/12/2022
DWG Number:

Title: ELECTRICAL NOTES, SYMBOLS & ABBREVIATIONS

Sheet: E1.0

ELECTRICAL SPECIFICATIONS

PART 1 – GENERAL

1.01 WORK INCLUDED

A. ELECTRICAL SYSTEMS

1.02 RELATED WORK

A. THE WORK COVERED BY THIS SPECIFICATION CONSISTS OF FURNISHING ALL LABOR, SUPPLIES AND MATERIALS, SHOP DRAWINGS AND A LIST OF MAKE AND CATALOG NUMBERS OF ALL EQUIPMENT AND MATERIALS TO BE INSTALLED AND PERFORMING ALL OPERATIONS, INCLUDING INSTALLATION OF LIGHTING FIXTURES, ELECTRICAL EQUIPMENT, CUTTING AND PATCHING, COORDINATION WITH OTHER TRADES ON THE JOB, ETC., NECESSARY FOR THE INSTALLATION OF COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED. THESE SPECIFICATIONS SUPPLEMENT THE GENERAL CONDITIONS AND SPECIFICATIONS.

B. EXAMINATION OF SITE: THE CONTRACTOR SHALL THOROUGHLY EXAMINE SITE AND SATISFY HIMSELF AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE CONTRACTOR SHALL VERIFY AT THE SITE ALL MEASUREMENTS AFFECTING HIS WORK AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF THE SAME. NO EXTRA COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR EXPENSES DUE TO HIS NEGLECT TO EXAMINE OR FAILURE TO DISCOVER CONDITIONS WHICH AFFECT HIS WORK. NO EXTRA COMPENSATION WILL BE ALLOWED ON ACCOUNT OF DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THOSE INDICATED ON THE DRAWINGS.

C. THE AGREEMENT FORMS, GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS OF THE SPECIFICATIONS SHALL APPLY TO THE WORK SPECIFIED IN DIVISION 26.

1.03 DEFINITION

A. "WIRING": WIRE OR CABLE, INSTALLED IN RACEWAY WITH ALL REQUIRED BOXES, FITTINGS, CONNECTORS AND ACCESSORIES, COMPLETELY INSTALLED.

B. "FEEDER": WIRING TO ANY DEVICE OR EQUIPMENT IN WHICH NUMBER SIX AWG COPPER (#6 CU) OR LARGER CONDUCTORS ARE USED.

C. "POWER WIRING": WIRING TO ANY DEVICE OR EQUIPMENT SERVED BY A MULTI-POLE BREAKER.

1.04 QUALITY ASSURANCE

A. CODES: COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ANY OTHER AUTHORITIES HAVING JURISDICTION OVER THE WORK.

B. PERMITS AND INSPECTIONS: PROVIDE ALL PERMITS REQUIRED AND OBTAIN FINAL INSPECTION AND APPROVAL FROM THE INSPECTION DEPARTMENT HAVING JURISDICTION.

C. WHERE DIFFERENT SECTIONS OF ANY APPLICABLE CODES SPECIFY DIFFERENT MATERIALS, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE SHALL GOVERN.

D. STANDARDS FOR MATERIAL AND WORKMANSHIP: USE MATERIALS THAT ARE NEW AND LISTED AND LABELED BY UNDERWRITERS LABORATORIES (UL) AS CONFORMING TO ITS STANDARDS, WHERE SUCH A STANDARD HAS BEEN ESTABLISHED FOR THE PARTICULAR TYPE OF MATERIAL IN QUESTION. EXECUTE WORK IN A WORKMAN LIKE MANNER, TO PRESENT A NEAT AND MECHANICAL APPEARANCE WHEN COMPLETED.

1.05 SUBSTITUTION OF MATERIALS

A. NO SUBSTITUTION OF MATERIAL IS ALLOWED WITHOUT WRITTEN PRIOR AUTHORIZATION FROM THE ENGINEER AND OWNER. DETERMINATION OF WHAT IS CONSIDERED EQUAL IS AT THE SOLE DISCRETION OF THE ENGINEER AND OWNER.

B. INCLUDE SUFFICIENT DESCRIPTIVE INFORMATION, INCLUDING MANUFACTURER'S PUBLISHED DATA TO ESTABLISH CONTRACT COMPLIANCE. SUBMIT SAMPLES IF REQUESTED BY ARCHITECT/ENGINEER.

1.06 DRAWINGS AND SPECIFICATIONS

A. THE WIRING LAYOUTS ARE SCHEMATIC AND DO NOT NECESSARILY SHOW THE EXACT LOCATION OF RACEWAYS, OUTLETS, ETC. REFER TO THE ARCHITECTURAL DRAWINGS FOR ACTUAL DIMENSIONS. FIT WORK TO CONFORM TO THE DETAILS OF BUILDING CONSTRUCTION. COORDINATE ALL WORK TO ASSURE PROPER CLEARANCE.

1.07 AS-BUILT DRAWINGS

A. AS WORK PROGRESSES, RECORD ON ONE (1) SET OF ELECTRICAL PRINTS ALL CHANGES AND DEVIATIONS FROM THE CONTRACT DOCUMENTS IN SIZE, LOCATIONS AND TYPES OF ALL MATERIALS AND EQUIPMENT. RECORD FINAL LOCATION OF OUTLETS, SWITCHES, STARTERS, UNDERGROUND AND EXPOSED CONDUITS, ETC. TO INDICATE THE FINAL INSTALLATION. MAKE SUFFICIENT MEASUREMENTS TO LOCATE ALL EQUIPMENT AND CONDUITS. PROVIDE AS-BUILT DRAWINGS.

B. THE CONTRACTOR SHALL PREPARE A TYPED PANEL DIRECTORY FOR EACH PANEL UTILIZED FOR THIS PROJECT. THIS DIRECTORY SHALL IDENTIFY THE CIRCUIT NUMBER, DEVICES SERVED, AND LOCATION OF DEVICES BY ROOM NUMBER. HE SHALL FILE THEM WITH THE BUILDING MANAGER WHEN THE WORK IS COMPLETE.

1.08 MAINTENANCE DATA

A. FURNISH AND DELIVER TO THE ARCHITECT/ENGINEER TWO (2) COMPLETE COPIES OF ALL DATA PREPARED BY MANUFACTURERS, DETAILING OPERATION AND MAINTENANCE INSTRUCTION FOR ALL EQUIPMENT.

1.09 PENETRATIONS, CUTTING, AND PATCHING

A. PERFORM CUTTING AND PATCHING IN ACCORDANCE WITH THE GENERAL AND SUPPLEMENTARY CONDITIONS OF THE CONTRACT.

B. PROVIDE ALL SLEEVES REQUIRED FOR PROPER INSTALLATION OF WORK INCLUDED IN THIS SECTION.

C. MAKE ALL PENETRATIONS THROUGH WALLS AT 90 DEGREE ANGLES. SEAL ALL PENETRATIONS AT FIRE AND SMOKE PARTITIONS WITH FIRE SAFING MATERIAL. SEAL ALL PENETRATIONS AT SOUND WALLS WITH SOUNDPROOFING MATERIAL.

1.10 SUBMITTALS

A. SHOP DRAWINGS AND MATERIAL BROCHURES: FURNISH AN ELECTRONIC SET OF SHOP DRAWINGS AND PRODUCT DATA IN PDF FORMAT TO THE ARCHITECT/ENGINEER ON THE FOLLOWING MATERIALS:

1. LIGHTING FIXTURES
2. DISCONNECT SWITCHES
3. TRANSFORMERS
4. RACEWAYS
5. CONDUCTORS
6. MOTOR CONTROL CENTER
7. PANELBOARDS
8. CONTROL PANELS
9. INSTRUMENTATION
10. VARIABLE FREQUENCY DRIVES
11. AUTOMATIC TRANSFER SWITCH
12. SURGE PROTECTION DEVICES (SPD)

1.11 COOPERATION

A. THE CONTRACTOR SHALL SCHEDULE HIS WORK, AND IN EVERY WAY POSSIBLE, COOPERATE WITH ALL OTHER TRADES IN THE JOB TO AVOID DELAYS, INTERFERENCES AND UNNECESSARY WORK. HE SHALL COOPERATE WITH THEM IN PROVIDING FOR THE INSTALLATION OF THIS WORK AND COORDINATE WITH WORK OF OTHER TRADES TO ASSURE PROPER CLEARANCE OF PIPING, DUCTWORK, CONDUIT, ETC. WHEN SUCH IS REQUIRED.

1.12 WIRING WORKMANSHIP

A. RUN WIRING IN ALL BRANCH CIRCUIT PANELBOARDS AND TERMINAL CABINETS PARALLEL OR AT RIGHT ANGLES TO THE SIDES OR TOP OF THE EQUIPMENT HOUSING.

B. GROUP AND HARNESS CONDUCTORS TOGETHER USING LOCKING TYPE CABLE TIES. CABLE TIES: AS MANUFACTURED BY THE PANDUIT CORPORATION OR THOMAS AND BETTS.

1.13 STORAGE MATERIALS

A. KEEP THE BUILDING AND PREMISES CLEAN AND CLEAR OF SCRAP MATERIALS AT ALL TIMES. STORE MATERIALS AND EQUIPMENT IN DESIGNATED STORAGE AREAS.

1.14 ORDERING OF MATERIALS

A. ORDER MATERIALS AND EQUIPMENT SO AS NOT TO JEOPARDIZE PROGRESS OF CONSTRUCTION OR COMPLETION DATE.

1.15 SAFETY PRECAUTIONS AND PROGRAMS

A. IT SHALL BE THE DUTY AND RESPONSIBILITY OF THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS TO BE FAMILIAR AND COMPLY WITH ALL REQUIREMENTS OF PUBLIC LAW 91-96, 29 U.S.C. SECS. 651 ET. SEQ., THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (OSHA), AND ALL AMENDMENTS THERETO AND TO ENFORCE AND COMPLY WITH ALL OF THE PROVISIONS OF THIS ACT. IN ADDITION, ON PROJECTS IN WHICH TRENCH EXCAVATION WILL EXCEED A DEPTH OF FIVE FEET (5'), THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS SHALL COMPLY WITH ALL REQUIREMENTS OF 29 C.F.R., SECS. 1926.652 AND 1926.653, OSHA SAFETY AND HEALTH STANDARDS.

1.16 WARRANTY

A. GUARANTEE ALL WORK UNDER THIS SECTION FOR WORKMANSHIP, LABOR AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.

1.17 ELECTRICAL STUDIES

A. FOR BOTH SITES, THE CONTRACTOR SHALL SUBMIT A POWER SYSTEM STUDY CONTAINING THE FOLLOWING: SHORT CIRCUIT ANALYSIS, PROTECTIVE COORDINATION ANALYSIS, HARMONIC ANALYSIS, AND ARC FLASH ANALYSIS OF ALL BUSES AND PROTECTIVE DEVICES. CONTRACTOR TO SUBMIT FOR REVIEW PRIOR TO EQUIPMENT SUBMITTALS, IN ORDER TO VERIFY RATINGS OF ALL EQUIPMENT.

ELECTRICAL STUDIES SHALL BE PERFORMED BY APPROVED THIRD PARTY, SUCH AS AMPSAFE, 2722 W. BITTERS RD, SUITE 125, SAN ANTONIO, TX, 78248.
AMPSAFE CONTACT PERSON: CHRISTOPHER HERZING, PHONE: 210-465-7180, EXT 2, EMAIL: CHRISTOPHER.HERZING@AMPSAFE.COM.

PART 2 – PRODUCTS AND EXECUTION

2.01 CONDUIT

A. EXCEPT AS OTHERWISE NOTED, SPECIFIED OR REQUIRED, INSTALL ALL WIRES USED IN THIS PROJECT IN CONDUIT AS HEREINAFTER SPECIFIED:

BELOW GRADE: SCHEDULE 40 PVC
ABOVE GRADE (OUTSIDE): ALUMINUM RIGID
ABOVE GRADE (INSIDE): ALUMINUM RIGID
ELBOWS: PVC COATED RIGID STEEL

B. INSTALL CONDUITS CONTINUOUS FROM OUTLET TO OUTLET, FROM OUTLET TO CABINET, JUNCTION BOX AND PULL BOX. SECURE CONDUITS TO ALL BOXES, ETC., IN SUCH A MANNER THAT EACH SYSTEM WILL BE ELECTRICALLY CONTINUOUS FROM SERVICE TO ALL OUTLETS. TERMINATE ALL CONDUIT RUNS FROM CABINETS AND JUNCTION BOXES IN APPROVED OUTLET BOXES. INSTALL CONDUITS AS HIGH AS POSSIBLE UP AGAINST STRUCTURE ABOVE. AVOID ROUTING CONFLICTS WITH HVAC EQUIPMENT/DUCTWORK, SANITARY WASTE, VENT PIPING, AND DOMESTIC WATER PIPING.

C. INSTALL A NYLON PULL WIRE (200 LB. TEST) AND TIE ENDS IN ALL CONDUIT LINES LEFT EMPTY FOR FUTURE USE.

D. TRAPPED OR INACCESSIBLE JUNCTION BOXES, OUTLETS, ETC. ARE NOT ALLOWED.

E. GENERALLY, CONCEAL ALL CONDUITS UNLESS OTHERWISE DIRECTED OR INDICATED ON THE DRAWINGS.

F. NO BENDS PERMITTED WITH A RADIUS LESS THAN SIX (6) TIMES THE DIAMETER OF THE CONDUIT OR MORE THAN 900.

G. PROVIDE JUNCTION BOXES OR PULL BOXES TO AVOID EXCESSIVE RUNS OR TOO MANY BENDS BETWEEN OUTLETS.

H. INCREASE CONDUIT SIZES SHOWN ON THE PLANS AS REQUIRED FACILITATING PULLING OF CONDUCTORS.

I. RUN ALL CONDUITS PARALLEL TO OR AT RIGHT ANGLES TO THE BUILDING WALLS AND SUPPORT FROM WALLS OR CEILINGS AT INTERVALS REQUIRED BY CODE WITH APPROVED CLAMPS OR HANGERS.

J. INSTALL APPROVED APPLETON, CROUSE HINDS, OR O.Z. MANUFACTURING CO. EXPANSION FITTINGS IN ALL EMT RUNS WHICH PASS THROUGH EXPANSION JOINTS IN THE BUILDING. OTHER METHODS TO PROVIDE FOR THIS EXPANSION MUST BE APPROVED BY THE ARCHITECT/ENGINEER.

2.02 WIRING

A. INSTALL WIRING AS FOLLOWS:

11. FEEDERS AND POWER WIRING: CONDUCTORS IN RIGID ALUMINUM RIGID CONDUIT WHEN INSTALLED IN DRY LOCATION ABOVE GRADE. SCHEDULE 40 PVC WHEN INSTALLED BELOW GRADE. USE PVC COATED RIGID ELBOWS.

12. BRANCH CIRCUITS: INSTALL CONDUCTORS IN ALUMINUM RIGID CONDUIT.

13. INSTALL ALL WIRING IN CONDUIT. USE ONLY UL LISTED LUBRICANTS IN PULLING THE CONDUCTORS.

14. INSTALL CONDUCTORS CONTINUOUS FROM OUTLET TO OUTLET AND FROM OUTLET TO JUNCTION BOX OR PULL BOX. INSTALL SPLICES AND JOINTS CAREFULLY AND SECURELY TO BE MECHANICALLY AND ELECTRICALLY SOLID WITH PRESSURE TYPE CONNECTORS. USE 3M "SCOTCHLOCK" OR IDEAL "WING NUT" OR EQUAL TWIST-ON CONNECTORS FOR #10 AND SMALLER CONDUCTORS.

15. CONNECT CONDUCTORS FOR LIGHTING AND RECEPTACLE CIRCUITS TO THE PANEL AS DETAILED WITH COLOR CODED JACKET. COLOR CODE ALL WIRES WITH THE TYPE, SIZE, MAKE AND VOLTAGE MARKED ON IT. COLOR CODE WIRING WITH THE SAME COLOR BEING USED WITH ITS RESPECTIVE PHASE AS FOLLOWS, UNLESS OTHERWISE REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

	120/240 VOLT DELTA	120/208 VOLT WYE	480/277 VOLT WYE
PHASE A	RED	RED	BROWN
PHASE B	ORANGE	BLACK	YELLOW
PHASE C	BLACK	BLUE	PURPLE
NEUTRAL	WHITE	WHITE	GRAY
GROUND	GREEN	GREEN	GREEN

16. BRANCH CIRCUIT CONDUCTORS SHALL NOT BE SMALLER THAN NO. 12 AWG. INCREASE THE WIRE SIZES UP ONE (1) SIZE WHEREVER THE RUN DISTANCE EXCEEDS 200 FEET.

17. ALL WIRING AND CABLE INCLUDING FIBER OPTIC, ELECTRICAL, DATA, TELECOMMUNICATIONS, TEMPERATURE CONTROLS, SECURITY, FIRE PROTECTION, ETC. SHALL BE RUN IN CONDUIT.

18. ELECTRICAL CONTRACTOR MAY GROUP WIRES WITH SAME VOLTAGE FOR FIELD DEVICES IN CONDUIT AS HE DEEMS BEST APPROPRIATE.

19. ANALOG AND LOW VOLTAGE SIGNALS SHALL NOT RUN IN SAME CONDUIT AS 120VAC AND 480VAC CIRCUITS.

2.03 CONDUCTORS

A. COPPER OF 98% CONDUCTIVITY.

B. NO. 10 AND SMALLER: SOLID TYPE XHHW-2, EXCEPT AS OTHERWISE NOTED.

C. NO. 8 AND LARGER: STRANDED, TYPE XHHW-2, EXCEPT AS OTHERWISE NOTED.

D. MINIMUM SIZE CONDUCTORS USED SHALL BE NO. 12 AWG FOR ALL APPLICATIONS EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE (A.C. CONTROLS, ETC.).

E. USE WIRE AND CABLE FROM ONE (1) MANUFACTURER. DELIVER IN THE ORIGINAL WRAPPING BEARING THE UNDERWRITERS LABORATORIES (UL) LABEL.

2.04 OUTLETS

A. USE GALVANIZED STEEL OR CAST TYPE BOXES AT ALL OUTLETS FOR LIGHTING FIXTURES, WALL SWITCHES, WALL RECEPTACLES, ETC.

B. SECURELY ATTACH OUTLET BOXES FOR FIXTURES AND DEVICES TO THE BUILDING CONSTRUCTION WITH EXPANSION BOLTS.

C. FLUSH MOUNT ALL OUTLET BOXES, REGARDLESS OF WALL OR CEILING CONSTRUCTION, UNLESS THEY ARE SPECIFICALLY SHOWN AS BEING USED WITH EXPOSED CONDUIT. IF SURFACE MOUNTED, USE CAST TYPE AS SPECIFIED ABOVE. UTILITY BOXES ARE NOT ALLOWED.

2.05 INSTALLATION

A. INSTALL RACEWAYS EXPOSED. SUPPORT EXPOSED RACEWAYS AT INTERVALS NOT EXCEEDING TEN FEET (10') WITH MACHINE SCREWS FOR METAL CONSTRUCTION AND EXPANSION BOLTS FOR CONCRETE CONSTRUCTION.

B. INSTALL THE EDGES OF ALL OUTLET BOXES FLUSH WITH THE SURFACE IN WHICH THEY ARE RECESSED. SCREW ATTACH INTERNAL DEVICES BEFORE ATTACHING COVERPLATE. DO NOT USE COVERPLATES AS A MEANS OF TIGHTENING THE DEVICES IN PLACE.

2.06 DISCONNECT AND FEEDER SWITCHES

A. FEEDER SWITCHES AND DISCONNECT SWITCHES: HEAVY DUTY, EXCEPT AS OTHERWISE NOTED. IN DAMP LOCATIONS OR EXPOSED TO THE WEATHER, USE NEMA 3R, RAINTIGHT.

B. DISCONNECT SWITCHES: FACTORY INSTALLED PROVISION FOR PADLOCKING IN EITHER THE "ON" OR "OFF" POSITION.

2.07 FUSES

A. FUSES: BUSSMANN OR APPROVED EQUAL.

2.08 LABELING

A. LABEL ALL PANELS, CONTROL POINTS, SWITCHES, AND MOTORS, AS DIRECTED. IDENTIFY PANELS BY PANEL NUMBER. LABEL SWITCHES, INDICATING THE EQUIPMENT WHICH THEY CONTROL. ALL LABELS SHALL BE ENGRAVED. PANEL DIRECTORIES TO BE TYPED. COORDINATE ALL EQUIPMENT NUMBERING WITH MECHANICAL CONTRACTOR.

B. INSTALL ARC FLASH HAZARD LABELS ON ALL NEW SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES AND MOTOR CONTROL CENTERS PER NEC 110.16. PANDUIT #PPS0305W2100 OR EQUAL.

2.09 GROUNDING

A. PROVIDE GROUNDING FOR ELECTRICAL SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC)

2.10 COVERPLATES

A. WHERE WIRING DEVICES ARE FLUSH MOUNTED, INSTALL STAINLESS STEEL COVERPLATES.

B. WHERE WIRING DEVICES ARE SURFACE MOUNTED, INSTALL FORMED STEEL COVERPLATES WITH CADMIUM PLATING.

C. WHERE WEATHERPROOF COVERPLATES ARE REQUIRED, MEET UL "WET LOCATION COVER CLOSED" REQUIREMENTS. USE COVERPLATES THAT ARE HINGED AND GASKETED WITH SPRING LOADED CLOSER.

D. INSTALL FINISHED COVERPLATES ON ALL JUNCTION BOXES, OUTLET BOXES, SECTIONAL SWITCH BOXES, UTILITY BOXES, ETC.

E. WHERE MORE THAN ONE (1) DEVICE IS INDICATED AT A LOCATION, MOUNT DEVICES IN COMBINED SECTION GANG BOXES, COVERED BY A COMMON PLATE.

2.11 RECEPTACLES

A. DUPLEX RECEPTACLES: 20 AMPERE, 125 VOLT, SELF OR AUTOMATIC GROUNDING, GFCI.

B. SPECIAL MOUNTING HEIGHTS ARE NOTED ON THE ARCHITECTURAL DRAWINGS. UNLESS OTHERWISE INDICATED ON THE ELECTRICAL DRAWINGS, MOUNT DEVICES AT THE FOLLOWING HEIGHTS ABOVE FINISHED FLOOR:

1. DUPLEX RECEPTACLE	18"
2. WALL SWITCHES	48"
3. VOICE & VOICE/DATA OUTLETS	18"
4. WALL TELEPHONE OUTLETS	48"

2.12 SWITCHES

A. PROVIDE HEAVY-DUTY, AC, QUIET SWITCHES. THE SWITCHES SHALL BE HUBBELL 1221 OR EQUAL. 120-277 VOLT, 20 AMPERES, SPECIFICATION GRADE. SWITCHES SHALL BE SINGLE POLE, DOUBLE POLE, THREE WAY, FOUR WAY, OR KEY OPERATED AS SCHEDULED ON THE DRAWINGS AND SHALL BE THE SELF GROUNDING TYPE. COLOR SHALL BE IVORY.

2.13 LIGHTING FIXTURES

A. PROVIDE ALL LIGHTING FIXTURES, AS SCHEDULED ON DRAWINGS, COMPLETE WITH LAMPS AND HARDWARE. INSTALL COMPLETELY WIRED, CONNECTED AND IN OPERATING ORDER.

B. CONFIRM ALL CEILING CONDITIONS, CLEARANCES AND OPERATING VOLTAGES BEFORE ORDERING LIGHTING FIXTURES.

C. SUBMIT SHOP DRAWINGS.

2.13.1 LAMPS

A. INSTALL SCHEDULED LAMPS MANUFACTURED BY GENERAL ELECTRIC, PHILLIPS, OR APPROVED EQUAL.

2.13.2 FIXTURES

A. PROVIDE LIGHTING FIXTURES WHICH HAVE BEEN TESTED AND CERTIFIED FOR PROPER OPERATION BY THE FIXTURE'S MANUFACTURER.

B. PROVIDE LIGHTING FIXTURES WITH TRIM COMPATIBLE WITH CEILING OR SURFACE ON OR IN WHICH INSTALLED.

C. EACH LUMINAIRE SHALL HAVE TWO SUPPORT WIRES INSTALLED, ONE ON EACH END, AT DIAGONAL CORNERS. LUMINAIRES IN FIRE RATED CEILINGS SHALL BE SUPPORTED ON ALL FOUR CORNERS.

D. SUPPORT AND SECURELY ATTACH WITH GALVANIZED FASTENERS IN A LEVEL POSITION.

E. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

F. FIRE RATED ASSEMBLIES, COMPLY WITH DETAILS OF LISTED ASSEMBLY.

2.14 TEMPORARY POWER

A. PROVIDE TEMPORARY POWER (SMALL TOOL) AND LIGHTING PER OSHA REQUIREMENTS.

CITY OF TEMPLE

AVENUE G PUMP STATION IMPROVEMENTS

605 S. 31ST STREET TEMPLE, TEXAS 76504

3740121

STATE OF TEXAS
STEVE L. KANETZKY
84696
LICENSED PROFESSIONAL ENGINEER
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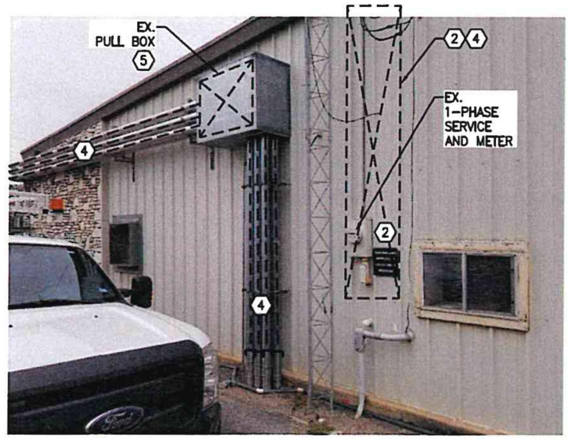
SKE PROJECT # 3740121

Filename:
Scale: AS NOTED
Drawn By: AH
Checked By: SK
Date: 07/12/2022

DWG Number:

Title: ELECTRICAL SPECIFICATIONS

Sheet: E1.1



2 **BUILDING MOUNTED RACEWAY** 2 4 5
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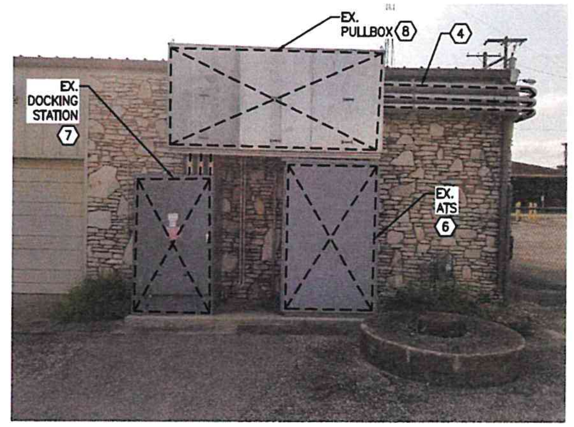

3 **DOCKING STATION AND ATS** 4 6 7 8
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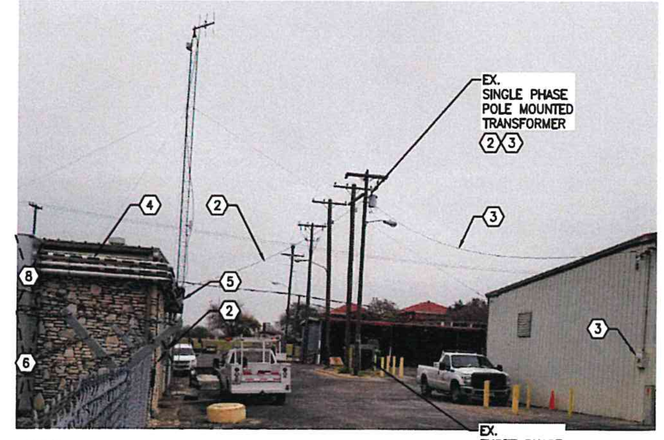
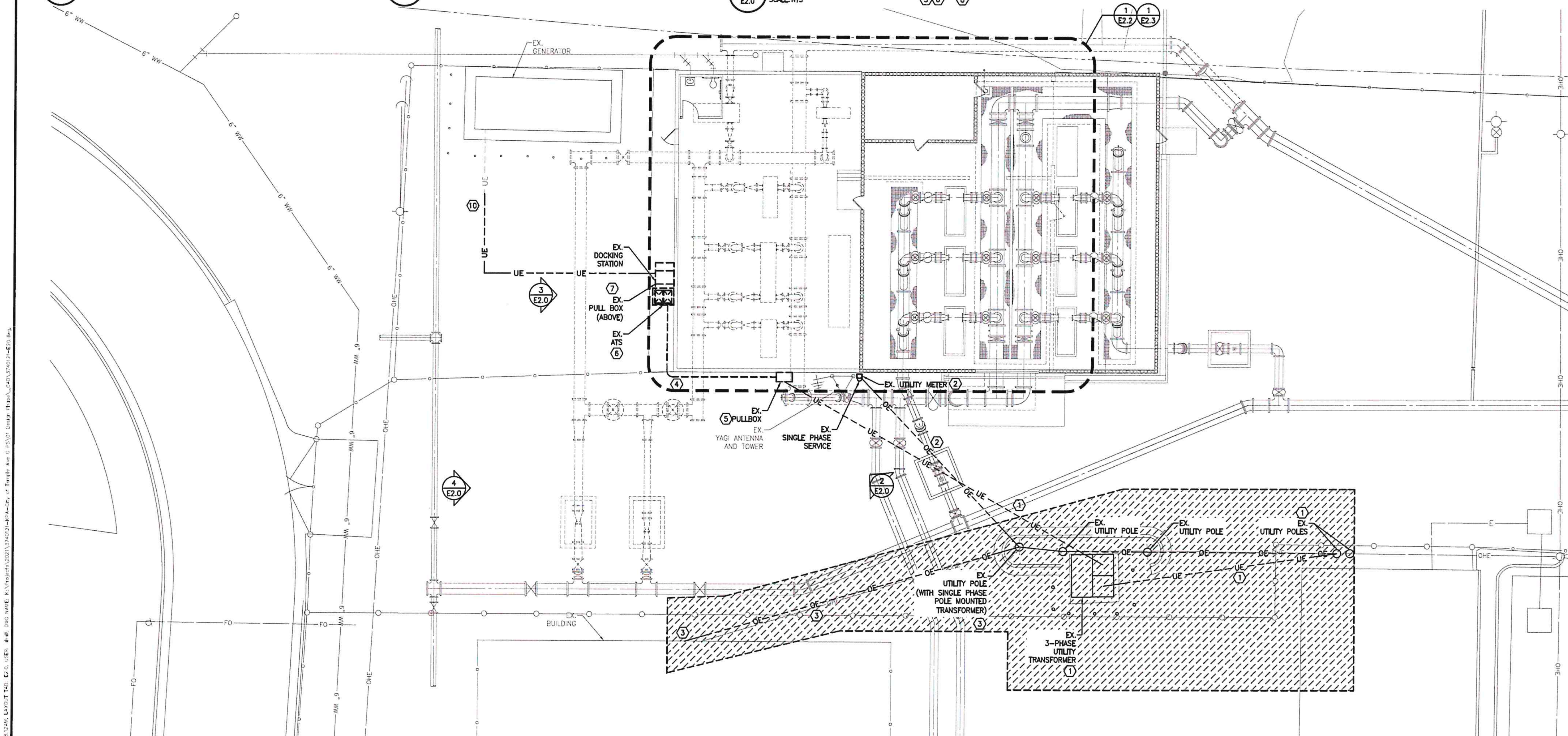


4 **EX. ELECTRICAL SERVICES** 1 2 3 4 5 6 8
E2.0 SCALE: NTS

REFERENCE NOTES

1. EXISTING 3-PHASE UTILITY TRANSFORMER SERVING PUMP STATION IS FED UNDERGROUND FROM EXISTING UTILITY POLE. CONTRACTOR TO COORDINATE SHUTDOWN AND REMOVAL OF EXISTING SERVICE WITH ONCOR. CONTACT JOHN WILLMAN, John.Willman@oncor.com.
2. EXISTING 1-PHASE SERVICE TO PUMP STATION IS FED OVERHEAD FROM EXISTING SINGLE PHASE POLE MOUNTED TRANSFORMER. CONTRACTOR TO COORDINATE SHUTDOWN AND REMOVAL OF EXISTING SERVICE WITH ONCOR. CONTACT JOHN WILLMAN, John.Willman@oncor.com.
3. EXISTING BUILDING IS PROVIDED WITH SINGLE PHASE POWER FROM EXISTING SINGLE PHASE POLE MOUNTED TRANSFORMER. WORK ASSOCIATED WITH THIS BUILDING IS OUTSIDE CONTRACTOR'S SCOPE OF WORK IN THIS CONTRACT.
4. DEMOLISH AND REMOVE EXISTING RACEWAY AND CONDUCTORS. CUT EXISTING RACEWAYS 6" AFG AND CAP.
5. DEMOLISH AND REMOVE EXISTING WALL MOUNTED PULLBOX.
6. DEMOLISH AND REMOVE EXISTING AUTOMATIC TRANSFER SWITCH.
7. DEMOLISH AND REMOVE EXISTING DOCKING STATION.
8. DEMOLISH AND REMOVE EXISTING PULLBOX.
9. DETAILED CONSTRUCTION INSTRUCTIONS FOR BUILDING INTERIOR DEMOLITION ARE SHOWN ON SHEET E2.2.
10. EXISTING (6) SETS: (4) 400KCMIL IN 4" CONDUIT. DEMOLISH AND REMOVE ALL EXISTING CONDUCTORS WITHIN UNDERGROUND RACEWAYS. EXISTING RACEWAY TO REMAIN. CUT EXISTING RACEWAYS 6" AFG AND CAP.



1 **ELECTRICAL SITE PLAN EXISTING & DEMOLITION** 9
E2.0 SCALE: 1" = 10'

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ELECTRICAL SITE PLAN EXISTING & DEMOLITION

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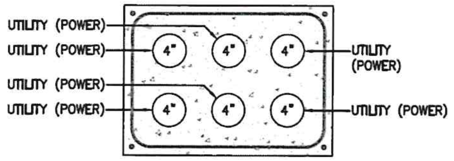
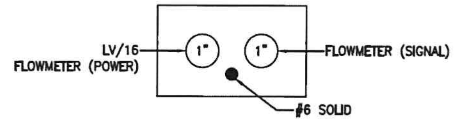
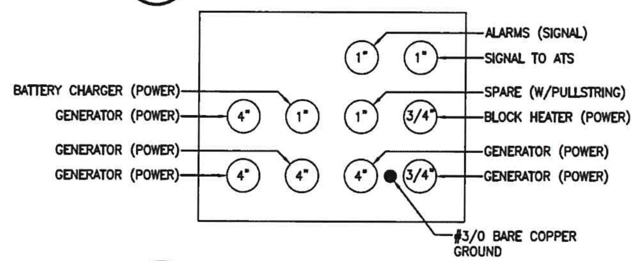
E2.0



5 DETAIL - TRENCH SECTION B-B (5)
E2.1 SCALE: NTS



7 DETAIL - DUCT BANK SECTION D-D (4)
E2.1 SCALE: NTS



6 DETAIL - DUCT BANK SECTION C-C (4)
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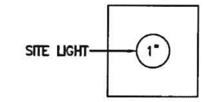

9 DETAIL - DUCT BANK SECTION F-F (4)
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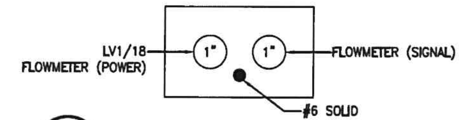
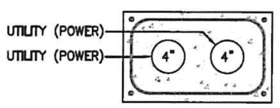


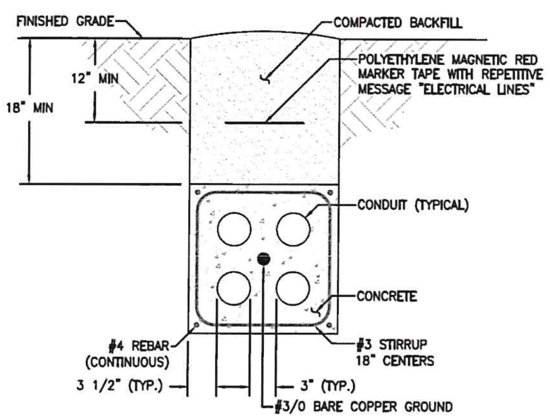
8 DETAIL - DUCT BANK SECTION E-E (4)
E2.1 SCALE: NTS

REFERENCE NOTES

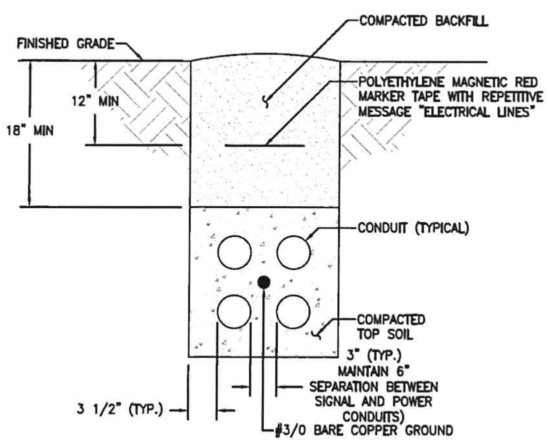
1. INSTALL NEW 2000A, 277/480V, 3-PHASE 4-WIRE, ELECTRICAL SERVICE. CONTRACTOR TO COORDINATE WITH ONCOR. CONTACT CASEY SIMPSON, 469-261-2370. PROVIDE PULLSTRING IN EACH PRIMARY CONDUIT. VERIFY EXACT LOCATION OF TRANSFORMER PAD PRIOR TO INSTALLATION.
2. PROVIDE AND INSTALL NEW BOLLARDS, PER DETAIL 6/E5.0.
3. ALL ELECTRICAL EQUIPMENT IS SPECIFIED ON SHEETS E3.1.
4. REFER TO DETAIL 2/E2.1 FOR ADDITIONAL INFORMATION REGARDING TRENCH SECTION CONSTRUCTION.
5. REFER TO DETAIL 3/E2.1 FOR ADDITIONAL INFORMATION REGARDING DUCT BANK CONSTRUCTION.
6. PROVIDE AND INSTALL 6-4" CONDUIT ABOVE CEILING ON UNISTRUT RACKING PER DETAIL. SEAL ALL EXTERIOR WALL PENETRATIONS.
7. PROVIDE AND INSTALL NEW SITE LIGHT PER SCHEDULE ONE SHEET E2.3 AND DETAIL 4/E5.1.
8. 4'x4'x4' TRAFFIC RATED PULLBOX, QUAZITE OR EQUAL COVER.
9. NEW SERVICE DROP TO EXISTING BUILDING BY ONCOR.



4 DETAIL - DUCT BANK SECTION A-A (5)
E2.1 SCALE: NTS



3 DETAIL - DUCTBANK SECTION CONSTRUCTION
E2.1 SCALE: NTS



2 DETAIL - TRENCH SECTION CONSTRUCTION
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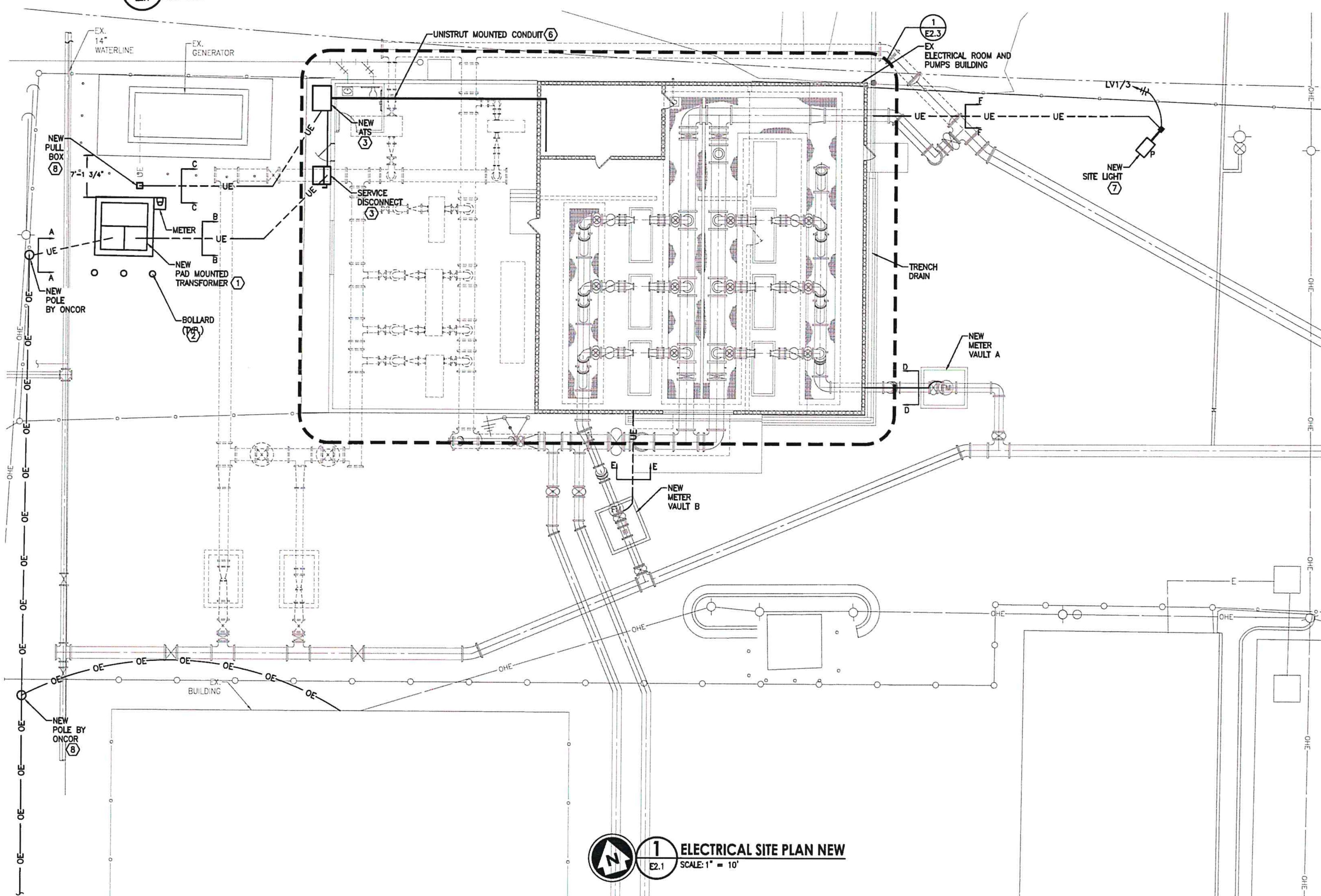

1 ELECTRICAL SITE PLAN NEW
E2.1 SCALE: 1" = 10'

CITY OF TEMPLE

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374 0121 — STATE OF TEXAS — STEVE L. KANETZKY — 84696 — LICENSED PROFESSIONAL ENGINEER — 7/12/22

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TBPE Firm No. F-2356
SKE PROJECT # 3740121

Filename:	
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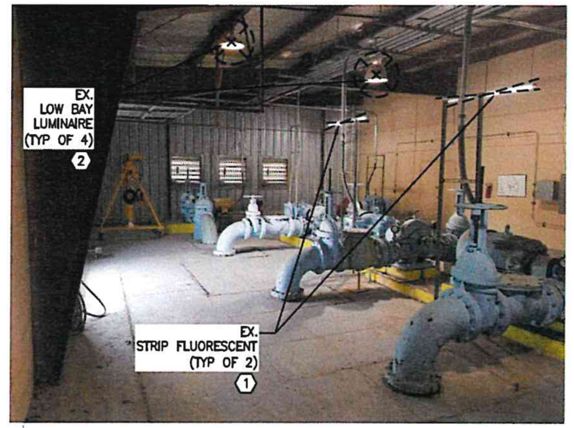
Drawn By:	AH
Checked By:	SK
Date:	07/12/2022
DWG Number:	

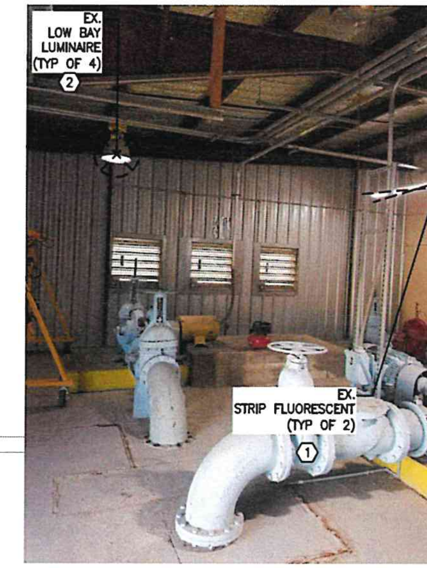
Title:
ELECTRICAL SITE PLAN NEW

Sheet:
E2.1

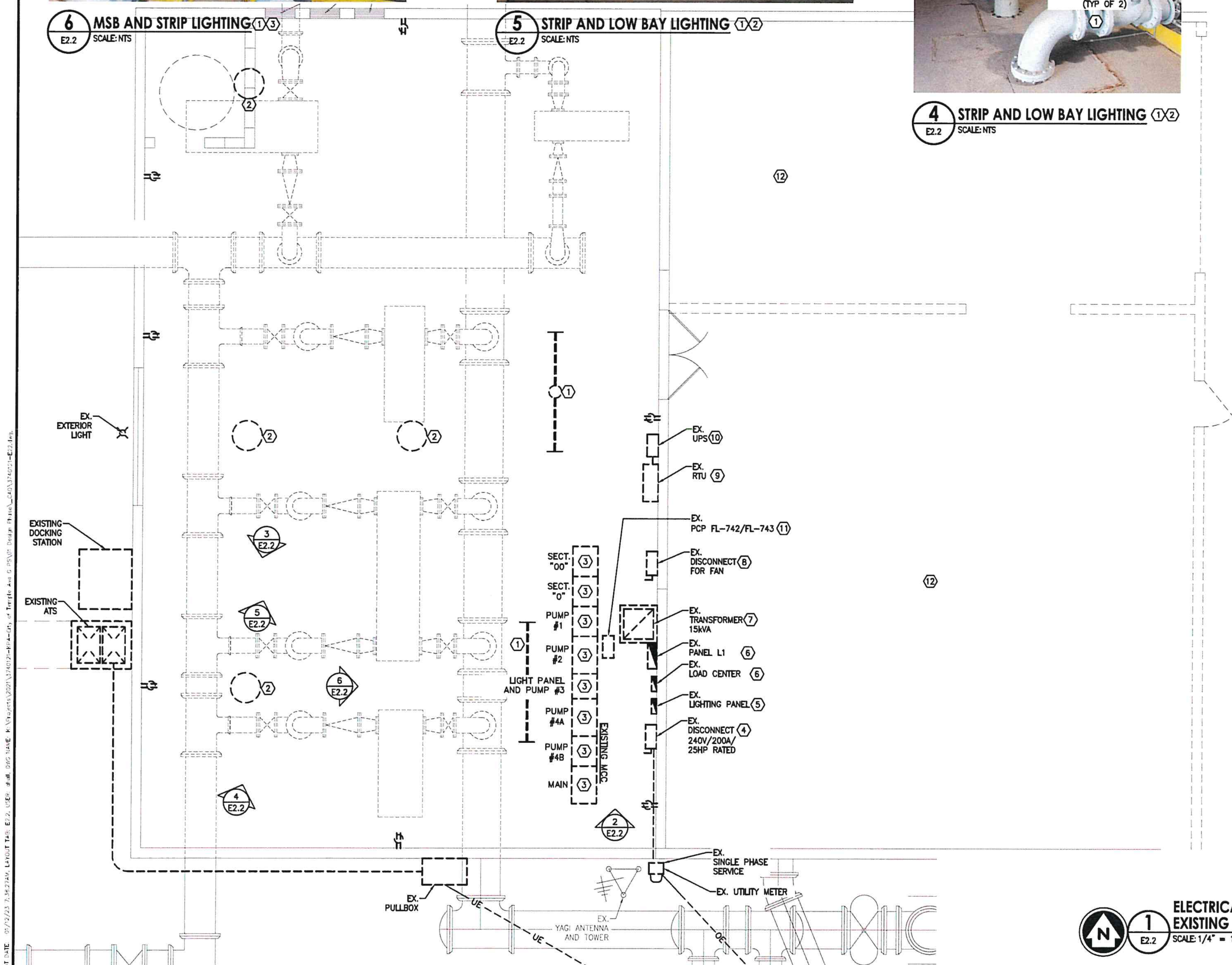
6 E2.2 MSB AND STRIP LIGHTING 1 3
SCALE: NTS



5 E2.2 STRIP AND LOW BAY LIGHTING 1 2
SCALE: NTS



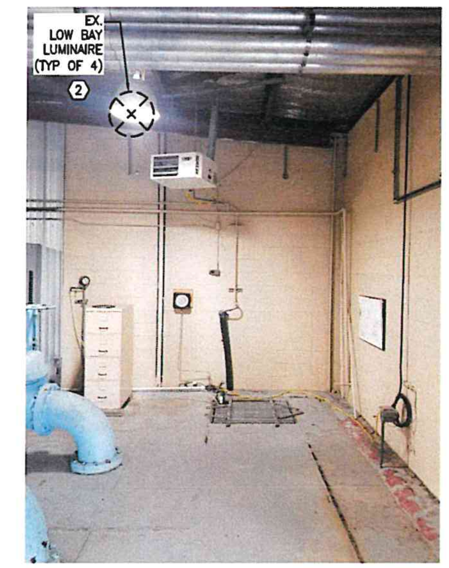
4 E2.2 STRIP AND LOW BAY LIGHTING 1 2
SCALE: NTS



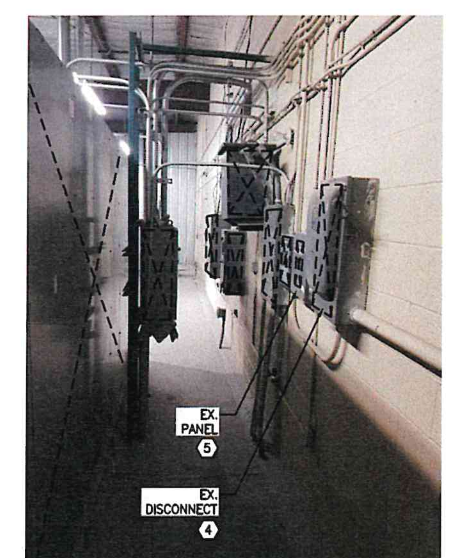
N 1 E2.2 ELECTRICAL FLOOR PLAN EXISTING & DEMOLITION
SCALE: 1/4" = 1'-0"

REFERENCE NOTES

1. DEMOLISH AND REMOVE 2 STRIP FLUORESCENT LIGHT FIXTURES, ASSOCIATED CONDUIT, CONDUCTORS AND HARDWARE.
2. DEMOLISH AND REMOVE 4 HIGH BAY LIGHT FIXTURES, ASSOCIATED CONDUIT, CONDUCTORS AND HARDWARE.
3. DEMOLISH AND REMOVE EXISTING MCC.
4. DEMOLISH AND REMOVE EXISTING 200A, 25HP DISCONNECT.
5. DEMOLISH AND REMOVE EXISTING LIGHTING PANEL. FEDERAL PACIFIC ELECTRIC.
6. DEMOLISH AND REMOVE EXISTING PANEL L1 AND LOAD CENTER, SQUARE-D.
7. DEMOLISH AND REMOVE EXISTING 15kVA TRANSFORMER.
8. DEMOLISH AND REMOVE EXISTING DISCONNECT.
9. DEMOLISH AND REMOVE EXISTING RTU.
10. DEMOLISH AND REMOVE EXISTING UPS.
11. DEMOLISH AND REMOVE EXISTING PUMP CONTROL PANEL FOR FL-742 AND FL-743.
12. DEMOLISH AND REMOVE ALL ELECTRICAL EQUIPMENT IN WEST SIDE OF BPS.
13. REFER TO P-16 FOR SEQUENCE OF OPERATIONS.



3 E2.2 LOW BAY LUMINAIRE 2
SCALE: NTS



2 E2.2 DISCONNECT AND PANELS 4 5
SCALE: NTS

CITY OF TEMPLE
AVENUE G PUMP STATION IMPROVEMENTS
605 S. 31ST STREET TEMPLE, TEXAS 76504

STATE OF TEXAS
STEVE L. KANETZKY
84696
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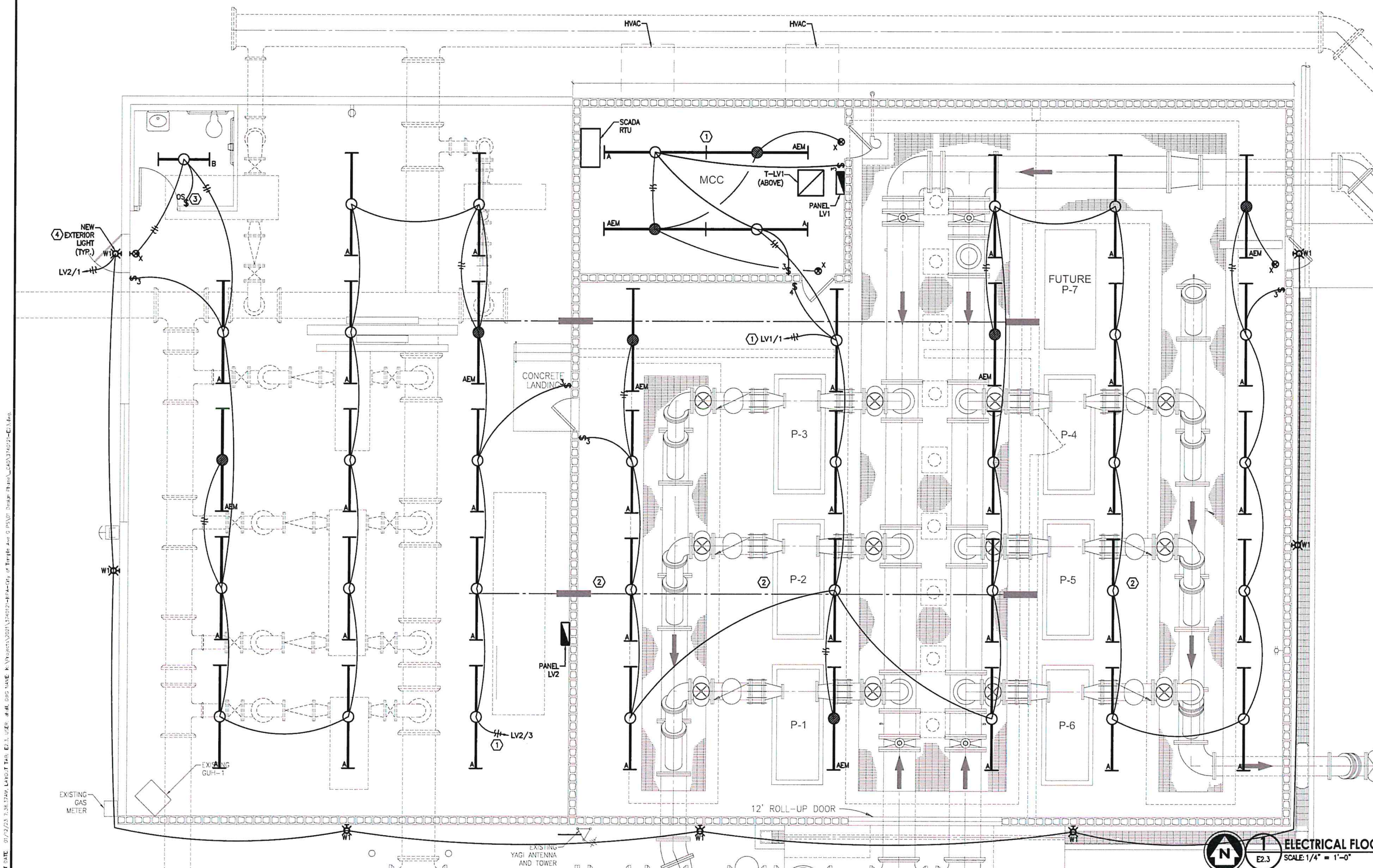
Title:
ELECTRICAL FLOOR PLAN EXISTING & DEMOLITION

Sheet:
E2.2

LIGHTING FIXTURE SCHEDULE									
			LAMP						
TYPE	MANUFACTURER	CATALOG NO.	QTY	TYPE	WATTS	FIX. WATTS	VOLTS	MOUNTING	REMARKS
A	LITHONIA	FEM L96 4000LM IMAFD MD 120 40K		LED		54	120	CEILING	1'X8' LED STRIP CHAIN HUNG 10' AFF
AEM	LITHONIA	FEM L96 4000LM IMAFD MD 120 40K		LED		54	120	CEILING	1'X8' LED STRIP WITH BATTERY CHAIN HUNG 10' AFF
B	LITHONIA	FEM L48 4000LM IMAFD MD 120 40K		LED		24	120	CEILING	1'X4'LED STRIP
BEM	LITHONIA	FEM L48 4000LM IMAFD MD 120 40K		LED		24	120	CEILING	1'X4' LED STRIP WITH BATTERY
W1	LUMARK	XTOR 6B Y BZ		LED		58	120	WALL	LED FULL CUTOFF, 3000K, WALL MOUNT 12' AFF
X	LITHONIA	LQM S W 3 R 120/277 EL N		LED		0.92	120	WALL	EXIT LIGHT WITH BATTERY PACK
P	LITHONIA	CSX1-LED-60C-700-30K-TFTM-120-RPA-PER-DDBXD		LED		134	120	POLE	LED FULL CUTOFF, 3000K #RSA-16-4-C-DM19AS-FBC-VD-DDB (16' ROUND ALUMINUM POLE)

REFERENCE NOTES

1. PROVIDE AND INSTALL NEW "A" AND "AEM" FIXTURES LIGHTING COMMON PUMP ROOM AREAS TYPICAL.
2. COORDINATE AND VERIFY LIGHTING MOUNTING ABOVE 2-TON CRANE SYSTEM.
3. PROVIDE AND INSTALL NEW OCCUPANCY SENSOR FOR CONTROL OF LIGHTING IN RESTROOM.
4. PROVIDE EXTERIOR WALL MOUNTED LIGHTING FOR PARKING AREAS. PROVIDE PHOTOCELL FOR CONTROL.



1 E2.3 ELECTRICAL FLOOR LIGHTING PLAN NEW
SCALE: 1/4" = 1'-0"

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AVENUE G PUMP STATION IMPROVEMENTS
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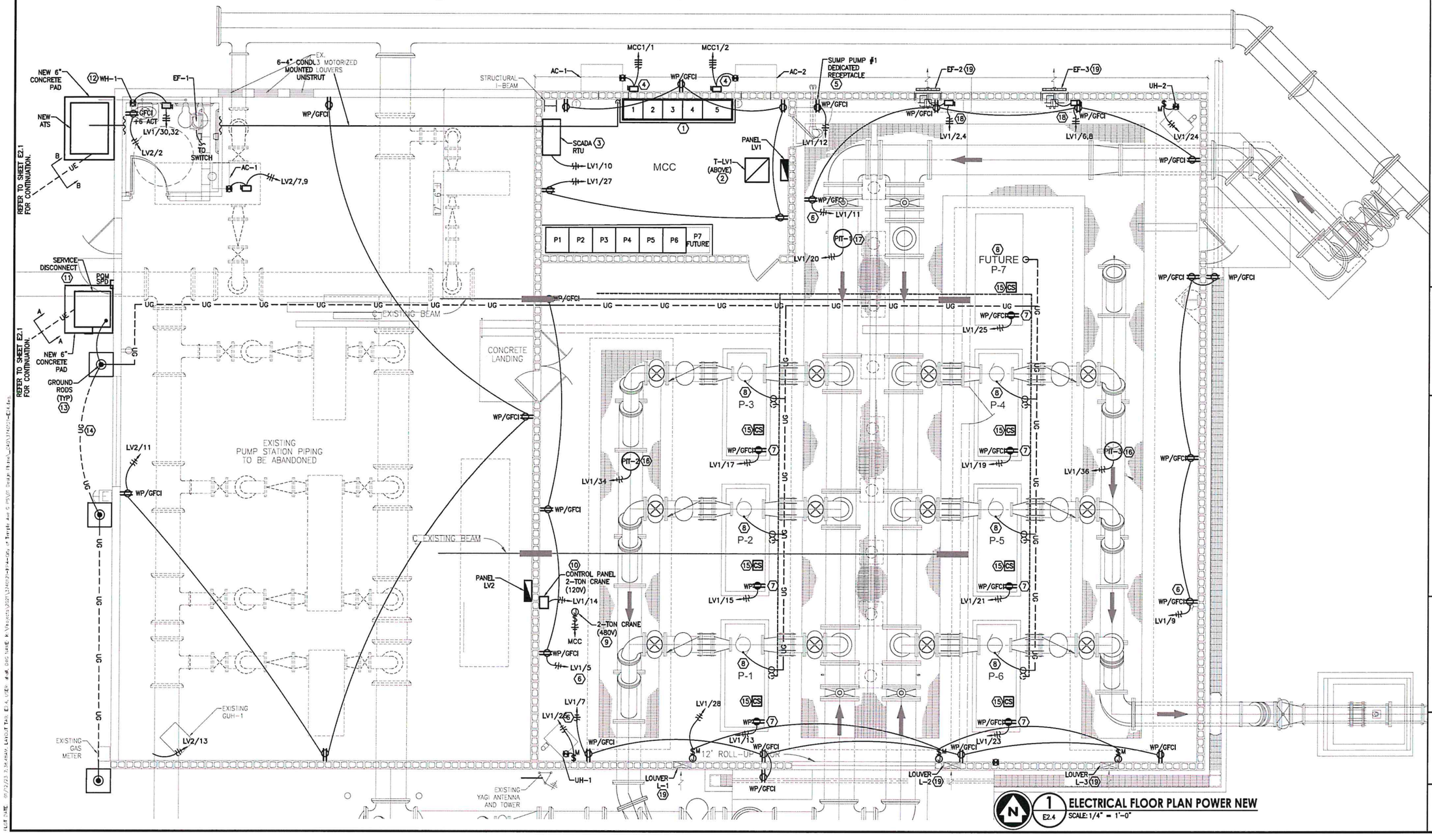
Title:
ELECTRICAL FLOOR PLAN LIGHTING NEW

Sheet:
E2.3

REFERENCE NOTES

1. PROVIDE AND INSTALL MCC1. REFER TO ONE-LINE SHEET E3.1.
2. MOUNT TRANSFORMER FROM ROOF STRUCTURE. REFER TO DETAIL 7/E5.1.
3. PROVIDE AND INSTALL SCADA RTU. REFER TO 8/E5.1.
4. PROVIDE AND INSTALL DISCONNECT 30A/2P/NF/N3R/600N. SQUARE D OR EQUAL. TYPICAL.
5. PROVIDE AND INSTALL DEDICATED RECEPTACLE FOR SUMP PUMP #1.
6. PROVIDE AND INSTALL GFCI SERVICE RECEPTACLES FOR COMMON AREAS.
7. PROVIDE AND INSTALL GFCI PUMP SERVICE RECEPTACLE. REFER TO DETAIL 2/E5.1. (TYPICAL OF 7)
8. PROVIDE AND INSTALL MOTOR GROUNDING REFER TO DETAILS 5 AND 6 /E5.1.
9. PROVIDE AND INSTALL NEW 277V CIRCUIT FOR 2-TON CRANE.
10. PROVIDE AND INSTALL NEW 120V CIRCUIT FOR 2-TON CRANE CONTROL PANEL.
11. PROVIDE AND INSTALL SERVICE DISCONNECT. REFER TO ONE-LINE SHEET E3.1.
12. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 30A/2P/NF/N1/250V DISCONNECT SWITCH TYPE SQUARE D OR EQUAL. SERVING WH-1.
13. PROVIDE AND INSTALL GROUND ROD PER DETAIL 1/E5.0. TYPICAL.
14. PROVIDE AND INSTALL #3/0 CU GROUND LOOP. TYPICAL.
15. CONTROL STATION, NEMA 4X SSTL TYPE, LOCAL-OFF-REMOTE SELECTOR SWITCH WITH 2NO CONTACTS FOR LOCAL AND 2NO FOR REMOTE. BLACK STOP/START PB BUTTONS WITH STOP AND START LEGEND PLATES, RED "RUN" AND BLUE "FAULT" LIGHT, LED, PTT TYPE, FULL VOLTAGE, 120V FULL VOLTAGE, PART #E20Y0A06
16. DISENGAGE PRESSURE TRANSMITTER SITRANS #P320/P420.
17. SUCTION PRESSURE TRANSMITTER SITRANS #P320/P420.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 30A/2P/NF/N1/250V DISCONNECT SWITCH TYPE SQUARE D OR EQUAL. FOR EF-2 AND EF-3.
19. PROVIDE AND INSTALL INTERLOCK WIRING AND RELAYS BETWEEN THE EXHAUST FANS AND LOUVERS. WHEN EXHAUST FANS RECEIVE A RUN SIGNAL FROM THE THERMOSTAT, LOUVERS TO OPEN 3/4", 4#14 FROM EACH EXHAUST FAN TO EACH LOUVER.



CITY OF TEMPLE

AVENUE G PUMP STATION IMPROVEMENTS

605 S. 31ST STREET
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3/4/2022
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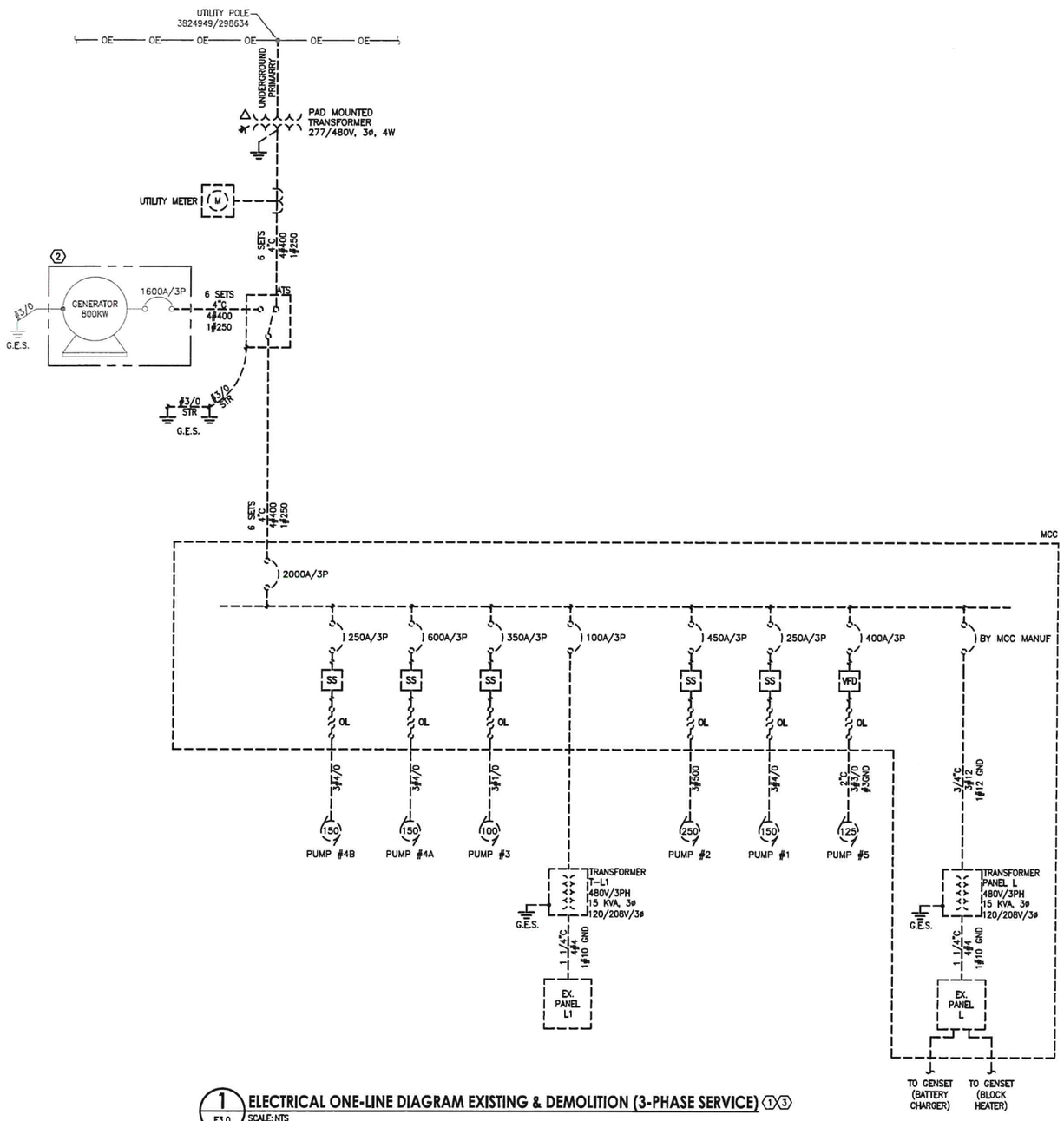
DWG Number:

Title: ELECTRICAL FLOOR PLAN POWER NEW

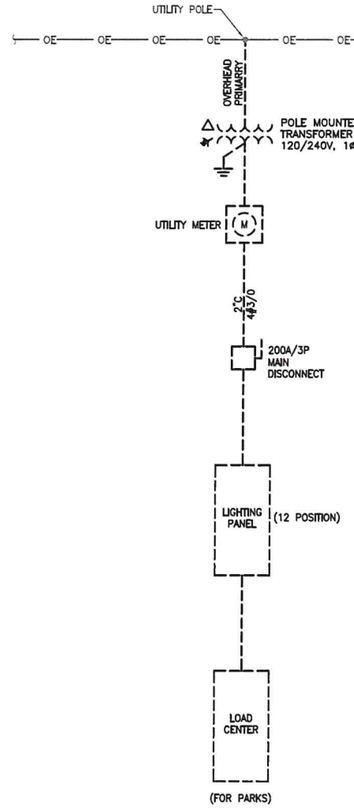
Sheet: E2.4

REFERENCE NOTES

1. DEMOLISH AND REMOVE ALL SHOWN WITH DASHED DEMOLITION LINE TYPE.
2. EX. TO REMAIN.
3. REFER TO P-16 FOR SEQUENCE OF OPERATIONS.



1 E3.0 **ELECTRICAL ONE-LINE DIAGRAM EXISTING & DEMOLITION (3-PHASE SERVICE)** ①③
SCALE: NTS



2 E3.0 **ELECTRICAL ONE-LINE DIAGRAM EXISTING & DEMOLITION (1-PHASE SERVICE)** ①③
SCALE: NTS

CITY OF TEMPLE

AVENUE G PUMP STATION IMPROVEMENTS

TEMPLE, TEXAS 76504

605 S. 31ST STREET

37 DEC

STATE OF TEXAS
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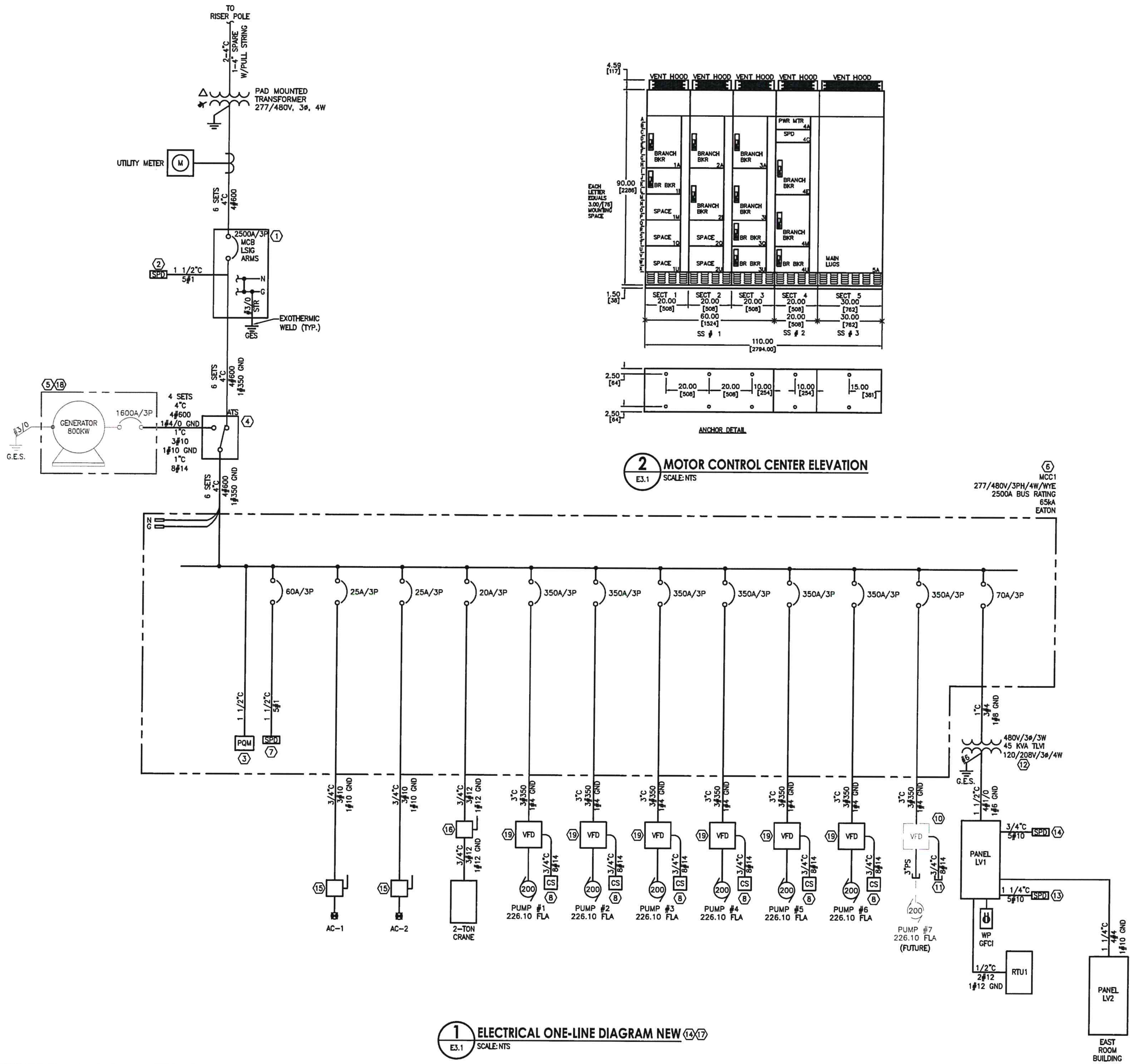
ELECTRICAL ONE-LINE DIAGRAM EXISTING & DEMOLITION

Sheet:
E3.0



1 ELECTRICAL ONE-LINE DIAGRAM NEW ⑭⑰
E3.1 SCALE: NTS

2 MOTOR CONTROL CENTER ELEVATION
E3.1 SCALE: NTS

REFERENCE NOTES

1. PROVIDE AND INSTALL SWITCHBOARD 2500A/3P LSIG WITH MAIN CIRCUIT BREAKER ARC FAULT REDUCTION IN NEMA 3R ENCLOSURE, 65KAIC TYPE EATON CUTLER-HAMMER OR EQUAL.
2. PROVIDE AND INSTALL SPD, EATON #SPD-200-480Y-3-P OR EQUAL IN A NEMA 3R ENCLOSURE.
3. PROVIDE AND INSTALL POWER QUALITY METER EATON 2280 OR EQUAL. REFER TO 6/00GE02.
4. PROVIDE AND INSTALL AUTOMATIC TRANSFER SWITCH, 2500A, 480/277V, 4-POLE, NEMA 3R OR EQUAL WITH SWITCHED NEUTRAL.
5. EXISTING STANDBY DIESEL GENERATOR.
6. PROVIDE AND INSTALL MCC1. 277/480V/3PH/4W/WYE/2500A BUS RATING 65kA, INCLUDES HARMONIC MITIGATIGATION.
7. PROVIDE AND INSTALL SPD, EATON #SPD-200-480Y-3-P OR EQUAL.
8. CONTROL STATION.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 350A/3P/NF/N4XSS/600V DISCONNECT SWITCH TYPE SQUARE D OR EQUAL. SERVING 200A MOTOR.
10. FUTURE FVD.
11. STUB AND CAP PROVIDE WITH PULLSTRINGS.
12. PROVIDE AND INSTALL WALL MOUNTED TRANSFORMER.
13. PROVIDE AND INSTALL SPD, EATON #SPD-200-480Y-3-P OR EQUAL IN A NEMA 3R ENCLOSURE.
14. PROVIDE AND INSTALL SPD, EATON #SPD-200-480Y-3-P OR EQUAL IN A NEMA 3R ENCLOSURE.
15. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 30A/3P/NF/N3R/600V DISCONNECT SWITCH TYPE SQUARE D OR EQUAL.
16. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 30A/3P/NF/N1/600V DISCONNECT SWITCH TYPE SQUARE D OR EQUAL.
17. ELECTRICAL CONTRACTOR TO PROVIDE ONE DAY EACH FOR UTILITY AND GENERATOR PLANT STARTUP AND COMMISSION.
18. ALL DIESEL FUEL BY THE CITY OF TEMPLE.
19. SQUARE-D ALTIVAR VFD WITH ACTIVE FRONT END.

MCC-1 SPECIFICATIONS

THE APPROVED MANUFACTURES ARE SQUARE D.
THE ELECTRICAL CONTRACTOR MUST VERIFY THAT THE MCC WILL FIT INSIDE THE ELECTRICAL ROOM PRIOR TO SUBMITTING THEIR BID.
2500A MLO, 480/277V, 3 PHASE, 4 WIRE, 65 KAIC, NEMA 1 ENCLOSURE, CLASS 1B WIRING, TOP FEED, 200 KA SPD, #PQM, COPPER BUS, SPARE BUCKETS FOR FUTURE BREAKERS.

FOR REVIEW ONLY, NOT FOR CONSTRUCTION

CITY OF TEMPLE

AVENUE G PUMP STATION IMPROVEMENTS

605 S. 31ST STREET
TEMPLE, TEXAS 76504

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SKE PROJECT # 3740121

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DWG Number:

Title: ELECTRICAL ONE-LINE DIAGRAM NEW

Sheet: E3.1

LIGHTING PANEL (EXISTING)(DEMOLITION)

AMPS: MLO | PHASE: 1 | MOUNTING: SURFACE
VOLTAGE: 240/120V | WIRE: 3 | MINIMUM AIC RATING: 10 KA
LOCATION: ON WEST SIDE INTERIOR DIVIDING WALL | BUSSING: COPPER
FED FROM: 200A MAIN DISCONNET | NEMA: 1

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	HVAC	6	50	2	0.0	0.0		0.0	1	20	12	REST RM LIGHTS	2
3	|				0.0		0.0	0.0	1	20	12	LIGHTS	4
5	LIGHTS	14	15	1	0.0	0.0		0.0	1	20	12	COMPRESSOR	6
7	UTILITY RM LIGHTS	14	15	1	0.0		0.0	0.0	1	20	12	RECEPTACLE GFCI	8
9	PUMP RM LIGHTS	14	15	1	0.0	0.0		0.0	1	20	12	RECEPTACLE GFCI	10
11	MTR STG RM W OLT	14	15	1	0.0		0.0	0.0	1	20	12	HV	12

PHASE LOAD IN KVA: 0.0 0.0
PHASE LOAD IN AMPS: 0 0
NOTE: SQUARE D NQ OR EQUAL

LOAD CENTER (EXISTING)(DEMOLITION)

AMPS: 100A MAX MLO | PHASE: 1 | MOUNTING: SURFACE
VOLTAGE: 240/120V | WIRE: 3 | MINIMUM AIC RATING: 10 KA
LOCATION: ON WEST SIDE INTERIOR DIVIDING WALL | BUSSING: COPPER
FED FROM: LIGHTING PANEL | NEMA: 1

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	"DO NOT USE SPACE"	x	x	x	0.0	0.0		0.0	2	60	4	HVAC	2
3	EXISTING	12	20	1	0.0		0.0	0.0				|	4
5	EXISTING	10	30	2	0.0		0.0	0.0	1	20	12	ICE MACHINE	6
7	|				0.0		0.0	0.0	x	x	x	"DO NOT USE SPACE"	8

PHASE LOAD IN KVA: 0.0 0.0
PHASE LOAD IN AMPS: 0 0
NOTE: SQUARE D QO LOAD CENTER Q06-12L100

PANEL L1 (EXISTING)(DEMOLITION)

AMPS: 100A MLO | PHASE: 1 | MOUNTING: SURFACE
VOLTAGE: 240/120V | WIRE: 3 | MINIMUM AIC RATING: 10 KA
LOCATION: ON WEST SIDE INTERIOR DIVIDING WALL | BUSSING: COPPER
FED FROM: TRANSFORMER | NEMA: 1

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	UPS	12	20	1	0.0	0.0		0.0	1	20	12	COMPRESSOR	2
3	EXISTING	12	20	1	0.0		0.0	0.0	1	20	12	BALCONY LIGHT	4
5	EXISTING	12	20	1	0.0	0.0		0.0	1	20	12	PUMPS	6
7	EXISTING	12	20	1	0.0		0.0	0.0	1	20	12	PUMP ROOM OUTLET	8
9	PUMP ROOM OUTLET	12	20	1	0.0	0.0		0.0	1	20	12	PUMP ROOM OUTLETS	10
11	EXISTING	12	20	1	0.0		0.0	0.0	1	20	12	PUMP ROOM OUTLETS	12
13	EXISTING	12	20	1	0.0	0.0		0.0	1	20	12	EXISTING	14
15	EXISTING	12	20	1	0.0		0.0	0.0	1	20	12	EXISTING	16
17	SPACE			1	0.0	0.0		0.0	1			SPACE	18
19	SPACE			1	0.0		0.0	0.0	1			SPACE	20

PHASE LOAD IN KVA: 0.0 0.0
PHASE LOAD IN AMPS: 0 0
NOTE: FEDERAL PACIFIC ELECTRIC COMPANY

PANEL LV1

AMPS: 150A MCB | PHASE: 3 | MOUNTING: SURFACE
VOLTAGE: 208/120V | WIRE: 4 | MINIMUM AIC RATING: 10 KA
LOCATION: ELECTRICAL BUILDING | BUSSING: COPPER
FED FROM: MCC1 | NEMA: 1

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	C	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	INTERIOR LIGHTS	12	20	1	1.4	2.0			0.6	2	20	12	EF-2	2
3	SITE LIGHTING	12	20	1	1.0		1.6		0.6				|	4
5	RECEPT - WEST WALL	12	20	1	0.5			1.1	0.6	2	20	12	EF-3	6
7	RECEPT - SOUTH WALL	12	20	1	0.9	1.5			0.6				|	8
9	RECEPT - EAST WALL	12	20	1	0.7		0.8		0.1	1	20	12	SCADA RTU	10
11	RECEPT - NORTH WALL	12	20	1	0.7			1.5	0.8	1	20	12	SUMP PUMP 1	12
13	RECEPT - P-1	12	20	1	0.2	0.4			0.3	1	20	12	2-TON HOIST CONTROL	14
15	RECEPT - P-2	12	20	1	0.2		0.4		0.2	1	20	12	FLOW METER 1	16
17	RECEPT - P-3	12	20	1	0.2			0.4	0.2	1	20	12	FLOM METER 2	18
19	RECEPT - P-4	12	20	1	0.2	0.3			0.1	1	20	12	PIT-1	20
21	RECEPT - P-5	12	20	1	0.2		0.2		0.0	1	20		SPACE	22
23	RECEPT - P-6	12	20	1	0.2			0.4	0.2	1	20	12	UH-1	24
25	RECEPT - P-7	12	20	1	0.2	0.4			0.2	1	20	12	UH-2	26
27	RECEPT - MCC ROOM	12	20	1	0.7		1.2		0.5	1	20	12	LOUVERS L-1,L-2,L-3	28
29	SPARE		20	1	0.0			1.0	1.0	2	20	12	WH-1	30
31	SPARE		20	1	0.0	1.0			1.0				|	32
33	SPARE		20	1	0.0		0.1		0.1	1	20	12	PIT-3	34
35	SPARE		20	1	0.0			0.1	0.1	1	20	12	PIT-4	36
37	PANEL LV2	4	60	3	5.0	5.0			0.0	3	30	10	SPD	38
39	|				5.0		5.0		0.0				|	40
41	|				5.0			5.0	0.0				|	42

PHASE LOAD IN KVA: 10.6 9.3 9.5
PHASE LOAD IN AMPS: 88 77 79
NOTE: SQUARE D NQ OR EQUAL

LOAD CALCULATION

	UTILITY		
	HP	AMPS	KVA
MISC.			
PANEL LV1/LV2 - LIGHTS, CONTROLS, MISC. 120V		36	30
HVAC		36	30
MOTORS			
PUMP STATION P-1	200	226	188
PUMP STATION P-2	200	226	188
PUMP STATION P-3	200	226	188
PUMP STATION P-4	200	226	188
PUMP STATION P-5	200	226	188
PUMP STATION P-6	200	226	188
PUMP STATION P-7	200	226	188
2-TON CRANE	3	5	4
25% OF LARGEST MOTOR		57	47
25% SPARE		429	356
DESIGN KVA TOTAL			1,780
DESIGN AMPS @ 277/480 VOLTS, 3 PHASE, 4 WIRE		2144	

THE ELECTRICAL SERVICE IS SIZED TO RUN ALL SEVEN PUMPS AND MISC. LOADS

PANEL L (EXISTING)

AMPS: 100A | PHASE: 3 | MOUNTING: SURFACE
VOLTAGE: 480/277V | WIRE: 4 | MINIMUM AIC RATING: 14 KA
LOCATION: IN MCC | BUSSING: COPPER
FED FROM: | NEMA: 1

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	C	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	GENERATOR CHARGER	12	20	1	0.0	0.0			0.0	1	20	12	RECP IN DOCKING STAT.	2
3	GENERATOR HEATER	12	20	2	0.0		0.0		0.0	1	30	10	EXIST.	4
5	|				0.0			0.0	0.0	1	20	12	EXIST.	6
7	EXIST.		20	1	0.0	0.0			0.0	1	20	12	EXIST.	8
9	EXIST.		20	1	0.0		0.0		0.0	1	20	12	EXIST.	10
11	EXIST.		20	1	0.0			0.0	0.0	1	20	12	EXIST.	12
13	SPACE				0.0	0.0			0.0	3	20	12	CRANE OUTLET	14
15	SPACE				0.0		0.0		0.0				|	16
17	SPACE				0.0			0.0	0.0				|	18
19	SPACE				0.0	0.0			0.0	2	30	10	DOCING STATION GEN	20
21	SPACE				0.0		0.0		0.0				|	22
23	SPACE				0.0			0.0	0.0				SPACE	24
25		1	100	3	0.0	0.0			0.0				SPACE	26
27	|				0.0		0.0		0.0				SPACE	28
29	|				0.0			0.0	0.0				SPACE	30

PHASE LOAD IN KVA: 0.0 0.0 0.0
PHASE LOAD IN AMPS: 0 0 0
NOTE: SQUARE D NQ430L1C

PANEL LV2

AMPS: 60A MCB | PHASE: 3 | MOUNTING: SURFACE
VOLTAGE: 208/120V | WIRE: 4 | MINIMUM AIC RATING: 10 KA
LOCATION: ELECTRICAL BUILDING | BUSSING: COPPER
FED FROM: MCC1 | NEMA: 1

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	C	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	EXTERIOR LIGHTS	12	20	1	0.2	0.4			0.2	1	20	12	RECEPT GFCI	2
3	LIGHTS	12	20	1	0.8		1.1		0.3	1	20	12	EF-1	4
5	EX.RECEPT	12	20	1	1.2			1.2	0.0	1	20		SPACE	6
7	AC-1	12	20	2	1.7	1.7			0.0	1	20		SPACE	8
9	|				1.7		1.7		0.0	1	20		SPACE	10
11	RECEPTACLES	12	20	1	0.8			0.8	0.0	1	20		SPARE	12
13	EUH-1	12	20	1	0.5	0.5			0.0	1	20		SPARE	14
15	SPARE		20	1	0.0		0.0		0.0	1	20		SPARE	16
17	SPARE		20	1	0.0			0.0	0.0	1	20		SPARE	18
19	SPARE		20	1	0.0	0.0			0.0	1	20		SPARE	20
21	SPARE		20	1	0.0		0.0		0.0	1	20		SPARE	22
23	SPARE		20	1	0.0			0.0	0.0	1	20		SPARE	24
25	SPARE		20	1	0.0	0.0			0.0	1	20		SPARE	26
27	SPARE		20	1	0.0		0.0		0.0	1	20		SPARE	28
29	SPARE		20	1	0.0			0.0	0.0	1	20		SPARE	30
31	SPARE		20	1	0.0	0.0			0.0	1	20		SPARE	32
33	SPARE		20	1	0.0		0.0		0.0	1	20		SPARE	34
35	SPARE		20	1	0.0			0.0	0.0	1	20		SPARE	36
37	SPARE		20	1	0.0	0.0			0.0	1	20		SPARE	38
39	SPARE		20	1	0.0		0.0		0.0	1	20		SPARE	40
41	SPARE		20	1	0.0			0.0	0.0	1	20		SPARE	42

PHASE LOAD IN KVA: 2.6 2.8 2.0
PHASE LOAD IN AMPS: 22 23 17
NOTE: SQUARE D NQ OR EQUAL

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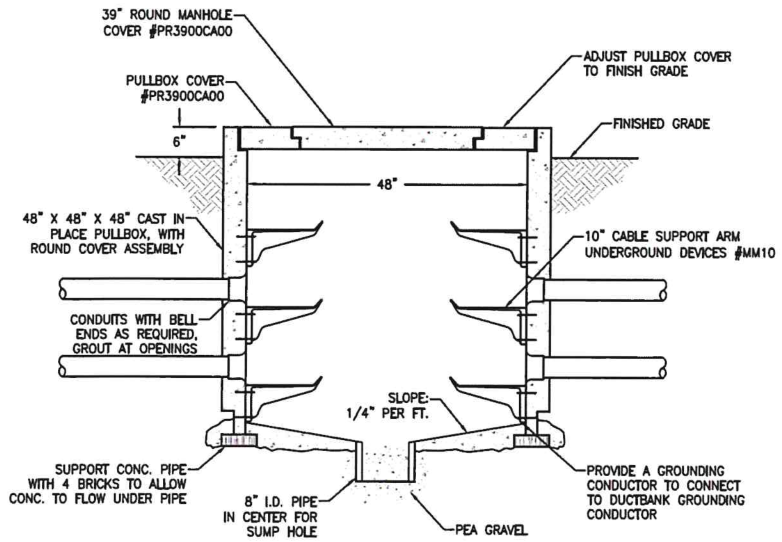
DWG Number:

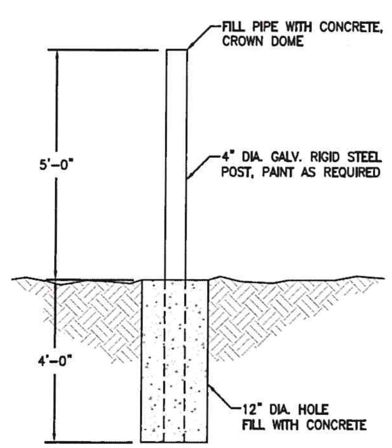
Title: ELECTRICAL SCHEDULES

Sheet: E4.0

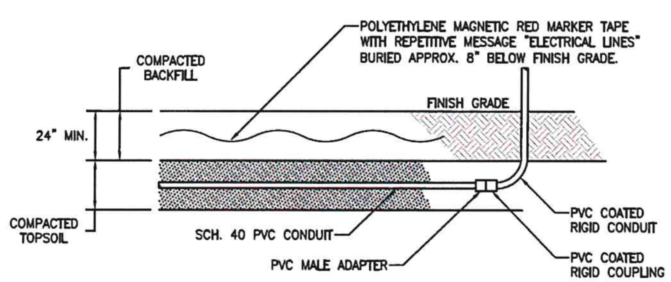


NOTE: ALL CONDUIT ENTERING PULLBOXES MUST DRAIN TO PULLBOXES

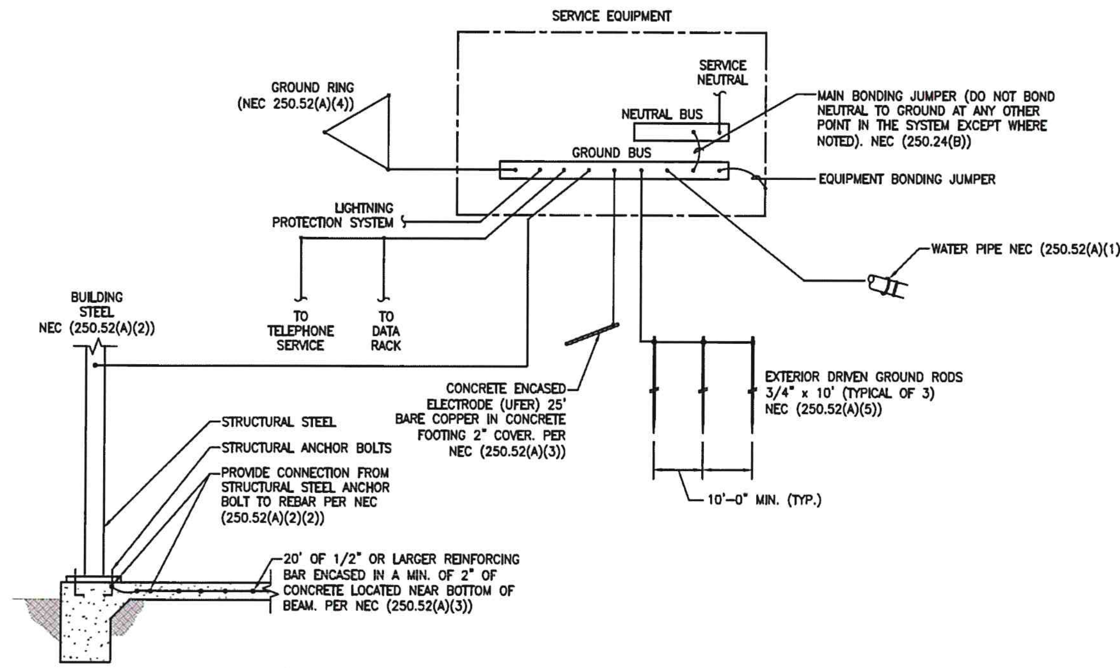
7 DETAIL - MANHOLE
E5.0 SCALE: NTS



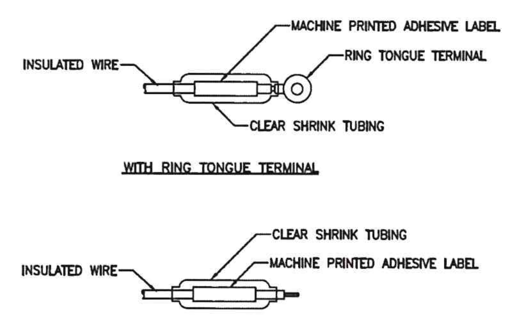
6 DETAIL - BOLLARD
E5.0 SCALE: NTS



5 DETAIL - TYPICAL UNDERGROUND CONDUIT RUN
E5.0 SCALE: NTS

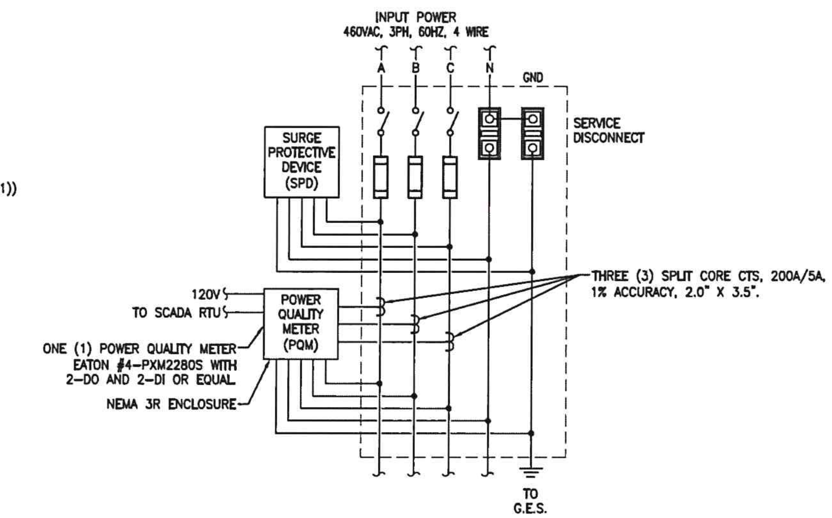


4 GROUNDING ELECTRODE SYSTEM (TYP.)
E5.0 SCALE: NTS

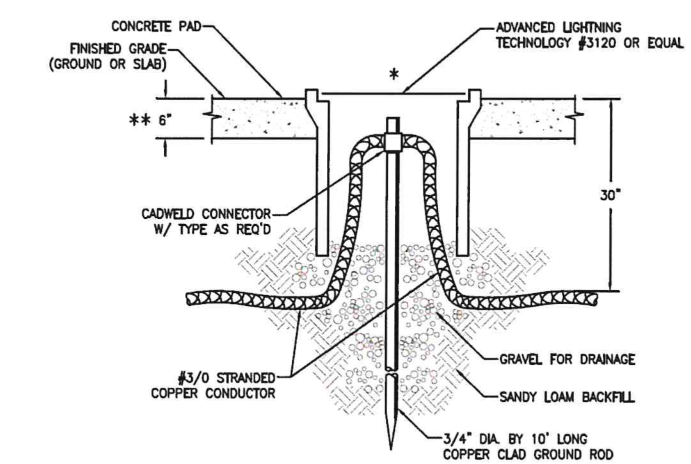


WHERE POSSIBLE RING TERMINALS SHALL BE USED. ONE OF THE ABOVE METHODS MUST BE USED ON ALL WIRE #8 AWG & SMALLER. THE SAME MUST ALSO BE USED ON LARGER WIRE UNLESS AN ALTERNATE METHOD IS SUBMITTED & APPROVED.

3 DETAIL - WIRE TERMINATION AND MARKING
E5.0 SCALE: NTS



2 DETAIL - POWER QUALITY METER
E5.0 SCALE: NTS



* INSTALL GROUND RODS AWAY FROM HEAVY TRAFFIC AREAS AND SIDEWALKS. COORDINATE EXACT LOCATION WITH CIVIL DRAWINGS.

** INSTALL 2'X2'X6" CONCRETE PAD.

1 DETAIL - 3/4" X 10' GROUND ROD
E5.0 SCALE: NTS

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ELECTRICAL DETAILS 1

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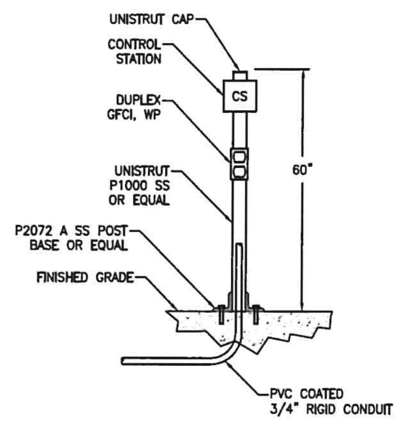
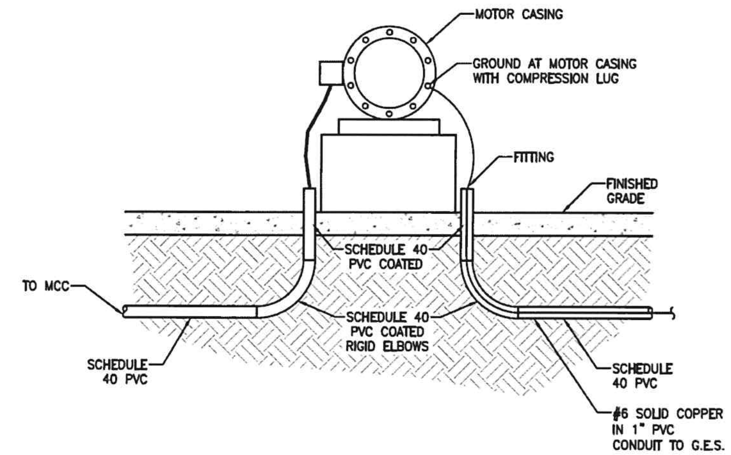
E5.0



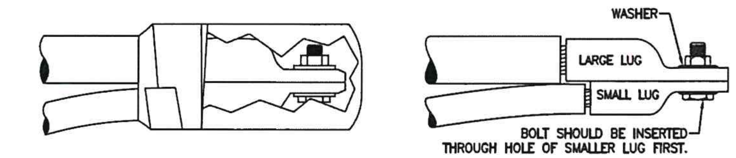
8 DETAIL - RECEPTACLE AND CONTROL STATION MOUNTED ON STRUT
E5.1 SCALE: NTS



5 DETAIL - MOTOR POWER & GROUNDING
E5.1 SCALE: NTS

PREPARE CABLES ACCORDING TO STANDARD PROCEDURES

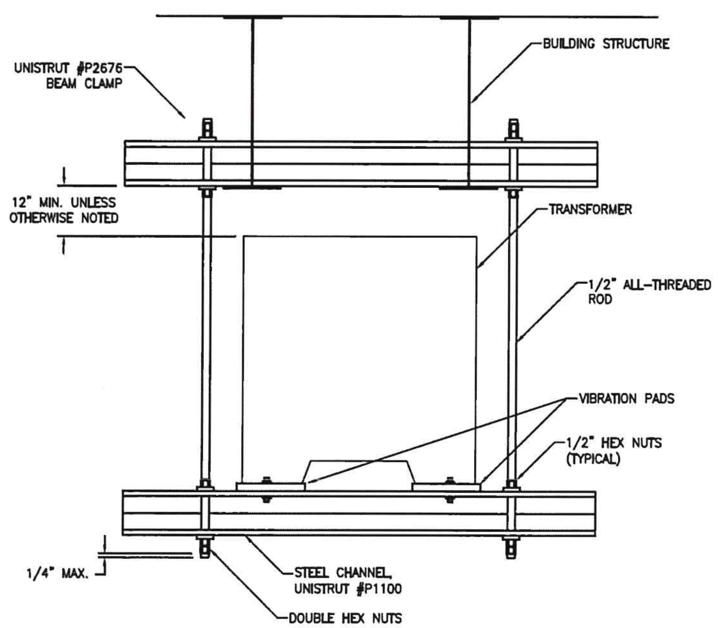
1. CHECK TO BE SURE CABLE SIZES FIT WITHIN THE KIT RANGE AS SHOWN IN TABLE 1.
2. REMOVE CABLE INSULATION FOR LENGTH RECOMMENDED BY TERMINAL LUG MANUFACTURER; IF NO INFORMATION IS AVAILABLE, REMOVE FOR DEPTH OF LUG BARREL.



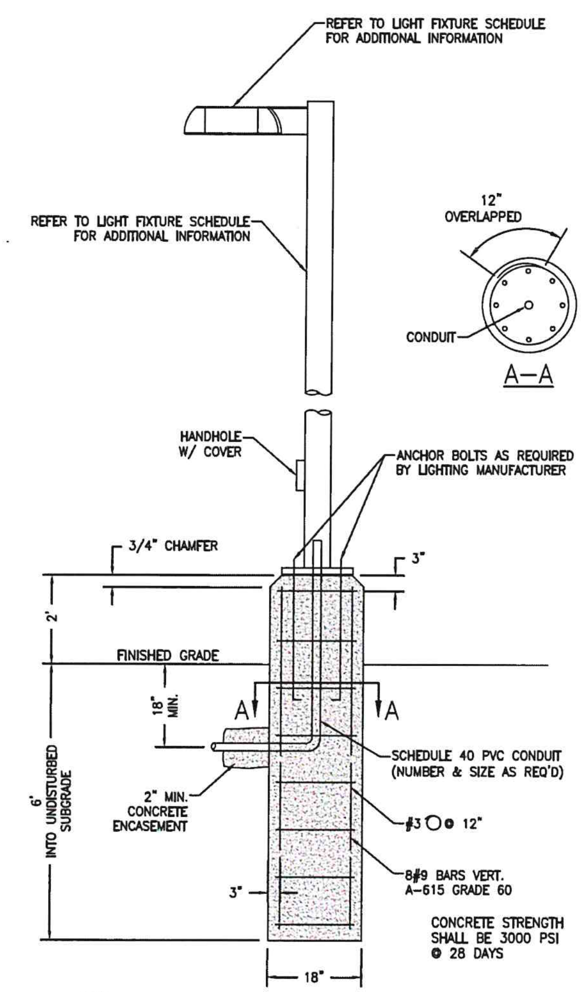
SPLICE SELECTION TABLE 1

TYPE	KIT NUMBER	VOLTAGE RATING	RANGE FEEDER CABLE (AWG & KCMIL)	RANGE MOTOR LEAD (AWG & KCMIL)
PIGTAIL (1 HOLE LUGS)	5300 5301 5302 5303 5304	1000V 1000V 1000V 1000V 1000V	14–10 10–4 2–1/0 1/0–250 250–500	16–12 12–4 4–1/0 2–250 4/0–500

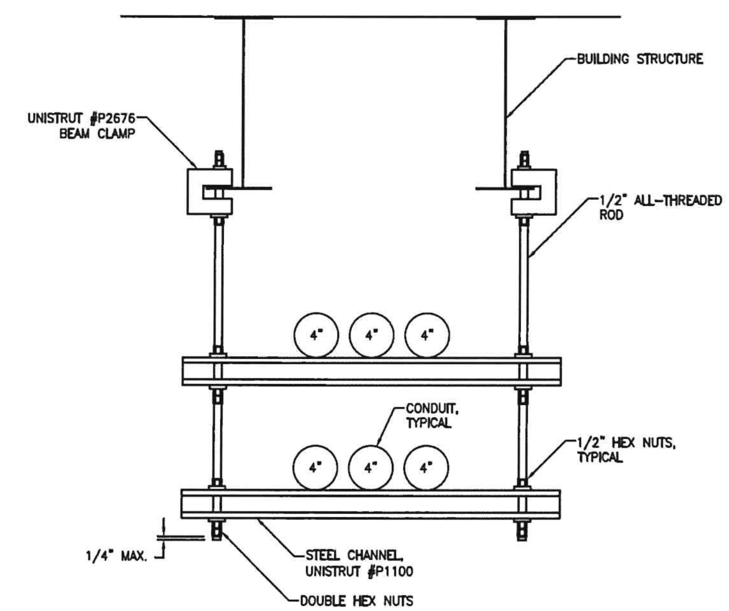
3 MOTOR LEAD SPLICING KIT
E5.1 SCALE: NTS



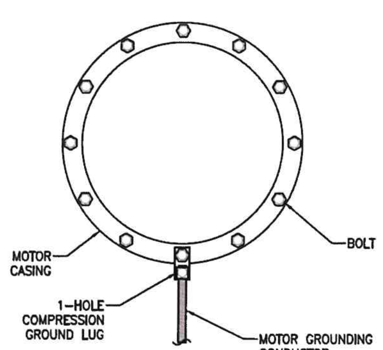
7 DETAIL - TRANSFORMER MOUNTING
E5.1 SCALE: NTS



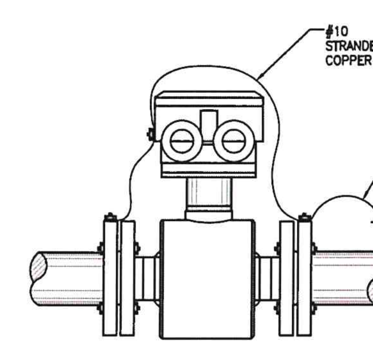
4 DETAIL - POLE MOUNTED LIGHTING FIXTURE
E5.1 SCALE: NTS



2 DETAIL - CEILING SUSPENDED CONDUIT
E5.1 SCALE: NTS



6 DETAIL - GROUND AT MOTOR CASING
E5.1 SCALE: NTS



1 DETAIL - MAGNETIC FLOWMETER - GROUNDING
E5.1 SCALE: NTS

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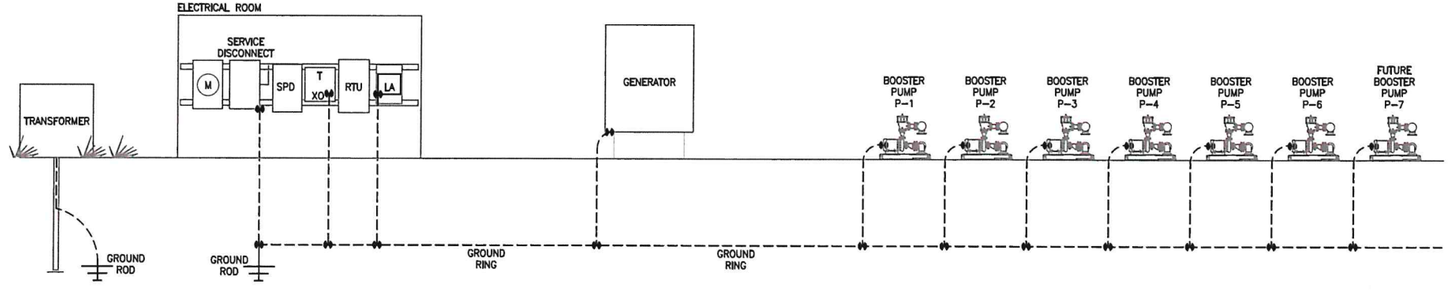
ELECTRICAL DETAILS 2

Sheet:
E5.1

CITY OF TEMPLE AVE G PUMP STATION GENERATOR STEP LOAD SEQUENCE							
STEP	LOAD	SIZE	FULL LOAD AMPS (FLA)	STARTER TYPE	TIME DELAY	FROM	COMMENTS
1	PANEL LV1/LV2	20 KVA	24	N/A	0 SEC		
1	AC-1	17 KVA	20	N/A	0 SEC		
1	AC-2	17 KVA	20	N/A	30 SEC	TDR	
AREA - STEP 2							
2	PUMP 1	200 HP	226	18 PULSE VFD	60 SEC	TDR	
AREA - STEP 3							
3	PUMP 2	200 HP	226	18 PULSE VFD	90 SEC	TDR	
AREA - STEP 4							
4	PUMP 3	200 HP	226	18 PULSE VFD			SCADA SYSTEM TO LOCK OUT
AREA - STEP 5							
5	PUMP 4	200 HP	226	18 PULSE VFD			SCADA SYSTEM TO LOCK OUT
AREA - STEP 6							
6	PUMP 5	200 HP	226	18 PULSE VFD			SCADA SYSTEM TO LOCK OUT
AREA - STEP 7							
7	PUMP 6	200 HP	226	18 PULSE VFD			SCADA SYSTEM TO LOCK OUT
AREA - STEP 8							
8	PUMP 7	200 HP	226	18 PULSE VFD			SCADA SYSTEM TO LOCK OUT
AREA - STEP 8							
9	CRANE	2.9 HP	4.8	FVR			
AREA - STEP 9							
NOTE: TIME DELAY IS INITIATED WHEN THE TIME DELAY RELAY (TDR) RECEIVES A SIGNAL FROM THE AUTOMATIC TRANSFER SWITCH ONCE IT IS ON EMERGENCY POWER. PROVIDE ALL TIME DELAY RELAYS AND WIRING AS REQURIED FOR A FUNCTIONAL SYSTEM							

REFERENCE NOTES

1. SITE TO CONFORM TO TYPICAL GROUNDING LAYOUT.



1 E5.2 **DETAIL - TYPICAL PLANT GROUNDING** ①
SCALE: NTS

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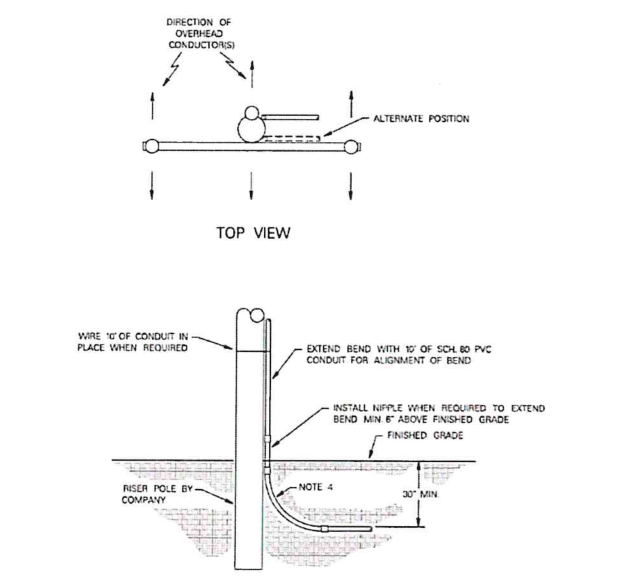
Sheet: **E5.2**



PLAN VIEW

NOTES

1. CONTACT COMPANY REPRESENTATIVE FOR (1) ROUTING OF CONDUIT LINE, (2) SIZE OF CODUIT, AND (3) INSTALLATIONS REQUIRING MORE THAN ONE RISER ON POLE.
2. LIMIT RACEWAY TO THREE 90° BENDS. IF MORE THAN THREE 90° BENDS ARE REQUIRED, CONTACT COMPANY REPRESENTATIVE.
3. DISTANCE BETWEEN 90° BENDS SHALL BE FIVE FEET MINIMUM.
4. REFERENCE DETAIL SHEET 12 FOR BEND RADIUS FOR ALL HORIZONTAL AND VERTICAL CONDUIT BENDS.

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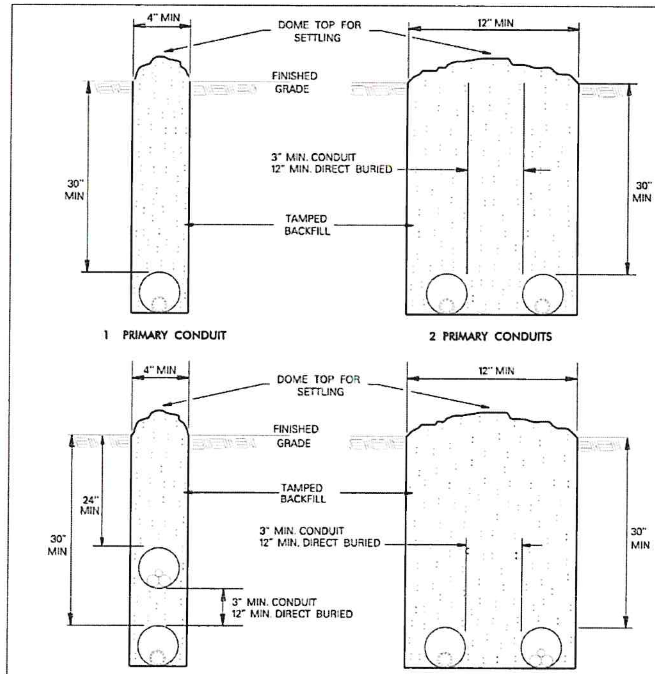
TERMINATION OF PRIMARY CONDUIT AT RISER POLE

DDS-4 UG DETAIL SHEET 1 OF 57

03 - 10



1 PRIMARY CONDUIT AND 1 SECONDARY CONDUIT VERTICALLY ARRANGED

1 PRIMARY CONDUIT AND 1 SECONDARY CONDUIT HORIZONTALLY ARRANGED

NOTES:

1. CONSULT COMPANY REPRESENTATIVE FOR CONDUIT SIZE.
2. SEE DETAIL SHEETS 7 AND 8 FOR NOTES AND INSTRUCTIONS.
3. SEPARATION DIMENSIONS APPLY TO COMPANY CONDUITS OR CABLES ONLY. MAINTAIN 12" SEPARATION BETWEEN COMPANY CONDUITS OR CABLES AND FOREIGN CONDUITS OR CABLES.

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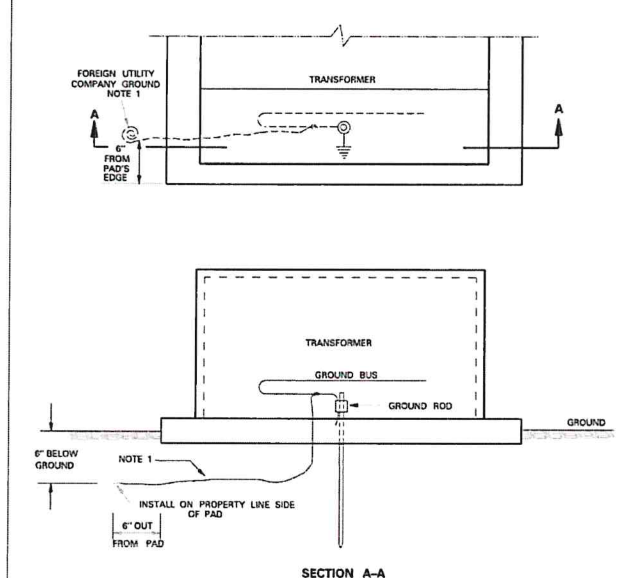
TRENCH REQUIREMENTS

DDS-4 UG DETAIL SHEET 2 OF 57

03 - 10



SECTION A-A

NOTES:

1. ON NEW INSTALLATIONS, INSTALL NO. 6 S.D. BARE COPPER AS SHOWN FOR FOREIGN UTILITY COMPANY BONDING.
2. THE NATIONAL ELECTRICAL SAFETY CODE RULE 384C RECOMMENDS BONDING OF ALL ABOVE GROUND METALLIC POWER AND COMMUNICATIONS APPARATUS (PEDESTALS, TERMINALS, APPARATUS CASES, TRANSFORMER CASES, ETC.) THAT ARE SEPARATED BY A DISTANCE OF 6 FEET OR LESS.

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METHOD OF PROVIDING UTILITY COMPANY EQUIPMENT GROUND

DDS-4 UG DETAIL SHEET 16 OF 57

03 - 10

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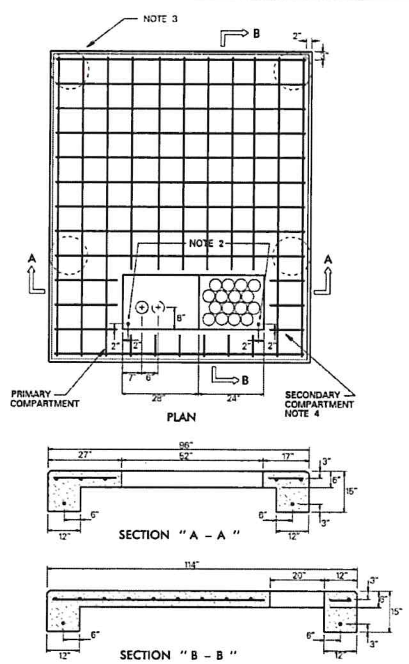

REINFORCEMENT SPACING: 9" CENTERS

REINFORCING SCHEDULE PAD WITH BEAMS (NOTES 2 & 3)		
NUMBER OF #3 BARS	LENGTH	WEIGHT (LBS)
12	92"	34.6
7	110"	24.1
6	78"	14.7
3	23"	2.2
3	13"	1.2
6	8"	1.5

2.1 CU YARDS CONCRETE
TOTAL WEIGHT OF PAD 8,645 LBS

REINFORCING SCHEDULE PAD WITHOUT BEAMS		
NUMBER OF #3 BARS	LENGTH	WEIGHT (LBS)
10	92"	28.8
5	110"	17.2
6	78"	14.7
3	23"	2.2
3	13"	1.2
6	8"	1.5

1.3 CU YARDS CONCRETE
TOTAL WEIGHT OF PAD 5,160 LBS

NOTES:
1. SEE DETAIL SHEET 21 FOR GENERAL NOTES.
2. CONTRACTOR TO OBTAIN AND INSTALL (2) 5/8" X 8' GROUND RODS AS SHOWN. INSTALLATION DEPTH SHALL BE 7' - 6".
3. PIERS ARE REQUIRED ON ALL THREE PHASE TRANSFORMER PADS UNLESS WAIVED BY THE COMPANY INSPECTOR. REFERENCE DETAIL SHEET 22 FOR PIER DETAILS.
4. BEGIN SECONDARY CONDUITS AT RIGHT EDGE OF PAD WINDOW. ADD CONDUITS AS REQUIRED RIGHT TO LEFT. DO NOT CROSS DIVIDING LINE BETWEEN PRIMARY AND SECONDARY COMPARTMENTS.
5. GROUT WINDOW AS PER DETAIL SHEET 15.

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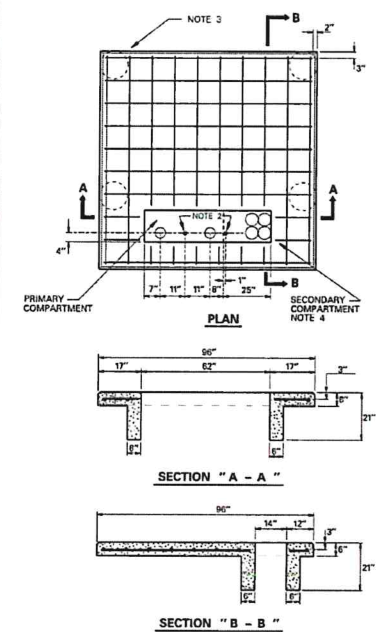
TRANSFORMER PAD
THREE PHASE
750 – 1000 KVA RADIAL

DDS-4 UG DETAIL SHEET 26 OF 57

03 – 10



REINFORCEMENT SPACING: 10" CENTERS

REINFORCING SCHEDULE PAD WITHOUT BEAMS		
NUMBER OF #3 BARS	LENGTH	WEIGHT (LBS)
12	92"	34.5
6	8"	1.5
6	66"	12.4
4	13"	1.6

1.47 CU YARDS CONCRETE
TOTAL WEIGHT OF PAD 5,770 LBS

NOTES:
1. SEE DETAIL SHEET 21 FOR GENERAL NOTES.
2. CONTRACTOR TO OBTAIN AND INSTALL (2) 5/8" X 10' GROUND RODS AS SHOWN. INSTALLATION DEPTH SHALL BE 7' - 6".
3. PIERS ARE REQUIRED ON ALL THREE PHASE TRANSFORMER PADS UNLESS WAIVED BY THE COMPANY INSPECTOR. REFERENCE DETAIL SHEET 22 FOR PIER DETAILS.
4. BEGIN SECONDARY CONDUITS AT RIGHT EDGE OF PAD WINDOW. ADD CONDUITS AS REQUIRED RIGHT TO LEFT. DO NOT CROSS DIVIDING LINE BETWEEN PRIMARY AND SECONDARY COMPARTMENTS.
5. GROUT WINDOW AS PER DETAIL SHEET 15.

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TRANSFORMER PAD
THREE PHASE 750 KVA
DEADFRONT LOOP FEED

DDS-4 UG DETAIL SHEET 36 OF 57

03 – 10

Three-Phase Transformer Size (kVA)	Maximum Number of 4" PVC Conduits		Maximum Number of Cables Including the Neutral	
	208Y/120	480Y/277	208Y/120	480Y/277
75 – 150	6	6	24	24
225 – 300	6	6	24	24
500	8	6	32	24
750	12	6	48	24
1000	16	8	64	32
1500	–	12	–	48
2000	–	16	–	64
2500	–	16	–	64

Notes:

1. For three-phase padmount transformers, the customer's service conductor must be 1000 kcmil or smaller. The maximum number of runs (three phase conductors and one neutral conductor) shall be as shown in above table.
2. For single-phase 240/120 volt transformers, the customer's service conductor must be 500 kcmil or smaller. The maximum number of runs (two phase conductors and one neutral conductor) and the size of the conduits shall be as shown in the following table:

Customer's Conductor Size	Conduit Sizes	Maximum Number of Runs
#6 – #3/0	2"	8
#4/0 – 350 kcmil	3"	6
500 kcmil	4"	4

3. If the number of runs installed by the customer is more than the maximum shown, a connection enclosure with pad may be required. Consult company representative for details.

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MAXIMUM NUMBER OF SECONDARY CONDUITS AND CABLES FOR PADMOUNTED TRANSFORMERS

DDS-4 UG DETAIL SHEET 38 OF 57

03 – 10

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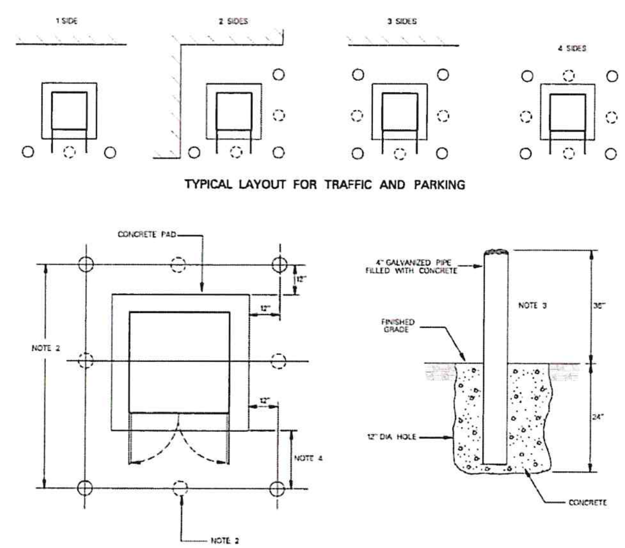
Sheet:
E5.4



NOTES:

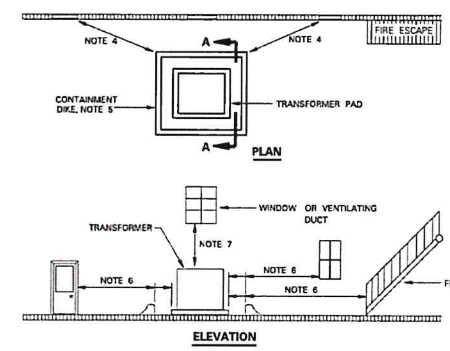
1. INSTALL GUARD POST WHERE PROTECTION FROM DAMAGE DUE TO VEHICULAR TRAFFIC IS NEEDED.
2. DISTANCE BETWEEN POSTS SHOULD NOT EXCEED 4 FEET. ADD ADDITIONAL POSTS WHERE NECESSARY TO MEET THIS CONDITION. VERIFY LOCATION OF POST IN FRONT OF TRANSFORMER TO ALLOW FOR DOOR OPENING.
3. INCREASE HEIGHT TO 48" AND DEPTH TO 36" IN TRUCK LOADING AREAS, AND INCREASE SIZE TO 6" GALVANIZED PIPE.
4. THIS DISTANCE TO BE LARGE ENOUGH TO ALLOW FULL OPENING OF ALL EQUIPMENT DOOR(S). CONTACT COMPANY REPRESENTATIVE TO VERIFY DIMENSION.

ONCOR

GUARD POST INSTALLATION

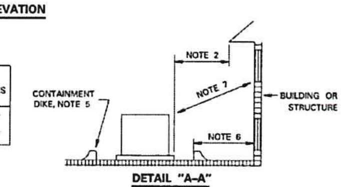
DDS-4 UG DETAIL SHEET 50 OF 57

03 - 10



TRANSF. TYPE	BUILDING CONSTRUCTION		WINDOWS, DOORS & VENTS	FIRE ESCAPES
	FIRE RESISTIVE NOTE 3	NON- FIRE RESISTIVE		
1 PHASE	5'-0"	10'-0"	10'-0"	20'-0"
3 PHASE	5'-0"	15'-0"	15'-0"	20'-0"

CLEARANCE TABLE



NOTES:

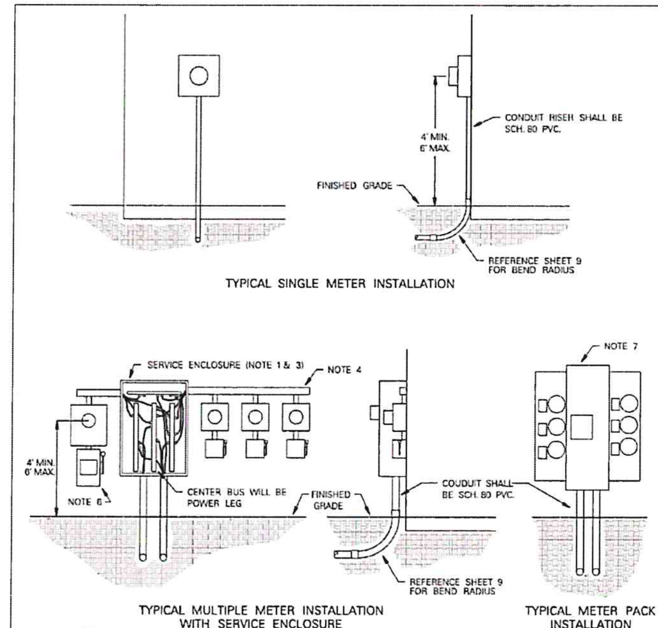
1. CLEARANCE FROM BUILDING WALLS SHALL COMPLY WITH THE CLEARANCE TABLE. ALL DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS.
2. WHERE THERE ARE BUILDING EAVES OR OVERHANGS WITHIN 25'- 0" ABOVE GROUND, CLEARANCE SHALL BE MEASURED HORIZONTALLY BEGINNING FROM THE EDGE OF THE EAVE OR OVERHANG.
3. FIRE RESISTIVE BUILDING WALLS INCLUDE BRICK AND MASONRY STRUCTURES THAT HAVE A 2 HOUR FIRE RATING.
4. CLEARANCE TO BUILDING DOORS, WINDOWS, VENTS AND FIRE ESCAPES TO BE MEASURED RADIALLY.
5. LIQUID FLOW OF AREA SURROUNDING TRANSFORMER SHOULD BE AWAY FROM BUILDING. WHERE GROUND IS FLAT OR SLOPES TOWARD BUILDING, A DIKE SUFFICIENT TO CONTAIN ALL TRANSFORMER OIL FOR TRANSFORMERS 500 KVA AND LARGER SHALL BE PROVIDED.
6. CLEARANCES ARE MEASURED FROM PAD EDGE TO BUILDING WALL, OPENING, OVERHANG OR FIRE ESCAPE UNLESS A CONTAINMENT DIKE IS UTILIZED. IF A CONTAINMENT DIKE IS UTILIZED, CLEARANCE IS MEASURED FROM DIKE.
7. CLEARANCES FOR WINDOWS AND VENTS ABOVE TRANSFORMER ARE MEASURED RADIALLY FROM CLOSEST POINT ON TRANSFORMER.
8. PADMOUNTED TRANSFORMERS SHALL BE POSITIONED SUCH THAT HOTSTICK USE IS NOT REQUIRED ON THE SIDE FACING THE BUILDING. IF HOTSTICK USE IS REQUIRED ON THE BUILDING SIDE, CLEARANCES SHOWN IN DETAIL SHEET 52 SHALL BE MAINTAINED.
9. THERE SHOULD NOT BE ANY ABOVE GROUND OBSTRUCTIONS, SUCH AS SHRUBS, COOLING TOWERS, GAS METERS, FENCING, ETC. WITHIN 5'- 0" OF PAD OR OVERHANGS ABOVE PAD FACILITIES. REFERENCE DETAIL SHEET 52 FOR SCREENING CLEARANCES AROUND PADMOUNTED EQUIPMENT.
10. THERE SHOULD NOT BE ANY PIPING OR CONDUIT UNDER THE PAD (EXCEPTION: MUTUALLY AGREED UPON COMMUNICATION CONDUITS) OTHER THAN THOSE ENTERING THE TRANSFORMER.
11. TRANSFORMERS SHALL NOT OBSTRUCT FIRE LANE.
12. IT IS THE OWNER'S RESPONSIBILITY TO COMPLY WITH ANY INSURANCE REGULATIONS AFFECTING THE PREMISES.

ONCOR

CLEARANCES OF PADMOUNTED TRANSFORMERS FROM BUILDINGS

DDS-4 UG DETAIL SHEET 51 OF 57

03 - 10



NOTES:

1. SERVICE ENTRANCE ENCLOSURE (FOR MULTIPLE METER INSTALLATIONS) PROVIDED BY COMPANY AND INSTALLED BY CONTRACTOR FOR SERVICE ENTRANCES THROUGH 2500 AMPS. CONTACT COMPANY REPRESENTATIVE FOR INFORMATION.
2. METER SOCKETS INSTALLED BY CONTRACTOR.
3. REFERENCE ONCOR'S "ELECTRIC SERVICE GUIDELINES" FOR METER AND SERVICE ENCLOSURE INFORMATION.
4. CONDUCTORS, RACEWAY AND GUTTER PROVIDED AND INSTALLED BY CONTRACTOR.
5. SERVICE ENTRANCE CONDUCTORS TO BE CONTINUOUS FROM METER SOCKET INTO SEVICE ENCLOSURE.
6. METER DISCONNECT SWITCH AS ALLOWED BY LOCAL INSPECTION AUTHORITY. VERIFY ACCEPTANCE PRIOR TO INSTALLATION.
7. CONTACT COMPANY FOR APPROVAL OF METER PACKS PRIOR TO LETTING BIDS AND INSTALLING EQUIPMENT.
8. EACH SOCKET MUST BE CLEARLY AND PERMANENTLY MARKED ON THE INTERIOR AND EXTERIOR OF THE METER SOCKET TO INDICATE EACH APARTMENT OR LOCATION SERVED.

ONCOR

TYPICAL METER INSTALLATIONS

DDS-4 UG DETAIL SHEET 57 OF 57

03 - 10

CITY OF TEMPLE

AVENUE G PUMP STATION IMPROVEMENTS

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SKE PROJECT # 3740121

Filename:
Scale: AS NOTED
Drawn By: AH
Checked By: SK
Date: 07/12/2022

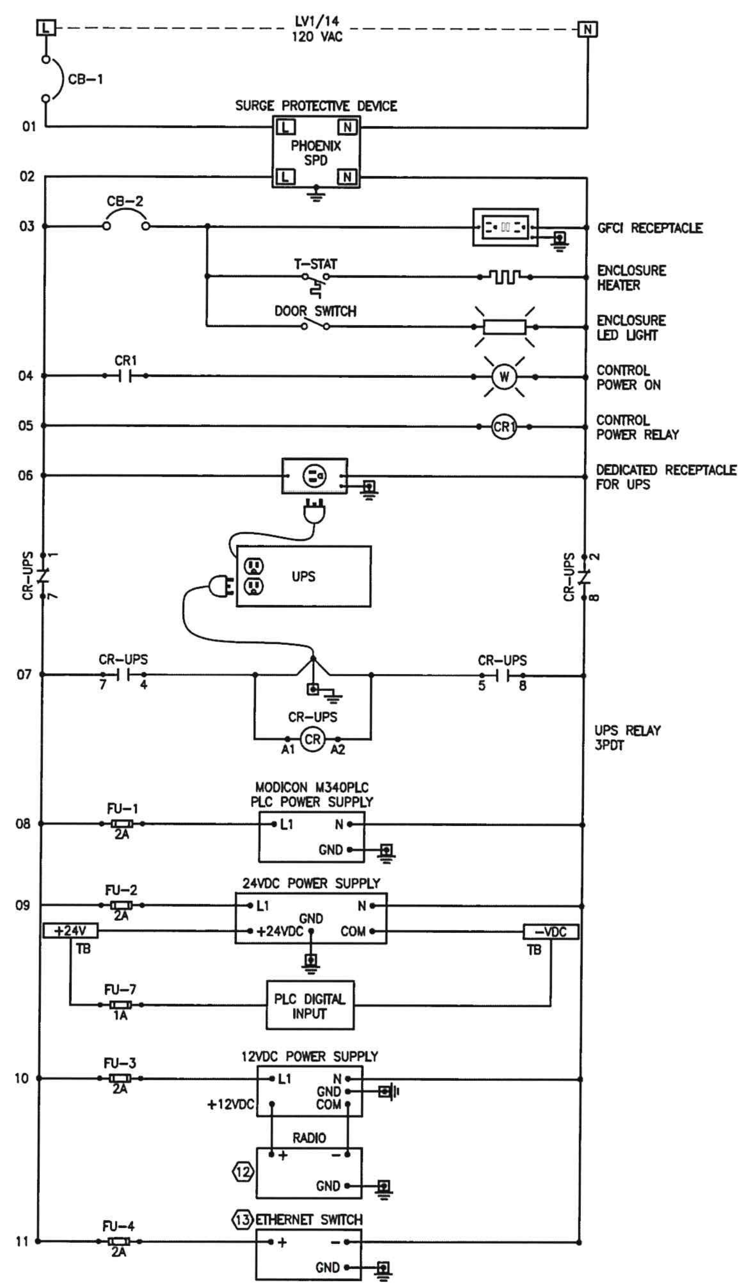
DWG Number:

Title: ELECTRICAL DETAILS 6

Sheet: **E5.5**

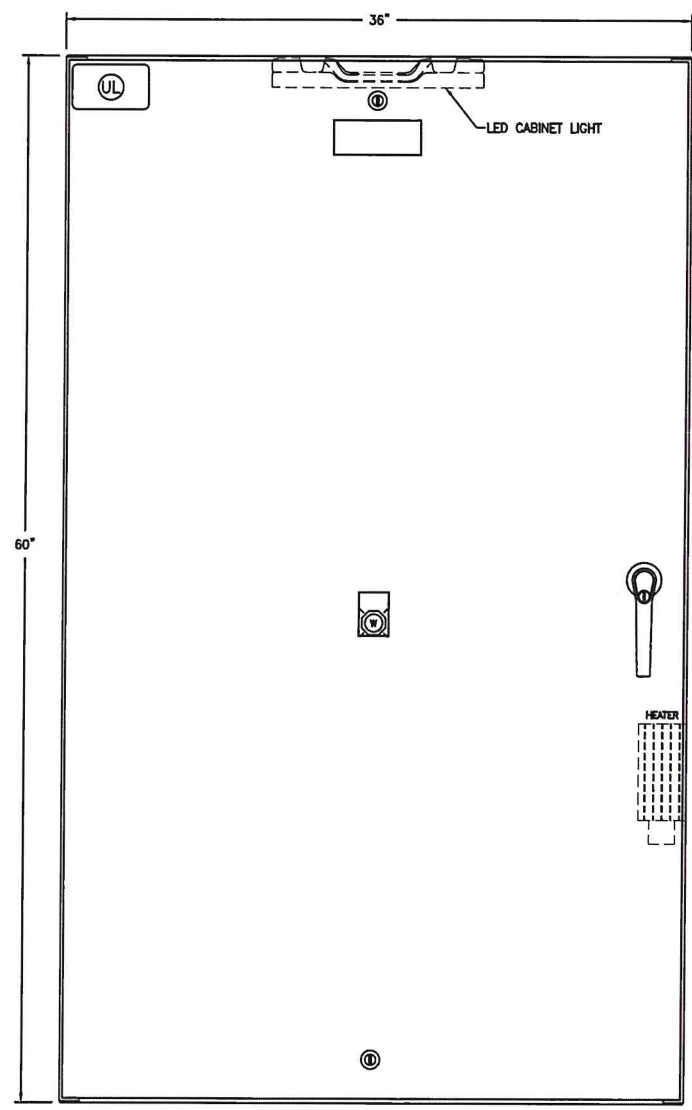
REFERENCE NOTES

1. RTU PANEL SCHEMATIC AND WIRING DIAGRAM IS TYPICAL IN NATURE. FINAL HARDWARE CONFIGURATION MAY VARY.
2. PROVIDE FACTORY AUTHORIZED STARTUP AND MINIMUM 4 HOURS TRAINING FOR OPERATOR PERSONNEL.
3. THE LIFT STATION SCADA SYSTEM SHALL OPERATE PER THE SEQUENCE OF OPERATIONS PROVIDED BY THE CIVIL ENGINEER.
4. ALL CONDUITS AND WIRING PROVIDED, INSTALLED BY THE ELECTRICAL CONTRACTOR AND TERMINATED BY THE SCADA CONTRACTOR.
5. ELECTRICAL CONTRACTOR MAY GROUP WIRES WITH SAME VOLTAGE FOR FIELD DEVICES IN CONDUIT AS HE DEEMS BEST APPROPRIATE.
6. ANALOG AND LOW VOLTAGE SIGNALS SHALL NOT BE RUN IN SAME CONDUIT AS 120VAC AND 480VAC CIRCUITS.
7. QUANTITY OF CONDUCTORS SHOWN ARE FOR REFERENCE ONLY. VERIFY EXACT WIRING REQUIREMENTS TO FIELD DEVICES PER INFORMATION PROVIDED BY THE EQUIPMENT VENDOR PRIOR TO INSTALLATION.
8. USE SHIELDED TWISTED PAIR (STP) CABLE BELDEN #5341FE OR EQUAL.
9. PROVIDE AND INSTALL SCHNEIDER ELECTRIC APC DIN RAIL – PANEL MOUNTED UPS WITH STANDARD BATTERY 500VA 120V TYPE SUA500PDR-S.
10. PROVIDE AND INSTALL MODICON M340 PLC WITH I/O AS SHOWN ON SCHEDULE, SHEET E6.1.
11. PROVIDE AND INSTALL OPERATOR INTERFACE TERMINAL TYPE SCHNEIDER HARMONY GTU WITH A 10" SCREEN.
12. PROVIDE AND INSTALL RADIO, MODEL PHOENIX #2901540 OR APPROVED EQUAL.
13. PROVIDE AND INSTALL ETHERNET SWITCH, MODEL AUTOMATION DIRECT STRIDE MODEL #SE-SWSU-WT OR APPROVED EQUAL.

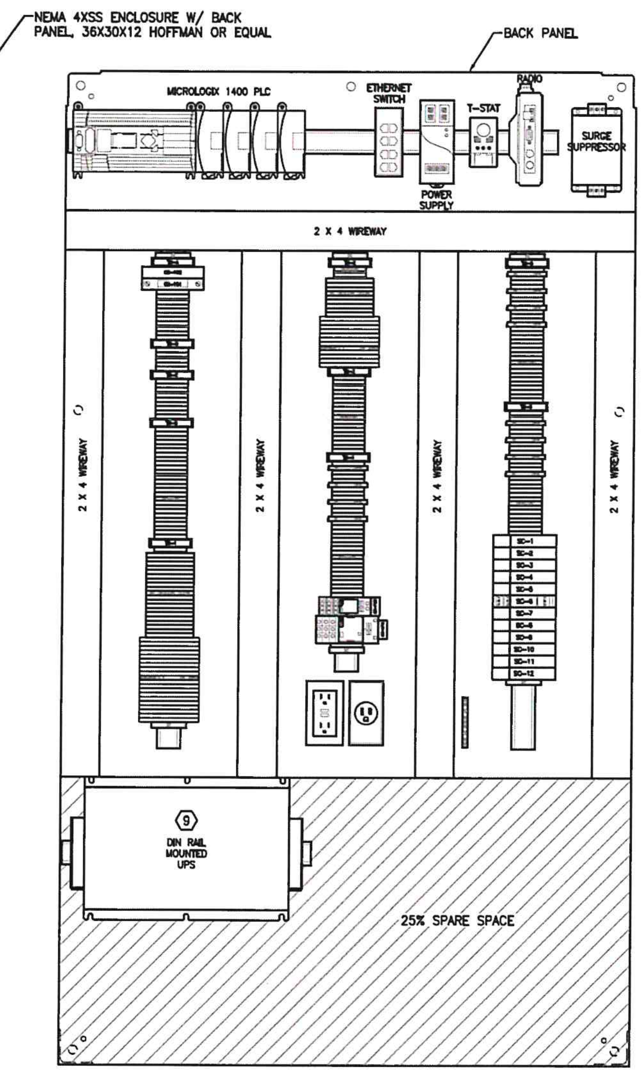


* INDICATES FIELD WIRING REQUIRED BY CONTRACTOR

2 RTU SCHEMATIC (E6.0)
SCALE: NTS



FRONT VIEW (EXTERIOR)



FRONT VIEW (INTERIOR)

1 SCADA RTU ENCLOSURE 1 2 3 4 5 6 7 8 9 10 (E6.0)
SCALE: NTS

CITY OF TEMPLE

AVENUE G PUMP STATION IMPROVEMENTS

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DWG Number:

Title: ELECTRICAL CONTROLS

Sheet: **E6.0**

RTU I/O LIST

ITEM	DESCRIPTION	TYP.	CONDUCTORS
1	UTILTY POWER	DI	2#14
2	GENERATOR STATUS	DI	2#14
3	GENERATOR LOW FUEL	DI	2#14
4	ATS IN EMERGENCY	DI	2#14
5		DI	2#14
6		DI	2#14
7	PUMP #1 VFD STATUS	DI	2#14
8	PUMP #2 VFD STATUS	DI	2#14
9	PUMP #3 VFD STATUS	DI	2#14
10	PUMP #4 VFD STATUS	DI	2#14
11	PUMP #5 VFD STATUS	DI	2#14
12	PUMP #6 VFD STATUS	DI	2#14
13	PUMP #7 VFD STATUS	DI	2#14
14	PUMP #1 VFD FAULT	DI	2#14
15	PUMP #2 VFD FAULT	DI	2#14
16	PUMP #3 VFD FAULT	DI	2#14
17	PUMP #4 VFD FAULT	DI	2#14
18	PUMP #5 VFD FAULT	DI	2#14
19	PUMP #6 VFD FAULT	DI	2#14
20	PUMP #7 VFD FAULT	DI	2#14
21		DI	2#14
22		DI	2#14
23	PUMP #1 VFD SPEED	DI	2#14
24	PUMP #2 VFD SPEED	DI	2#14
25	PUMP #3 VFD SPEED	DI	2#14
26	PUMP #4 VFD SPEED	DI	2#14
27	PUMP #5 VFD SPEED	DI	2#14
28	PUMP #6 VFD SPEED	DI	2#14
29	PUMP #7 VFD SPEED	DI	2#14
30	SPARE	DI	
31	SPARE	DI	
32	PUMP #1 START/STOP	DO	2#14
33	PUMP #2 START/STOP	DO	2#14
34	PUMP #3 START/STOP	DO	2#14
35	PUMP #4 START/STOP	DO	2#14
36	PUMP #5 START/STOP	DO	2#14
37	PUMP #6 START/STOP	DO	2#14
38	PUMP #7 START/STOP	DO	2#14
39	SPARE	DO	
40	SPARE	DO	
41	SPARE	DO	
42	FLOW METER 1	AI	2#18 STP
43	FLOW METER 2	AI	2#18 STP
44	TANK #1 LEVEL TRANSDUCER	AI	2#18 STP
45	TANK #1 PRESSURE TRANSDUCER	AI	2#18 STP
46	TANK #2 LEVEL TRANSDUCER	AI	2#18 STP
47	TANK #2 PRESSURE TRANSDUCER	AI	2#18 STP
48	SPARE	AI	
48	SUCTION PRESSURE TRANSMITTER PIT-1	AI	2#18 STP
49	SPARE	AI	
49	DISCHARGE PRESSURE TRANSMITTER PIT-3	AI	2#18 STP
50	DISCHARGE PRESSURE TRANSMITTER PIT-4	AI	2#18 STP
51	PQM	AI	1-CAT-6

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Drawn By: AH
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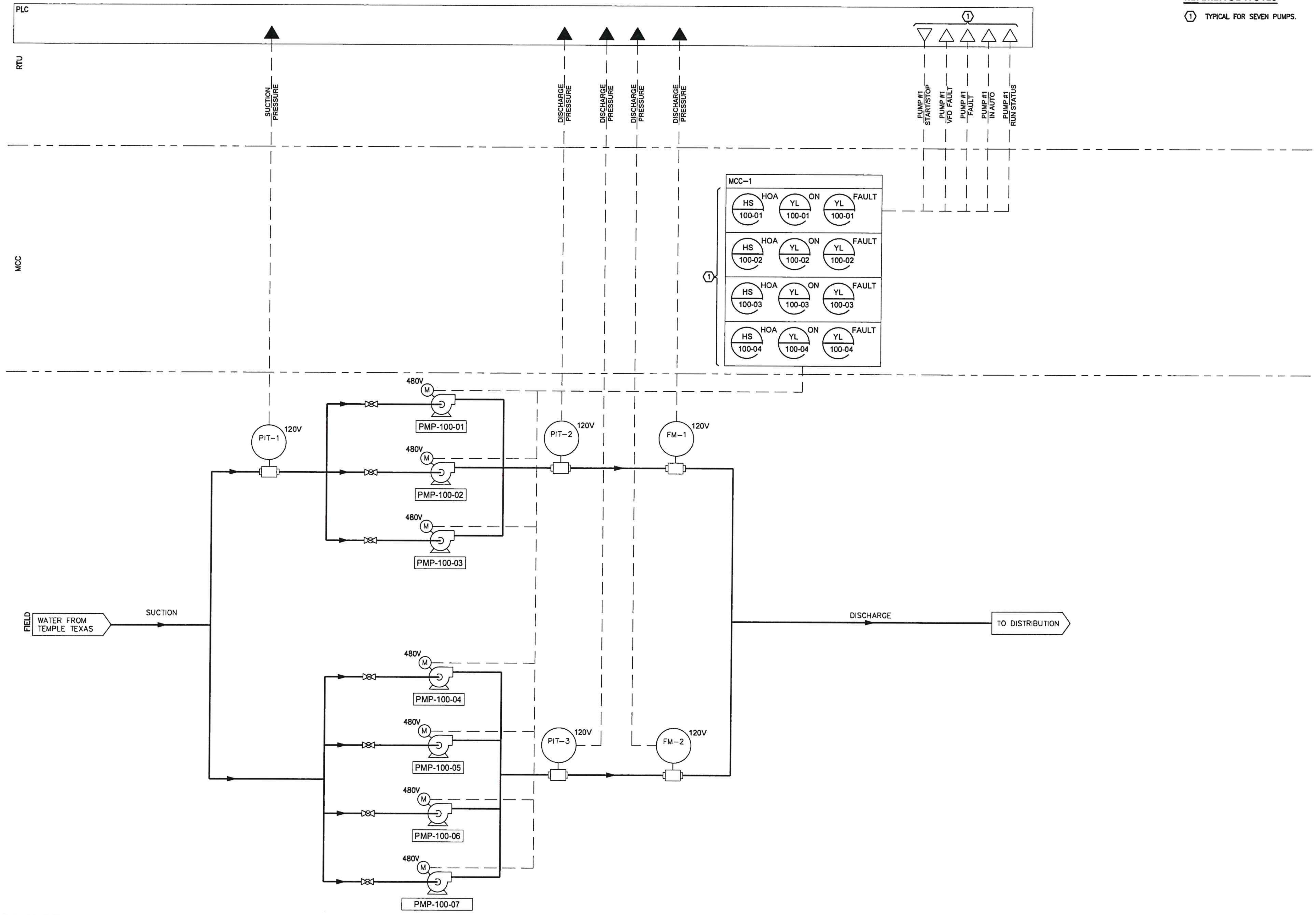
Title: ELECTRICAL CONTROLS

Sheet: E6.1

REFERENCE NOTES

(1) TYPICAL FOR SEVEN PUMPS.



1 PLANT PROCESS AND INSTRUMENTATION DIAGRAM
E7.0
SCALE: NTS

CITY OF TEMPLE

AVENUE G PUMP STATION IMPROVEMENTS

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Date: 07/12/2022

DWG Number:

Title:
ELECTRICAL PIPING AND INSTRUMENTATION DIAGRAMS

Sheet:
E7.0

MECHANICAL PROJECT NOTES

NUMBER	NOTE
1	PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. PROVIDE ALL PERMITS, INSPECTIONS, LICENSES AND FEES. FURNISH ALL LABOR, EQUIPMENT, SUPPLIES AND MATERIALS NECESSARY TO PROVIDE COMPLETE AND OPERATIONAL SYSTEMS.
2	THE DRAWINGS AND SPECIFICATIONS INDICATE THE GENERAL DESIGN AND ARRANGEMENT OF PIPES, FIXTURES, EQUIPMENT, SYSTEMS, ETC. INFORMATION SHOWN IS DIAGRAMMATIC IN CHARACTER AND DOES NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC. DO NOT SCALE THE DRAWINGS FOR DIMENSIONS. TAKE ALL DIMENSIONS, MEASUREMENTS, EQUIPMENT LOCATIONS, LEVELS, ETC. FROM THE ARCHITECTURAL DRAWINGS, FIELD MEASUREMENTS, AND FROM THE EQUIPMENT TO BE FURNISHED. PIPING MAY BE RELOCATED OR OFFSET FOR PROPER CLEARANCES OR TO AVOID CONFLICTS WITH OTHER TRADES. THE DESIGN INTENT (I.E. PITCHES, VELOCITIES, PRESSURE DROPS, VOLTAGE DROPS, ETC.) CANNOT BE GREATLY ALTERED WITHOUT THE APPROVAL OF THE ARCHITECT. THE COST OF THESE DEVIATIONS TO AVOID INTERFERENCE'S SHALL BE PART OF THE ORIGINAL CONTRACT BID.
3	CONFER AND COOPERATE WITH ALL OTHER TRADES TO COORDINATE THEIR WORK. COORDINATION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, MATERIALS AND EQUIPMENT ROUTED IN CEILING AND WALL CAVITIES, EQUIPMENT ARRANGEMENT IN MECHANICAL SPACES, INCLUDING EQUIPMENT CLEARANCE REQUIREMENTS, ELEVATIONS AND DIMENSIONS OF STRUCTURAL MEMBERS AND OPENINGS, ETC. NOTIFY THE ARCHITECT OF ANY CONFLICTS.
4	BASE FINAL INSTALLATION OF MATERIALS AND EQUIPMENT ON ACTUAL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE. FIELD MEASURE FOR MATERIALS AND EQUIPMENT REQUIRING EXACT FIT. NO EXTRAS WILL BE GIVEN FOR THE CONTRACTOR'S FAILURE TO FIELD COORDINATE.
5	NEITHER THE OWNER NOR THE ENGINEER IS RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PRECAUTIONS OR FOR MEANS, METHODS, TECHNIQUES, CONSTRUCTION SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE WORK.
6	LOCATE ALL EQUIPMENT THAT MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO, VALVES, MOTORS, CONTROLLERS, SWITCHGEAR, AND DRAIN POINTS IF REQUIRED FOR BETTER ACCESSIBILITY. FURNISH ACCESS DOORS FOR THIS PURPOSE. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE ALLOWED TO PROVIDE FOR BETTER ACCESSIBILITY. ANY CHANGES SHALL BE APPROVED BY THE ARCHITECT AND CONSTRUCTION MANAGER/GENERAL CONTRACTOR PRIOR TO MAKING THE CHANGE.
7	PROVIDE ACCESS DOORS, WALL OPENINGS, ROOF OPENINGS, OR ANY OTHER CONSTRUCTION REQUIREMENT NEEDED TO ACCOMMODATE THE MECHANICAL EQUIPMENT. LOCATIONS OF THESE OPENINGS SHALL BE SUBMITTED IN SUFFICIENT TIME TO BE INSTALLED IN THE NORMAL COURSE OF WORK.
8	COORDINATE ELECTRICAL REQUIREMENTS OF APPROVED MECHANICAL EQUIPMENT WITH THE ELECTRICAL SUB-CONTRACTOR PRIOR TO THE PURCHASE AND INSTALLATION OF ANY ELECTRICAL EQUIPMENT, DEVICES, WIRING, OR CONDUIT.
9	PROVIDE GENERAL CONTROL WIRING, THERMOSTATS, MOTORIZED DAMPERS AND CONDUIT ASSOCIATED WITH HVAC EQUIPMENT. COORDINATE THE LOCATION OF ALL THERMOSTATS, ROOM SENSORS, ETC. WITH THE ARCHITECT AND ALL OTHER TRADES PRIOR TO INSTALLATION. IF A CONFLICT WITH MILLWORK, LIGHT SWITCHES, WINDOWS, ETC. EXISTS, NOTIFY THE ARCHITECT OF THE POTENTIAL INTERFERENCE PRIOR TO INSTALLATION. INSTALL THERMOSTATS WITH PROTECTIVE LOCKING COVER, CENTERED AT 4'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE INDICATED. COMPLY WITH THE PROVISIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE TEXAS ACCESSIBILITY'S STANDARD (TAS).
10	PROVIDE VIBRATION ISOLATORS FOR MOTOR DRIVEN EQUIPMENT, UNLESS OTHERWISE NOTED. PROVIDE ISOLATION AS INDICATED OR AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
11	ALL EQUIPMENT SHALL HAVE IDENTIFICATION TAGS. TAGS SHALL BE PLASTIC LAMINATE, WHITE FACE WITH 1/2" TALL BLACK LETTERS. THE TAG SHALL MATCH THE UNIT DESIGNATIONS SHOWN ON THE SCHEDULES.

MECHANICAL ABBREVIATIONS

NUMBER	NOTE
(D)	EXISTING TO BE REMOVED
(E)	EXISTING TO REMAIN
(R)	EXISTING TO BE RELOCATED
A/C	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
BAS	BUILDING AUTOMATION SYSTEM
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT PER HOUR
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CU	COPPER, CONDENSING UNIT
D	EQUIPMENT DRAIN
DB	DRY BULB
DEG, °	DEGREES
DEMO	DEMOLITION
DN	DOWN
E/A	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FPVAV	FAN POWERED VAV
FSD	FIRE SMOKE DAMPER
FT	FEET
FT. WG	FEET, WATER GAUGE
GA	U.S. GAUGE
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HZ	HERTZ
IN	INCHES
IN. WG	INCHES, WATER GAUGE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LRA	LOCKED ROTOR AMPS
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
N/A	NOT APPLICABLE
O/A	OUTSIDE AIR
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
PH	PHASE
PROVIDE	FURNISH AND INSTALL
PSI	POUNDS PER SQUARE INCH
R/A	RETURN AIR
RE:	REFERENCE, REFER
RFI	REQUEST FOR INFORMATION
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
S/A	SUPPLY AIR
SD	SMOKE DETECTOR
SF	SUPPLY FAN
T/A	TRANSFER AIR
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
V	VOLTAGE
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WB	WET BULB

PLUMBING GENERAL NOTES

NUMBER	NOTE
1	PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. PROVIDE ALL PERMITS, INSPECTIONS, LICENSES AND FEES. FURNISH ALL LABOR, EQUIPMENT, SUPPLIES AND MATERIALS NECESSARY TO PROVIDE COMPLETE AND OPERATIONAL SYSTEMS.
2	THE DRAWINGS AND SPECIFICATIONS INDICATE THE GENERAL DESIGN AND ARRANGEMENT OF PIPES, FIXTURES, EQUIPMENT, SYSTEMS, ETC. INFORMATION SHOWN IS DIAGRAMMATIC IN CHARACTER AND DOES NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC. DO NOT SCALE THE DRAWINGS FOR DIMENSIONS. TAKE ALL DIMENSIONS, MEASUREMENTS, EQUIPMENT LOCATIONS, LEVELS, ETC FROM THE ARCHITECTURAL DRAWINGS AND FROM THE EQUIPMENT TO BE FURNISHED. PIPING MAY BE RELOCATED OR OFFSET FOR PROPER CLEARANCES OR TO AVOID CONFLICTS WITH OTHER TRADES. THE DESIGN INTENT (I.E. PITCHES, VELOCITIES, PRESSURE DROPS, VOLTAGE DROPS, ETC) CANNOT BE GREATLY ALTERED WITHOUT THE APPROVAL OF THE ENGINEER. THE COST OF THESE DEVIATIONS TO AVOID INTERFERENCE'S SHALL BE PART OF THE ORIGINAL CONTRACT BID.
3	EACH SUBCONTRACTOR SHALL CONFER AND COOPERATE WITH ALL OTHER TRADES TO COORDINATE THEIR WORK. COORDINATION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO MATERIALS AND EQUIPMENT ROUTED IN CEILING AND WALL CAVITIES, EQUIPMENT ARRANGEMENT IN MECHANICAL SPACES, INCLUDING EQUIPMENT CLEARANCE REQUIREMENTS, ELEVATIONS AND DIMENSIONS OF STRUCTURAL MEMBERS AND OPENINGS, ETC. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY CONFLICTS.
4	BASE FINAL INSTALLATION OF MATERIALS AND EQUIPMENT ON ACTUAL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE. FIELD MEASURE FOR MATERIALS AND EQUIPMENT REQUIRING EXACT FIT. NO EXTRAS WILL BE GIVEN FOR THE CONTRACTORS FAILURE TO FIELD COORDINATE.
5	NEITHER THE OWNER NOR THE ENGINEER IS RESPONSIBLE FOR THE CONTRACTOR'S SAFETY OR FOR MEANS, METHODS, TECHNIQUES, CONSTRUCTION SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE WORK.
6	THE CONTRACTOR SHALL LOCATE ALL EQUIPMENT THAT MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. EQUIPMENT SHALL INCLUDE (BUT NOT LIMITED TO) VALVES, SHOCK ABSORBERS, TRAPS, CLEANOUTS, MOTORS, CONTROLLERS, SWITCHGEAR, AND DRAIN POINTS IF REQUIRED FOR BETTER ACCESSIBILITY. FURNISH ACCESS DOORS FOR THIS PURPOSE. MINOR DEVIATIONS FROM THE DRAWINGS MAY BE ALLOWED TO PROVIDE FOR BETTER ACCESSIBILITY. ANY CHANGES SHALL BE APPROVED BY THE ARCHITECT, ENGINEER AND CONSTRUCTION MANAGER/GENERAL CONTRACTOR PRIOR TO MAKING THE CHANGE.
7	THE CONTRACTOR SHALL PROVIDE ACCESS DOORS, WALL OPENINGS, ROOF OPENINGS OR ANY OTHER CONSTRUCTION REQUIREMENT NEEDED TO ACCOMMODATE THE PLUMBING EQUIPMENT. LOCATIONS OF THESE OPENINGS SHALL BE SUBMITTED IN SUFFICIENT TIME TO BE INSTALLED IN THE NORMAL COURSE OF WORK.
8	THE CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS OF PLUMBING EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO THE PURCHASE AND INSTALLATION OF ANY ELECTRICAL GEAR OR CONDUIT.
9	PROVIDE VIBRATION ISOLATORS FOR MOTOR DRIVEN PLUMBING EQUIPMENT UNLESS NOTED OTHERWISE. PROVIDE ISOLATION AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
10	THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL WALL CLEANOUTS, ACCESS DOORS, ETC WITH THE ARCHITECT, ENGINEER AND ALL OTHER TRADES PRIOR TO INSTALLATION. IF A CONFLICT WITH MILLWORK, LIGHT SWITCHES, WINDOWS, ETC EXISTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER OF THE POTENTIAL INTERFERENCE PRIOR TO INSTALLATION.
11	PLUMBING VENTS THROUGH THE ROOF SHALL BE A MINIMUM OF 10 FEET FROM ALL OUTSIDE AIR INTAKES AND A MINIMUM OF 5 FEET FROM EXTERIOR PERIMETER WALLS.
12	SOME PIPES SHOWN ON EACH FLOOR PLAN MAY BE SHOWN WITH AN OFFSET FOR CLARITY.
13	PLUMBING FIXTURES AND TRIM OF LIKE KIND SHALL BE OF THE SAME MANUFACTURER THROUGHOUT THE PROJECT.
14	PROVIDE WATER HAMMER ARRESTERS BETWEEN THE NEXT TO LAST AND LAST FIXTURE AT EACH BATTERY OF PLUMBING FIXTURES IN ACCORDANCE WITH THE WATER HAMMER ARRESTER SCHEDULE AND THE PLUMBING AND DRAINAGE INSTITUTE STANDARD PDI-WH-201.
15	ALL SANITARY WASTE PIPING WITHIN THE BUILDING ENVELOPE SHALL HAVE MINIMUM SLOPES AS REQUIRED BY THE LOCAL CODE AUTHORITY. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS INDICATED ON FLOOR PLANS PRIOR TO INSTALLATION OF ANY SITE UTILITIES AND CONNECTION INTO EXISTING SERVICES.
16	COMPLY WITH THE PROVISIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE TEXAS ACCESSIBILITY'S STANDARD (TAS). PLUMBING CONTRACTOR SHALL PROVIDE PLUMBING FIXTURES WITH FLUSH VALVE HANDLES LOCATED ON THE WIDE SIDE OF EACH STALL.
17	SEAL ALL PIPE PENETRATIONS THROUGH FIRE RATED BUILDING ELEMENTS WITH AN APPROVED FIRE PROOFING MATERIAL.
18	ALL FLOOR DRAIN AND FLOOR SINKS SHALL BE PROVIDED WITH WITH LISTED TRAP GUARDS.
19	THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL NATURAL GAS UTILITY COMPANY TO EXTEND NATURAL GAS SERVICE TO LOCATION INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL PAY ALL FEES AND COSTS ASSOCIATED/REQUIRED BY THE LOCAL GAS UTILITY COMPANY FOR THE EXTENSION OF THE GAS SERVICE. THE CONTRACTOR SHALL PROVIDE ALL PIPING, VALVES, ETC THAT ARE NOT PROVIDED BY THE LOCAL GAS UTILITY COMPANY AND THAT ARE REQUIRED FOR CONNECTION OF THE GAS METER AND REGULATOR(S) FOR A COMPLETE OPERATIONAL SYSTEM. THE CONTRACTOR SHALL VERIFY THE NATURAL GAS PRESSURE PROVIDED BY THE NATURAL GAS UTILITY COMPANY AND PROVIDE ADDITIONAL REGULATORS AS REQUIRED BY THE GAS FIRED EQUIPMENT INSTALLED.
19	ALL PIPING LOCATED IN EXPOSED CEILING AREAS SHALL BE INSTALLED TIGHT TO CEILING AND ROUTE IN PARALLEL WITH ADJACENT WALLS.
20	PROVIDE ISOLATION VALVES AT EACH DOMESTIC WATER BRANCH LINE. VALVE SHALL BE INSTALLED IN ACCESSIBLE LOCATION.

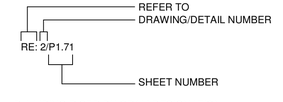
PLUMBING ABBREVIATIONS

NUMBER	NOTE
(D)	EXISTING TO BE REMOVED
(E)	EXISTING TO REMAIN
(R)	EXISTING TO BE RELOCATED
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
BD	BUILDING DRAIN
BFG	BELOW FINISHED GRADE
BLDG	BUILDING
BS	BUILDING SEWER
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CMU	CONCRETE MASONRY UNIT
CU	COPPER, CONDENSING UNIT
D	EQUIPMENT DRAIN
DCO	DOUBLE CLEANOUT
DCW	DOMESTIC COLD WATER
DEG, °	DEGREES
DEMO	DEMOLITION
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DN	DOWN
DSN	DOWNSPOUT NOZZLE
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FS	FLOOR SINK
FT	FEET
G	NATURAL GAS
GCO	GRADE CLEANOUT
HB	HOSE BIBB
IE	INVERT ELEVATION
IN	INCHES
KW	KILOWATT
L	LAVATORY
LBS	POUNDS
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MSB	MOP SINK BASIN
N/A	NOT APPLICABLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NFPH	NON-FREEZE POST HYDRANT
NFRH	NON-FREEZE ROOF HYDRANT
NFWH	NON-FREEZE WALL HYDRANT
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFD	OVERFLOW DRAIN
PCO	PLUG CLEANOUT
PH	PHASE
PROVIDE	FURNISH AND INSTALL
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
RD	ROOF DRAIN
RE:	REFERENCE, REFER
RFI	REQUEST FOR INFORMATION
RPZ	REDUCE PRESSURE ZONE
S	SINK
SD	STORM DRAIN
SSD	SUB SURFACE DRAIN
TYP	TYPICAL
U	URINAL
U&D	UP & DOWN
UL	UNDERWRITERS LABORATORIES
V	SANITARY VENT, VOLTAGE
VTR	VENT THROUGH ROOF
W	SANITARY WASTE, WATTS
WC	WATER CLOSET
WCO	WALL CLEANOUT

LINE TYPES

SYMBOL	DESCRIPTION
—W—	SANITARY SEWER (ABOVE CEILING)
—BD—	SANITARY SEWER (BELOW FLOOR, BUILDING DRAIN)
—BS—	SANITARY SEWER (OUTSIDE OF BUILDING, BUILDING SEWER)
—GW—	GREASY WASTE (ABOVE CEILING)
—GD—	GREASY WASTE (BELOW FLOOR)
—D—	EQUIPMENT DRAIN (ABOVE CEILING)
—ST—	STORM WATER PIPING (ABOVE CEILING)
—SD—	STORM WATER PIPING (BELOW FLOOR/GRADE)
—OFD—	OVERFLOW DRAIN (ABOVE CEILING)
—SSD—	SUBSURFACE DRAINAGE
—V—	SANITARY VENT
—DCW—	DOMESTIC COLD WATER
—DHW—	DOMESTIC HOT WATER
—DHWR—	DOMESTIC HOT WATER CIRCULATION
—G—	NATURAL GAS
	DIRECTION OF FLOW
	DIRECTION OF PIPE SLOPE DOWN
	PIPE DEMOLITION

DRAWING/DETAIL REFERENCE



MISCELLANEOUS

CONNECTION INTO EXISTING (CTE)

PLUMBING BASIS OF DESIGN

NUMBER	NOTE
DOMESTIC HOT WATER SYSTEM TYPE(S):	TANKLSS ELECTRIC WATER HEATER
DOMESTIC WATER TOTAL FIXTURE UNITS ADDED:	7 FU ADDED
SANITARY WASTE AND VENT TOTAL DRAINAGE FIXTURE UNITS ADDED:	4 DFU ADDED

MECHANICAL BASIS OF DESIGN

NUMBER	NOTE
AMBIENT TEMPERATURE AT CONDENSING UNITS:	105 DEG F (DB, SUMMER)
INDOOR DESIGN TEMPERATURE (SUMMER):	75 DEG F (DB), 50% (RH)
INDOOR DESIGN TEMPERATURE (WINTER):	72 DEG F (DB)
OUTDOOR DESIGN TEMPERATURE (SUMMER):	99 DEG F (DB), 74 DEG F (WB)
OUTDOOR DESIGN TEMPERATURE (WINTER):	22 DEG F (DB)
OUTSIDE AIR REQUIREMENTS:	PER IMC TABLE 403.3

MECHANICAL & PLUMBING CODE SUMMARY

NUMBER	NOTE
	CODE SUMMARY
BUILDING CODE:	2015 INTERNATIONAL BUILDING CODE (IBC) WITH CITY AMENDMENTS.
IECC CODE:	2015 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) WITCH CITY AMENDMENTS.
MECHANICAL CODE:	2015 INTERNATIONAL MECHANICAL CODE (IMC) WITH CITY AMENDMENTS.
PLUMBING CODE:	2015 INTERNATIONAL PLUMBING CODE (IPC) WITH CITY AMENDMENTS.

WATER HAMMER ARRESTER SCHEDULE

NOTES:
1.ALL WHA'S SHALL BE PISTON TYPE WITH EPDM O-RINGS, SIOUX CHIEF'S SERIES 650 OR EQUAL.
2.ALL WHA'S SHALL BE ANSI/ASSE 1010 2004 CERTIFIED AND APPROVED FOR INSTALLATION WITH NO ACCESS PANEL REQUIRED.
3.SIZE AND LOCATE WATER HAMMER ARRESTERS IN ACCORDANCE WITH PDI PAMPHLET PDI-WH-201.

P.D.I. SIZE	A	B	C	D	E	F
FIXTURE UNITS	1-11	12-32	33-60	61-113	114-154	155-330

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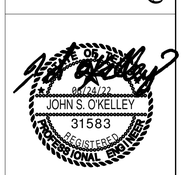

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SKE PROJECT # 3740121

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Title: MECHANICAL & PLUMBING LEGEND & SYMBOLS

Sheet: **MP000**

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE DISCRIPTION	ROUGH IN (MIN) WASTE	VENT	DCW	DHW	MANUFACTURER/MODEL	ADA
DCO	TWO-WAY GRADE CLEANOUT, CI BODY, ADJ. TYPE, SOIL PIPE HUB W/COUNTERSUNK THREADED BRNZ PLUG	-	-	-	-	JOSAM SERIES 56000, OR EQUAL IN ZURN, OR WADE, REFER DETAIL 3/P300	-
HB1	HOSE BIBB, BRASS WITH CHROME FINISH, VAUUM BREAKER, 3/4" MALE N.H.T OUTLET, WALL FLANGE	-	-	3/4"	-	MIFAB MHY-90; ZURN Z1341; WOODFORD #24	-
L1	LAVATORY, 20"X18" VITREOUS CHINA WALL MOUNT, 4" CENTER FAUCET HOLES, FRONT OVERFLOW, CONCEALED ARM CARRIER SYSTEM, DECK MOUNTED FAUCET, INTERGRAL 4" BACKSPLASH, ANSI A112.19.2R	2"	1 1/2"	-	-	AMERICAN STANDARD, 0355.012; KOHLER, K-2005; ZURN, Z5364; SLOAN, SS-3003; OR EQUAL	YES
	FAUCET, DECK MOUNT, CHROME PLATED BRASS, 3 1/2" RIGID/ SWING GOOSENECK SPOUT, 1/4 TURN, 4" WRIST BLADE HANDLES, 4" CENTERS, NSF 61 COMPLIANT, ANSI A112.18.1M, 0.5 GPM MAX. FLOW RATE.	-	-	1/2"	1/2"	CHICAGO FAUCETS, 802-V317E66XKABCP; OR EQUAL	
	P-TRAP, CHROME PLATED CAST BRASS BODY WITH CLEANOUT, SEAMLESS WALL BEND, 17 GA.	-	-	-	-	MCGUIRE, 8902; BRASSCRAFT, 507; OR EQUAL IN T&S	
	OFFSET TAILPIECE AND STRAINER, CHROME PLATED CAST BRASS	-	-	-	-	MCGUIRE, 155WC; OR EQUAL IN T&S BRASS; OR BRASSCRAFT	
	THERMOSTATIC MIXING VALVE, 0.25 GPM MINIMUM FLOW, INTEGRAL INLET CHECK VALVES AND STRAINER, SET TEMPERATURE TO 105°, ASSE 1070.	-	-	1/2"	1/2"	WATTS, LFUSG-B; LEONARD, 170-LF; OR EQUAL	
	FIXTURE CARRIER, CONCEALED ARMS, LEVELING AND SECURING SCREWS, UPRIGHTS, WELDED FEET.	-	-	-	-	JOSAM, SERIES 17100; WATTS, CA-411; ZURN, Z1231; OR JR SMITH, 0700	
WC1	WATERCLOSET, ADA COMPLIANT, FLOOR MOUNT, FLUSHOMETER VALVE, 1 1/2" TOP SPUD, ELONGATED, SIPHON ACTION JETTED BOWL, VITREOUS CHINA, WHITE, ASME A112.19.2M, 2 " FULLY GLAZED TRAPWAY, 10" ROUGH-IN, 1.28 GPF.	4"	2"	-	-	AMERICAN STANDARD, 3461.128; KOHLER, K-4405; ZURN, Z5665; SLOAN, ST-2020-1.28	YES
	SEAT, EXTRA HEAVY WEIGHT, POSTURE MOLDED SOLID PLASTIC, ELONGATED, OPEN FRONT, LESS COVER, EXTERNAL CHECK HINGES, STAINLESS STEEL HINGE POSTS, WHITE.	-	-	-	-	CHURCH, 9500C; BEMIS, 1655C; OLSONITE, 95/SS; OR EQUAL	
	FLUSHOMETER VALVE, EXPOSED DIAPHRAGM-TYPE, CHROME PLATED, 1 1/2" TOP SPUD, 1.28 GPF, SPUD COUPLING AND FLANGE, OSCILLATING NON-HOLD OPEN HANDLE, CHROME PLATED ANGLE STOP WITH STOP CAP,	-	-	1"	-	SLOAN REGAL 111-1.28; ZURN, Z6200-PEV	
WCO	WALL CLEANOUT, CI BODY, RECESSED, THREADED BRASS PLUG, STAINLESS STEEL ACCESS COVER	-	-	-	-	JOSAM SERIES 58890; MIFAB C1460; ZURN Z-1441. REFER DETAIL 2/P300	-

REMARKS:
1. CONTRACTOR SHALL FURNISH AND INSTALL SUPPLIES, STOPS, TRAPS, TAILPIECES AND ALL APPURTENANCES NECESSARY FOR A COMPLETE INSTALLATION OF ALL FIXTURES.
2. ALL ADA ACCESSIBLE SINKS AND LAVATORIES SHALL BE EQUIPPED WITH TRUEBRO #103 UNDERSINK PROTECTIVE PIPE COVERS WHERE NOT CONCEALED BY MILLWORK.
3. ABOVE THE FLOOR P-TRAPS ON LAVS AND SINKS SHALL BE 17 GAUGE, CHROME PLATED BRASS. ACCEPTABLE MANUFACTURERS: MCGUIRE, T&S BRASS, OR BRASSCRAFT.
4. CONTRACTOR SHALL VERIFY FIXTURE SUPPLIES AND APPURTENANCES FOR EACH FIXTURE PRIOR TO BIDDING AND PURCHASING.
5. CONTRACTOR SHALL VERIFY PLUMBING FIXTURES PROVIDED COMPLY WITH HANDICAPPED ACCESSIBILITY STANDARDS INCLUDING HEIGHT AND CLEARANCE REQUIREMENTS.

DOMESTIC ELECTRIC WATER HEATER SCHEDULE

MARK	SERVICE	TYPE	MIN. PRESSURE (PSI)	TEMP RISE (°F) AT 1 GPM	LEAVING WATER TEMP (°F)	ELECTRICAL CHARACTERISTICS # ELEMENTS	KW	VOLTS	PHASE	HZ	MANUFACTURER AND MODEL NUMBER	REMARKS
WH1	DOMESTIC HOT WATER	INSTA-HOT	25	55	110	1	8	277	1	60	EEMAX, PROADVANTAGE PA008277T	(1)

(1) OR EQUAL.

REDUCED PRESSURE BACKFLOW ASSEMBLY SCHEDULE

MARK	SERVICE	SIZE	PRESSURE DROP (PSIG)	MANUFACTURER AND MODEL NUMBER	REMARKS
RPZ	BATHROOM GROUP	1"	0-15	ZURN BF-375ST	1,2

REMARKS:
1. MOUNT AND SUPPORT FROM WALL.
2. PROVIDE FUNNEL (JOSAM E3) AND PIPE, SIZED PER THE MANUFACTURER'S RECOMMENDATIONS, ROUTE TO FLOOR DRAIN PROVIDING AN AIR GAP 2 TIMES THE SIZE OF PIPE.

REMARKS:
1. HEATER SHALL BE EQUIPED FOR NATURAL GAS.
2. PROVIDE WITH SPARK IGNITED IGNITION.
3. 100% SHUTOFF PRE-PURGE PRIOR TO FIRING.
4. PROVIDE REMOTE MOUNTED THERMOSTAT. REFER TO DRAWINGS FOR EXACT LOCATION.
5. MOUNT AT 10-FT AFF. MAINTAIN ALL MANUFACTURER REQUIRED CLEARANCES.
6. PROVIDE 6-INCH ROOFTOP VENT PACKAGE FOR COMMON VENT VERTICALLY THROUGH ROOF.
7. OR APPROVED EQUAL.

GAS-FIRED UNIT HEATER SCHEDULE

MARK	SERVES	FLUE SIZE	HEATING INPUT (MBH)	HEATING OUTPUT (MBH)	V	PHASE	FLA	WEIGHT (LBS)	MANUFACTURER MAKE/MODEL	REMARKS
UH-1	PUMP ROOM	4"	30	24.6	120	1	1.9	60	REZNOR/UDAS	1,2,3,4,5,6,7
UH-2	PUMP ROOM	4"	30	24.6	120	1	1.9	60	REZNOR/UDAS	1,2,3,4,5,6,7

REMARKS:
1. PROVIDE FACTORY MOUNTED HARDWARE FOR MOUNTING TO THE WALL.
2. PROVIDE FACTORY STARTER/DISCONNECT WITH MOTOR THERMAL OVERLOAD PROTECTION.
3. PROVIDE WITH 2-SPEED FAN CONTROL INTERLOCKED WITH THERMOSTAT.
4. FAN SHALL BE OF HEAVY DUTY CONSTRUCTION.
5. PROVIDE FAN WITH INTEGRAL BACK-DRAFT DAMPER.
6. PROVIDE STAINLESS STEEL SCREEN.
7. PROVIDE WALL HOOD W/BIRD SCREEN.
8. PROVIDE FAN WITH ALUMINUM SHUTTER.
9. INTERLOCK START-STOP WITH LIGHT SWITCH.
10. OR APPROVED EQUAL.

EXHAUST FAN SCHEDULE

MARK	EXHAUST CFM	TYPE	ESP	HP	V	PH	DRIVE	SONES	WEIGHT	MANUFACTURER MAKE/MODEL	REMARKS
EF-1	70	CEILING	0.3	1/20	120	1	DIRECT	15	20	LOREN COOK/GC	2,5,9,10
EF-2	6500	SIDEWALL PROPELLER	0.1	1/2	240	1	BELT	15	75	GREENHECK/SBE	1,2,3,4,5,6,7,8,10
EF-3	6500	SIDEWALL PROPELLER	0.1	1/2	240	1	BELT	15	75	GREENHECK/SBE	1,2,3,4,5,6,7,8,10

REMARKS:
1. PROVIDED WITH CORROSION RESISTANT INSECT SCREEN AND LOW LEAKAGE SEALS.
2. VERIFY FINISH WITH ARCHITECT BEFORE ORDERING.
3. ACTUATOR SHALL BE 120V, POWER CLOSED; SPRING OPEN.

LOUVER SCHEDULE

MARK	TYPE	LOUVER HEIGHT	LOUVER WIDTH	LOUVER DEPTH	LOUVER CFM	LOUVER VELOCITY	ESP	MANUFACTURER MAKE/MODEL	REMARKS
L-1	ADJUSTABLE BLADE	2'-6"	2'-6"	0'-6"	4340 CFM	600 FPM	0.1	GREENHECK/EAH-690	1,2,3
L-2	ADJUSTABLE BLADE	2'-6"	2'-6"	0'-6"	4340 CFM	600 FPM	0.1	GREENHECK/EAH-690	1,2,3
L-3	ADJUSTABLE BLADE	2'-6"	2'-6"	0'-6"	4340 CFM	600 FPM	0.1	GREENHECK/EAH-690	1,2,3

REMARKS:
1. CAPACITIES LISTED ARE NET FROM UNIT DISCHARGE. UNITS SHALL PERFORM TO LISTED CAPACITIES.
2. OR EQUAL.
3. UNIT WIRING INCLUDES ELECTRIC HEATER.
4. UNIT PERFORMANCE MUST SATISFY BOTH SENSIBLE AND LATENT CAPACITY REQUIREMENTS.
5. PROVIDE SINGLE POINT ELECTRICAL CONNECTION.

WALL MOUNT AC UNIT SCHEDULE

MARK	ARRANGEMENT	EVAPORATOR FAN S/A CFM	ESP	MOTOR HP	POWER CONNECTION V	PH	MCA	MOCP	HEATING PERFORMANCE INPUT KW	CAP (MBH)	NO. STAGES	COMPRESSOR COMP QUANTITY	REF	CONDENSER NO. FANS	FLA	NET COOLING PERFORMANCE DATA CAPACITY (MBH) QS	QL	QT	AMB DB	ENTERING D.B.	W.B.	WEIGHT (LBS)	SEER (EER)	MANUFACTURER MAKE AND MODEL	REMARKS
AC-1	THRU-WALL	1725 CFM	0.20	1/2	460	3	18	25	9	28.26	1	1	R410A	1	0	0.0	0.0	0.0	221	100	63	560	(10.0)	BARD/W72AC	1,2,3,4,5
AC-2	THRU-WALL	1725 CFM	0.20	1/2	460	3	18	25	9	28.26	1	1	R410A	1	0	0.0	0.0	0.0	221	100	63	560	(10.0)	BARD/W72AC	1,2,3,4,5

THROUGH-THE-WALL HEAT PUMP SCHEDULE

MARK AC-	ARRANGEMENT / TYPE	NOM. SIZE TONS	FAN CFM	POWER CONN. V.	Ph.	MCA	MOCP	COOLING PERFORMANCE DATA CAPACITY (MBH) TOTAL	SENS	LAT	OUTDOOR D.B.	ENTERING D.B.	W.B.	MIN. EER	HEATING CAPACITY OUTDOOR D.B.	MBH	AUX. ELEC. HEATER KW	MANUFACTURER AND MODEL NO.	REMARKS
1	THROUGH WALL	0.5	265	208	1	3.5	15.0	7.4	6.0	1.4	105	75	64	10.4	47.0	6.6	3.5	AMANA PTHP	1,2,3,4,5

1. AMANA IS THE BASIS FOR DESIGN. ACCEPTABLE ALTERNATE MANUFACTURER'S ARE: GE, AND TRANE. CONTRACTOR IS RESPONSIBLE FOR VARIATIONS IN FIT AND ELECTRICAL SERVICE.
2. UNIT PROVIDED WITH AN OUTDOOR, EXTRUDED ALUMINUM ARCHITECTURAL GRILLE.
3. PROVIDE OPTIONAL POWER VENT KIT
4. CFM GIVEN IS FOR WET COIL AT HIGH FAN SPEED
5. PROVIDE OPTIONAL EVAPORATION CONDENSATE REMOVAL.

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Title: MECHANICAL & PLUMBING SCHEDULES

Sheet: **MP001**

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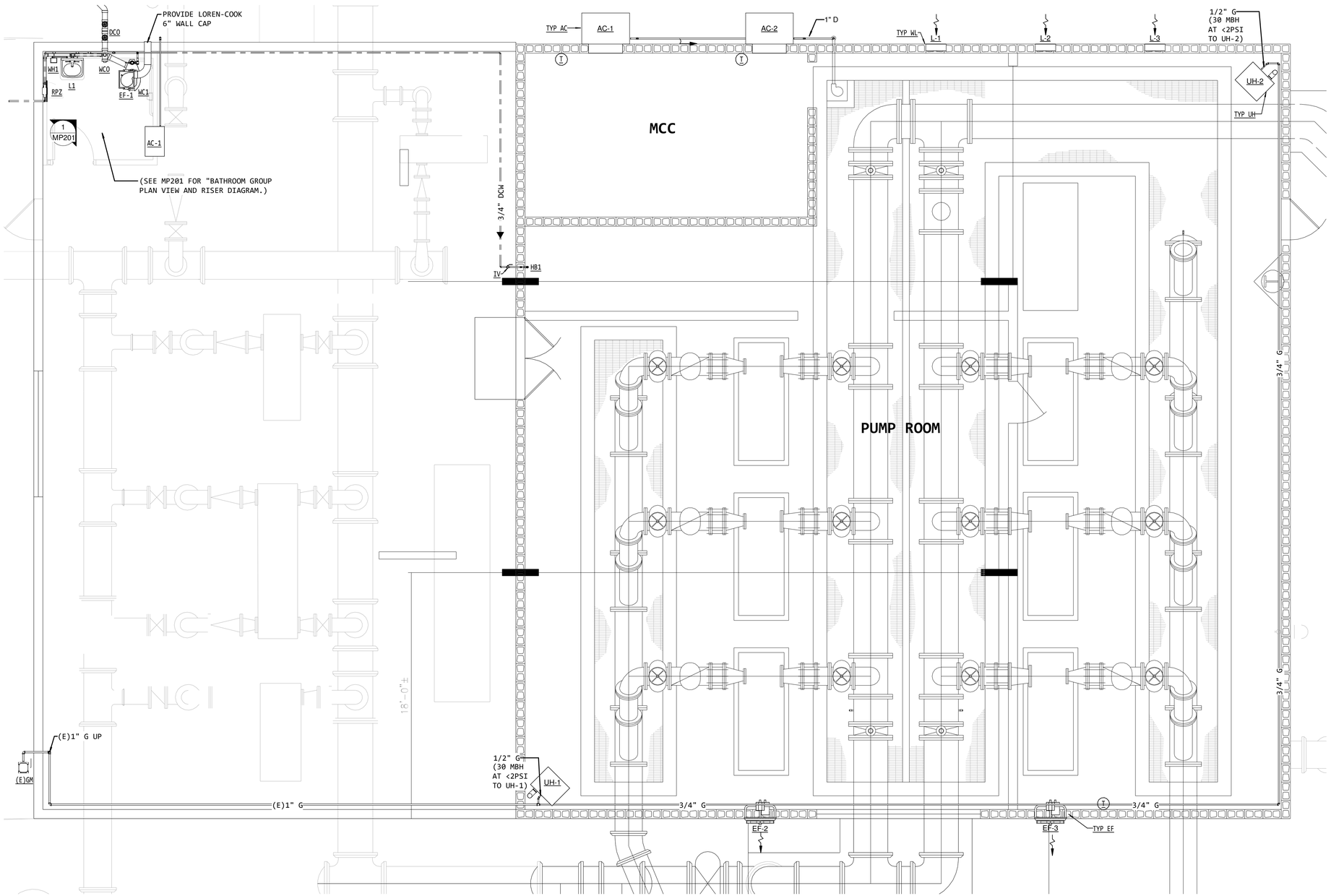

1 / MP200 LEVEL 1 MECHANICAL-PUMP ROOM BUILDING
1/4" = 1'-0"

KEY NOTES

KEY	NOTE
(E)GM	GAS METER, FIELD VERIFY EXISTING SUPPLY LOAD AND PRESSURE. REGULATE TO ACCOMIDATE AN ADDITIONAL 60 MBH TO THE EXISTING LOAD.
AC-1	TYPICAL THRU WALL HEAT PUMP. REFER TO THRU THE WALL HEAT PUMP SCHEDULE FOR ADDITIONAL INFORMATION.
DCO	TYPICAL DOUBLE CLEANOUT, REFER TO PLUMING FIXTURE SCHEDUEL FOR ADDITIONAL INFORMAION.
EF-1	MAX 60 CFM
HB1	TYPICAL 3/4-INCH WALL MOUNTED HOSE BIBB. COORDINATE MOUNTING HEIGHT WITH ARCHTIECT. REFER TO HB1 ON PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
IV	ISOLATION VALVE, 2 PIECE, FULL PORT, BRASS BALL VALVE
L1	TYPICAL WALL MOUNT LAVATORY. REFER TO L1 ON PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
RPZ	TYPICAL REDUCED PRESSURE ZONE. REFER TO REDUCED PRESSURE BACFLOW ASSYMBLY SCHEDULE FOR ADDITIONAL INFORMATION.
T	THERMOSTAT TO CONTROL EXHAUST FANS EF-1,2. REFER TO ARCHITECT FOR FINAL LOCATION.
TYP AC	TYPICAL WALL MOUNTED AIR CONDITIONER WITH ELECTRIC HEAT. ROUTE CONDENSATE TO SPASH BLOCK AND DISCHARGE 6" ABOVE SPASH BLOCK. REFER TO WALL MOUNT AC UNIT SCHEDULE AND DETAIL 2/MP300 FOR ADDITIONAL INFORMATION.
TYP EF	TYPICAL WALL MOUNTED PROPELLER EXHAUST FAN. FANS TO BE CONTROLLED BY THERMOSTATS. WHEN THE TEMPERATURE REACHES 85 DEGREES, FANS ARE TO TURN ON AND RUN AT HALF SPEED. WHEN TEMPERATURE REACHES 95 DEGREES, FANS ARE TO RUN AT FULL SPEED. MOUNT 5 FT CENTERLINE ABOVE FLOOR. REFER TO FAN SCHEDULE AND DETAIL 3/MP300 FOR ADDITIONAL INFORMATION.
TYP UH	TYPICAL GAS FIRIED UNIT HEATER. COMBUSTION AIR TO BE PULLED FROM THE ROOM. VENT THROUGH ROOF. REFER TO GAS FIRED UNIT HEATER SCHEDULE AND DETAIL 4/MP300 FOR ADDITIONAL INFORMATION.
TYP WL	TYPICAL OPERABLE INTAKE WALL LOUVER. INTAKE LOUVERS ARE MOTORIZED AND MUST BE INTERLOCKED WITH EXHAUST FANS. WHEN THE FAN IS ON, THE LOUVER IS TO BE FULLY OPEN. WHEN THE FAN IS OFF, THE LOUVER IS TO BE FULLY CLOSED. MOUNT 4 FT CENTERLINE ABOVE FLOOR. REFER TO LOUVER SCHEDULE AND DETAIL 1/MP300 FOR ADDITIONAL INFORMATION.
WC1	TYPICAL FLOOR MOUNTED WATER CLOSET. REFER TO WC1 ON PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
WCO	TYPICAL WALL CLEANOUT, REFER TO PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
WH1	TYPICAL TANKLESS WATER HEATER. PROVIDE AN ELECTRIC TANKLESS WATER HEATER EEMAX PROADVANTAGE COMMERCIAL #PA008277T OR EQUAL. REFER TO WATER HEATER SCHEUDLE ON MP001 FOR ADDITIONAL INFORMATION.

(PRIOR TO CONSTRUCTION COMMENCMENT, FIELD VERIFY AND RECORD EXISTING GAS SUPPLY PIPE SIZES, PRESSURE AND GAS LOAD TO BUILDING. PROVIDE RECORDED EXISTING GAS INFORMATION TO MEP ENGINEER FOR DESIGN VERIFICATION. REGULATE EXISTING GAS TO ACCOMIDATE THE ADDITION OF 60 MBH AT 150 FEET.)

(DRAWINGS OF EXISTING PIPE SIZE AND LOCATION BASED ON LIMITED INFORMATION AND SITE VISIT PICTURES.)

4' 0' 4' 8'
1/4" = 1'-0"

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Texas Registration # F-10963

FOR REVIEW ONLY, NOT FOR CONSTRUCTION

CITY OF TEMPLE
AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TEXAS 76504
605 S. 31ST STREET

06/24/22
JOHN S. O'KELLEY
31583
REGISTERED PROFESSIONAL ENGINEER

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S. Kanetzky Engineering,LLC.
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Building B, Suite 100
Bee Cave, Texas 78738
(512) 326-3380
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TBPE Firm No. F-2356

SKE PROJECT # 3740121

Filename:
Scale: AS NOTED
Drawn By: BR/CA
Checked By: JSO
Date: 06/24/2022

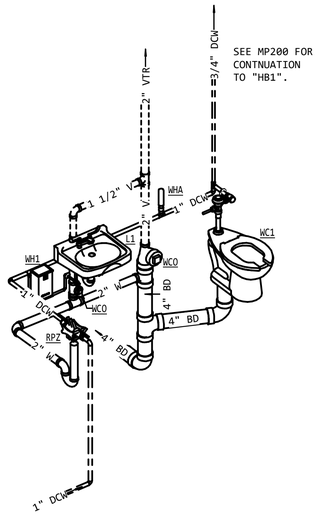
DWG Number:

Title:
LEVEL 1 PLAN EAST MECHANICAL & PLUMBING

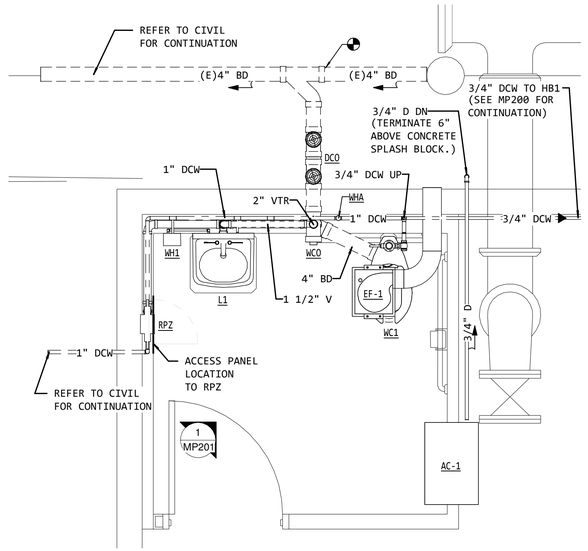
Sheet:
MP200

KEY NOTES

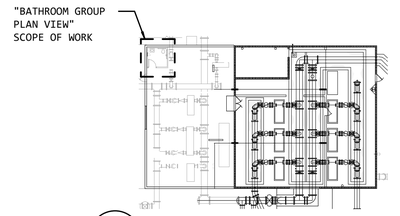
KEY	NOTE
AC-1	TYPICAL THRU WALL HEAT PUMP. REFER TO THRU THE WALL HEAT PUMP SCHEDULE FOR ADDITIONAL INFORMATION.
DCO	TYPICAL DOUBLE CLEANOUT, REFER TO PLUMING FIXTURE SCHEDUEL FOR ADDITIONAL INFORMAION.
EF-1	MAX 60 CFM
L1	TYPICAL WALL MOUNT LAVATORY. REFER TO L1 ON PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
RPZ	TYPICAL REDUCED PRESSURE ZONE. REFER TO REDUCED PRESSURE BACFLOW ASSYMBLY SCHEDULE FOR ADDITIONAL INFORMATION.
WC1	TYPICAL FLOOR MOUNTED WATER CLOSET. REFER TO WC1 ON PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
WCO	TYPICAL WALL CLEANOUT, REFER TO PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
WH1	TYPICAL TANKLESS WATER HEATER, PROVIDE AN ELECTRIC TANKLESS WATER HEATER EEMAX PROADVANTAGE COMMERCIAL #PA008277T OR EQUAL. REFER TO WATER HEATER SCHEUDLE ON MP001 FOR ADDITIONAL INFORMATION.
WHA	WATER HAMMER ARRESTOR. SEE WATER HAMMER ARRESTER SCHEDULE ON MP000 FOR SIZING.



1 MP201 BATHROOM GROUP



2 MP201 BATHROOM GROUP PLAN VIEW
1/2" = 1'-0"



3 MP201 LEVEL 1 SITE PLAN
1" = 30'-0"

2' 0' 2' 4'
1/2" = 1'-0"

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DWG Number:

Title: LEVEL 1 PLAN WEST MECHANICAL & PLUMBING

Sheet: **MP201**

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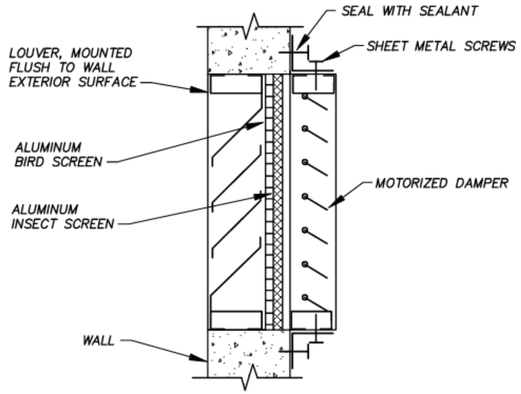
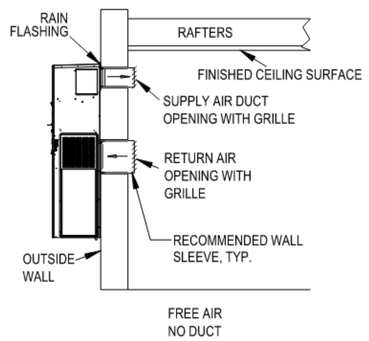
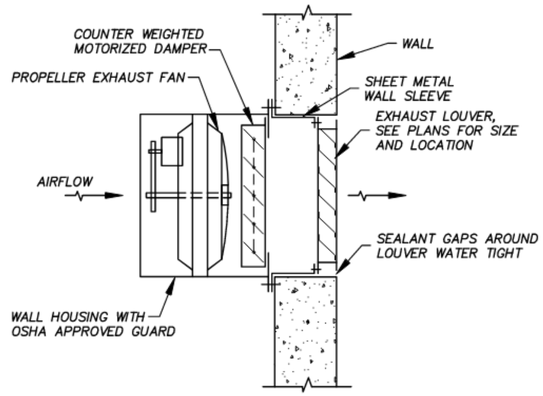


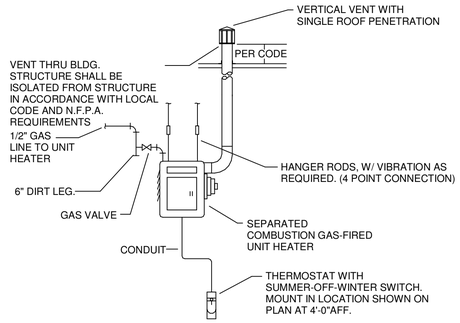
1 MP300 INTAKE LOUVER WITH MOTORIZED DAMPER
N.T.S.



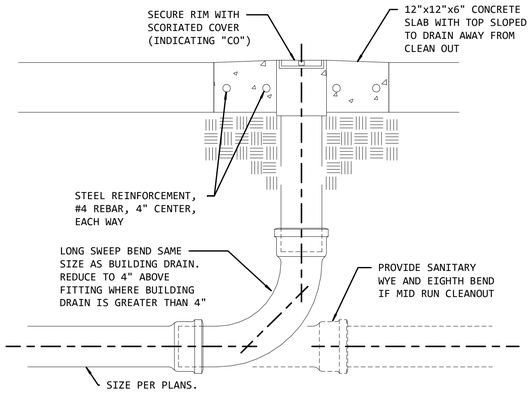
2 MP300 THRU-WALL AC UNIT MOUNTING INSTALLATION
N.T.S.



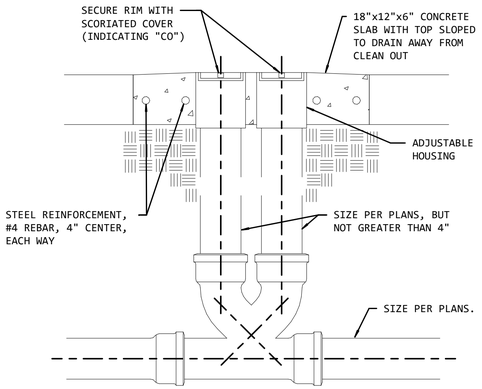
3 MP300 WALL MOUNTED EXHAUST FAN
N.T.S.



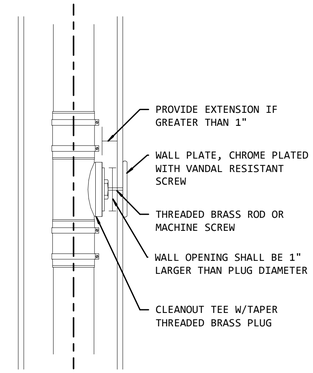
4 MP300 SEPERATED COMBUSTION GAS FIRED UNIT HEATER
N.T.S.

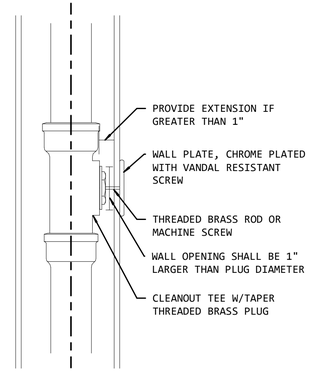


5 MP300 GRADE CLEANOUT
N.T.S.

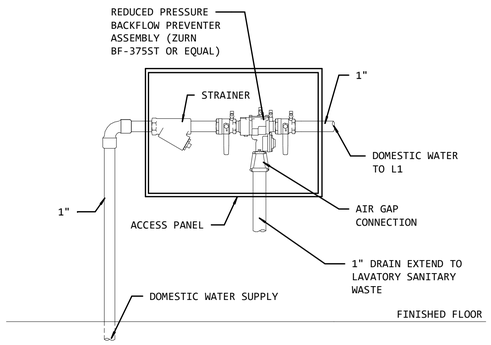


6 MP300 TWO-WAY GRADE CLEANOUT
N.T.S.



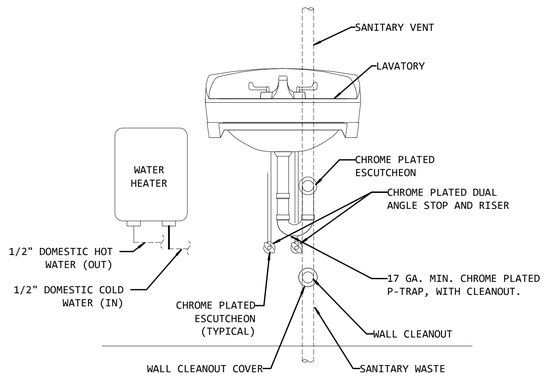


7 MP300 WALL CLEANOUT
N.T.S.

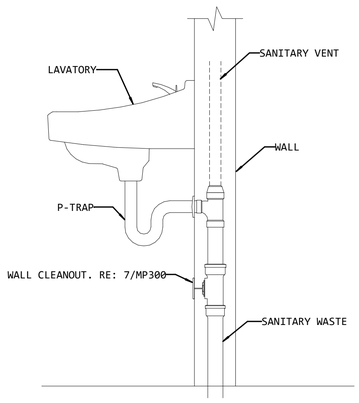


NOTES:
MINIMUM CLEARANCES AROUND BACKFLOW DEVICE SHALL BE AS FOLLOWS:
1. MIN. 12"/MAX 36" BOTTOM OF VALVE TO FINISHED FLOOR
2. 24" MIN FRONT CLEARANCE.
3. MINIMUM 12" SIDE CLEARANCES.

8 MP300 REDUCED PRESSURE BACKFLOW PREVENTER
N.T.S.



9 MP300 TYPICAL LAVATORY W/ WATER HEATER
N.T.S.



NOTES:
FIXTURE CARRIER AND SERVICE STOPS ARE NOT SHOWN FOR CLARITY.
REFER TO PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.

10 MP300 TYPICAL LAVATORY W/ WALL CLEANOUT
N.T.S.

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Filename:
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Drawn By: BR/CA
Checked By: JSO
Date: 06/24/2022

DWG Number:

Title: MECHANICAL & PLUMBING DETAILS

Sheet: MP300

PLUMBING SPECIFICATIONS

SCOPE OF WORK

1. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE THE INSTALLATION OF THE WORK OF THIS SECTION AS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN, INCLUDING ALL INCIDENTAL WORK NECESSARY TO MAKE IT COMPLETE, SATISFACTORY AND READY FOR OPERATION AND USE. INSTALLATION OF ALL EQUIPMENT SHALL COMPLY WITH THE APPLICABLE DIVISIONS OF THE LOCAL BUILDING AND SAFETY DEPARTMENT CODES.
2. ALL SEWER AND WATER PIPING SHALL BE PROPERLY TESTED AND DISINFECTED TO THE SATISFACTION OF THE ARCHITECT AND THE AUTHORITY HAVING JURISDICTION.

DOMESTIC WATER PIPING AND FITTINGS

1. DOMESTIC (POTABLE) COLD AND HOT WATER PIPING ABOVE GROUND/SLAB SHALL BE HARD DRAWN COPPER TUBE, ASTM B88, TYPE "L" WATER TUBE, DRAWN TEMPER. FITTINGS SHALL BE CAST-COPPER-ALLOY, ASTM B16.18 OR WROUGHT-COPPER, ASTM B16.22 SOLDER JOINT FITTINGS. PROVIDE SHUTOFF VALVE ON EACH WATER SUPPLY TO EQUIPMENT AND ON EACH WATER SUPPLY TO PLUMBING FIXTURES WITHOUT SUPPLY STOPS. USE BALL VALVES FOR PIPING NPS 2 AND SMALLER.

SANITARY SEWER PIPING SYSTEMS

1. WASTE AND VENT PIPING ABOVE GROUND/SLAB AND IN RETURN AIR PLENUM SHALL BE CAST IRON SOIL PIPE, NO-HUB WITH STAINLESS STEEL COUPLINGS (ASTM A 888, ASTM C 1277, ASTM C 564).

GAS PIPING SYSTEMS

1. GAS PIPING ABOVE GROUND SHALL BE STEEL PIPE ASTM A 53; TYPE E OR S; GRADE B; SCHEDULE 40; BLACK WITH MALLEABLE-IRON THREADED FITTINGS: ASME B16.3, CLASS 150, STANDARD PATTERN, WITH THREADED ENDS ACCORDING TO ASME B1.20.1. PROVIDE PRIMER PAINT WITH RUST INHIBITOR ON ALL GAS PIPING DURING CONSTRUCTION TO PREVENT RUST AND PROVIDE A FINAL FINISHING PAINT WITH COLOR OF GRAY.
2. GAS PIPING BELOW GRADE SHALL BE PE PIPE ASTM D2513; AND FACTORY-FABRICATED FITTINGS WITH PE PIPE COMPLYING WITH ASTM D2513, SDR 11.
3. GAS STOPS: BRONZE BODY WITH AGA STAMP, PLUG TYPE WITH BRONZE PLUG AND FLAT OR SQUARE HEAD, BALL TYPE WITH CHROME-PLATED BRASS BALL AND LEVER HANDLE

INSULATION

1. MINERAL-FIBER, PIPE INSULATION: PREFORMED PIPE INSULATION COMPLYING WITH ASTM C 547, TYPE I, GRADE A, WITH ABSORBENT CLOTH FACTORY APPLIED TO THE ENTIRE INSIDE SURFACE OF PREFORMED PIPE INSULATION AND EXTENDED THROUGH THE LONGITUDINAL JOINT TO OUTSIDE SURFACE OF INSULATION UNDER INSULATION JACKET. FACTORY APPLY A WHITE, POLYMER, VAPOR-RETARDER JACKET WITH SELF-SEALING ADHESIVE TAPE SEAM AND EVAPORATION HOLES RUNNING CONTINUOUSLY ALONG THE LONGITUDINAL SEAM, EXPOSING THE ABSORBENT CLOTH. INSULATE ALL HOT AND COLD WATER PIPING WITH 1" THICK PIPE INSULATION. ALL WATER PIPING INSTALLED IN EXTERIOR WALLS OR IN ATTIC SPACES SHALL BE INSTALLED TO THE HEATED SIDE OF THE WALL OR ATTIC INSULATION. ALL WATER PIPING SUBJECT TO FREEZING TEMPERATURES SHALL BE:
A. INSULATED SUFFICIENTLY TO PREVENT FREEZING OF PIPING; OR
B. WRAPPED WITH HEAT TAPE, THERMOSTATICALLY CONTROLLED, OF SUFFICIENT WATTAGE TO PREVENT FREEZING OF PIPING. PIPE INSULATION THICKNESS AS RECOMMENDED BY THE HEAT TAPE MANUFACTURER WITH FIBERGLASS INSULATION WITH UNIVERSAL JACKET.
2. CONDENSATE DRAINAGE PIPE INSULATION INSIDE THE BUILDING: 1/2" THICK FLEXIBLE ELASTOMERIC THERMAL INSULATION, CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS. COMPLY WITH ASTM C 534
3. CONTRACTOR SHALL PROVIDE A MINIMUM HORIZONTAL LENGTH OF 10' OF 1 1/2" THICK PIPING INSULATION ON ALL STORM AND OVERFLOW PIPING WITHIN THE BUILD STARTING FROM EACH DRAIN BODY .

EXECUTION OF PLUMBING SYSTEMS

1. THE CONTRACTOR SHALL FURNISH ALL PIPE SUPPORTS REQUIRED FOR EQUIPMENT AND MATERIALS. ALL HORIZONTAL RUNS OF PIPING SHALL BE SUPPORTED BY CLEVIS HANGERS, SPACED AS FOLLOWS:
A. COPPER PIPE: NPS 3/4 AND SMALLER: 60 INCHES WITH 3/8-INCH ROD.
B. COPPER PIPE: NPS 1 AND NPS 1-1/4: 72 INCHES WITH 3/8-INCH ROD.
C. COPPER PIPE: NPS 1-1/2 AND NPS 2: 96 INCHES WITH 3/8-INCH ROD.
D. CAST IRON SOIL PIPE: NPS 4 AND SMALLER: 60 INCHES WITH 5/8-INCH ROD.
E. CAST IRON SOIL PIPING: AT EACH JOINT.
F. ADDITIONAL SUPPORTS SHALL BE PROVIDED WHERE REQUIRED TO PREVENT SAGGING. HANGERS FOR COPPER PIPE SHALL HAVE NYLON INSULATED BUSHINGS OR PIPE SHALL BE WRAPPED WITH 15# FELT.
2. PURGE NEW PIPING AND PARTS OF EXISTING DOMESTIC WATER PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED BEFORE USING. USE PURGING AND DISINFECTING PROCEDURES PRESCRIBED BY AUTHORITIES HAVING JURISDICTION OR, IF METHODS ARE NOT PRESCRIBED, USE PROCEDURES DESCRIBED IN EITHER AWWA C651 OR AWWA C652
3. TEST SANITARY DRAINAGE AND VENT PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION.
4. TEST, INSPECT, AND PURGE NATURAL GAS PIPING ACCORDING TO NFPA 54 AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. EACH PLUMBING VENT AND/OR SOIL STACK PROJECTING ABOVE THE ROOF SHALL BE FLASHED WITH STANDARD MANUFACTURED FLASHINGS. FLASHINGS SHALL BE SHEET METAL WITH RUBBER GASKETS. FLASHINGS SHALL EXTEND INTO ROOFING A MINIMUM OF 12" OR DISTANCE SPECIFIED BY LOCAL CODE. PAINT VENT PIPING EXPOSED ON ROOF BLACK OR AS DIRECTED BY THE ARCHITECT.
6. ALL FIXTURES SHALL BE COMPLETE WITH ALL NECESSARY TRIM AND APPURTENANCES. ALL EXPOSED METAL PARTS SHALL BE CHROME-PLATED BRASS.

1 / MP400 PLUMBING SHEET SPECS_ N.T.S.

SECTION 1 - SUPPLIMENTARY CONDITIONS FOR MECHANICAL WORK

1.1.1 GENERAL CONDITIONS

A. All work covered by this section of these specifications shall be accomplished in accordance with the respective drawings, information of instructions to bidders, general requirements and the supplementary general conditions of these specifications.
B. Bidders shall determine the contents of a complete set of drawings and specifications and be aware that they may be bidding from a partial set of drawings, applicable only to the various separate contract, subcontracts or trades as may be issued for bidding purposes only. The contract documents are the combined Architectural, Structural, Plumbing, Heating, Ventilating and Air Conditioning and Electrical drawings and specifications. All drawings and specifications are on file in the Architect's office, and each Bidder shall thoroughly acquaint himself with all of the details of the complete set of drawings and specifications before submitting his bid. All drawings and specifications form a part of the contract documents for each separate contract. They shall be considered as bound therewith in the event partial sets of plans and specifications shall be deemed evidence of the review and examination of all drawings, specifications and addenda issued for this project. No allowances will be made because of the Contractor's unfamiliarity with any portion of the complete set of documents.
C. All equipment and materials shall be manufactured in the United States of America.

1.1.2 SCOPE

A. The work included under this specification consists of the furnishing of all labor, materials, tools, transportation, services, etc. which are applicable and necessary to complete the installation of the systems specified herein; all as described in these specifications, as illustrated on the accompanying drawings, or as directed by the Architect.
B. In general, the various lines and ducts to be installed by the various trades under this specification shall be run as indicated, as specified herein, as required by particular conditions at the site and as required to conform to the generally accepted standards so as to complete the work in a neat and satisfactorily workable manner. Run work parallel or perpendicular to the lines of the building unless otherwise noted.
C. The construction details for the building are illustrated on the Architectural and Structural Drawings. Each Contractor shall lhoroughly acquaint himself with the details before submitting his bid, as no allowance will be made because of the Contractor's unfamiliarity with these details. Place all inserts to accommodate the ultimate installation of pipe hangers in the forms before concrete is poured. Set sleeves in place in forms before concrete is poured, and in masonry walls while they are under construction. All concealed lines shall be installed as required by the pace of the general construction to precede that general construction.

1.1.3 INSPECTION OF SITE

A. The Contractors shall visit the site, verify all existing items shown on plans or specified herein, and familiarize himself with the working conditions, hazards, existing grades, actual formations, soil conditions, and localrequirements involved, and submission of bids shall be deemed evidence of such visit. All proposals shall take the existing conditions into consideration, and the lack of specific information on the drawings shall not relieve the Contractor of any responsibility.

1.1.4 UTILITIES, LOCATIONS AND ELEVATIONS

A. Locations and elevations of the various utilities included within the scope of this work have been obtained from City and/or other substantially reliable sources and are offered separately from the Contract Documents, as a general guide only, without guarantee as to accuracy. The Contractor shall examine the site, shall verify to their own satisfaction the locations, elevations and availability of all utilities and services required and shall adequately inform themselves as to their relation to the work; the submission of bids shall be deemed evidence thereof.

1.1.5 CODE REQUIREMENTS

A. All work shall comply with the provisions of these specifications, as illustrated on the accompanying drawings, or as directed by the Architect, and shall satisfy all applicable local codes, ordinances, or regulations of the governing bodies, and all authorities having jurisdiction over the work, or services thereto. In all cases where alterations to, or deviations from the drawings and specifications are required by the authority having jurisdiction, the Contractor shall report same in writing to the Owner and secure his approval before proceeding. Upon completion of the work, the Contractor shall provide complete utility service connections, as directed, and submit, as required, all necessary drawings; he shall secure all permits and inspections necessary in connection with his work and pay all legal fees on account thereof. In the absence of other applicable local codes acceptable to the Architect, the National Electrical Code and International Plumbing Code shall apply to this work.

1.1.6 RECORDS FOR THE OWNER

A. The Contractor shall obtain at his own expense a complete, full-size set of prints on which he shall keep an accurate record of the installation of all materials and systems covered by his contractual agreement. The record shall indicate the location of all equipment and the routing of all systems. All conduit buried in concrete slabs, walls, and below grade shall be located by dimension unless a surface mounted device in each space indicates the exact location. He shall then obtain at his expense one complete reproducible set of the original drawings on which he shall neatly transfer his notations and deliver these drawings to the Engineer at job completion before the final payment for delivery to the Owner.
B. In addition to the above, the Contractor shall accumulate during the job progress the following data in duplicate prepared in a neat brochure or packet folder bonding for subsequent delivery to the Owner. The Contractor shall include in his bid the cost of binding into a book:
1. All warranties, guarantee, and manufacturer's directions on equipment and material covered by the Contract.
2. Copies of approved shop drawings and submittals.
3. Copies of sequence of operations for all equipment covered by Contract.

1.1.7 MATERIALS AND WORKMANSHIP

A. All materials, unless otherwise specified, shall be new, free from any defects and of the best quality of their respective kinds. All like materials used shall be of the same manufacturer, model and quality, unless otherwise specified.
B. All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, adjusted and conditioned as recommended by the Manufacturers, or all indicated in their published literature, unless specifically herein specified to the contrary. All work under this contract shall be performed by competent workmen and executed in a neat and workmanlike manner providing a thorough and complete installation. Work shall be properly protected during construction, including the shielding of soft or fragile materials and the temporary plugging of open lines during construction. At completion, the installation shall be thoroughly cleaned, and all tools, equipment, obstruction or debris present as a result of this Contract shall be removed from the premises.

1.1.8 STORAGE AND PROTECTION

A. Provide adequate facilities for items furnished under these specifications which are subject to damage if exposed to elements. Take such precautions as necessary to properly protect apparatus from damage. Failure to comply with this provision will be sufficient cause for rejection of the particular apparatus involved.

1.1.9 COOPERATION

A. All work under these specifications shall be accomplished in conjunction with other trades on this project in a manner which will allow each trade adequate time at the proper stage of construction to fulfill his work.
B. Maintaining contact and being familiar with the progress of the general construction and the timely installation of sleeves and inserts, etc., before concrete is placed shall be the responsibility of this trade, as will the installation of the required systems in their several stages, at the proper time to expedite this contract and avoid unnecessary delays in the progress of other contracts, and meet all requirements of progress schedules set up by the Architect.
C. Should any question arise between trades as to the placing of lines, ducts, conduits, fixtures or equipment, or should it appear desirable to remove any general construction which would affect the appearance or strength of the structure, reference shall be made to the Architect for instruction.

1.1.10 SCHEDULE OF MATERIAL AND EQUIPMENT

A. The Contractor shall submit for approval a complete schedule of material and equipment which is to be installed under the contract. The schedule shall be submitted within 30 days after the award of this contract and prior to the installation or fabrication of any of the material involved. The schedule shall include for materials the Manufacturer's name, Catalog Number, Type and Trade Name; in addition, for equipment, attach Manufacturer's Engineering Data and Specification Sheet.

1.1.11 SHOP DRAWINGS AND SUBMITTALS:

A. Provide Submittals and Shop Drawings (3 copies minimum) for the following equipment and layout:
1. Mechanical equipment cut sheets including all performance characteristics, accessories, drawings, wiring diagrams, etc. Accessories shall be clearly labeled to show what is and is not provided.
2. Piping details showing materials used and joining/sealing methods.
3. Piping layout at 1/8" = 1'-0" scale.

B. Equipment shall not be ordered until approved by the Architect and Engineer of Record. The Contractor shall allow two (2) weeks for design team review of submittals.

1.1.12 DRAWINGS AND SPECIFICATIONS

A. The drawings show, diagrammatically, the locations of the various lines, conduits, fixtures and equipment and the method of connecting and controlling them. It is not intended to show every connection in detail and all fittings required for a complete system. The systems shall include, but are not limited to, the items shown on the drawings. Exact locations of these items shall be determined by reference to the general plans and measurements at the building and in cooperation with other sub-contractors and, in all cases, shall be subject to the approval of the Contractor. the Contractor reserves the right to make any reasonable change in the location of any part of this work without additional cost to the Owner.
B. Should any changes be deemed necessary by the Contractor in items shown on the contract drawings, shop drawings and descriptions, the reason for the proposed changes shall be submitted to the Owner for approval.
C. Exceptions and inconsistencies in plans and specifications shall be brought to the contractor's attention before bids are submitted; otherwise, the Contractor shall be responsible for the cost of any and all changes and additions that may be necessary to accommodate his particular apparatus.
D. The Contractor shall lay out his work maintaining all lines, grades and dimensions according to these drawings with due consideration for other trades and verify all dimensions at the site prior to any fabrication or installation. Should the layout be impractical, the Contractor shall be notified before any installation or fabrication, and the existing conditions shall be investigated and proper changes effected without any additional cost.
E. Titles of Sections and Paragraphs in these specifications are introduced merely for convenience and are not to be construed as a correct or complete segregation to tabulation of the various units of material and/or work. The Architect does not assume any responsibility, either direct or implied, for omissions or duplications by the Contractor or any Sub-contractor due to real or alleged error in the arrangement of matter in the Contract Documents.

1.1.13 ARCHITECT'S APPROVAL

A. In any statement under this contract where "approval" is required or requested, it is understood that such approval must be obtained from the Architect in writing before proceeding with the proposal, and an adequate number of copies of any such proposal shall be submitted to the Architect.
B. The approval by the Architect of any materials, changes, drawings, etc., submitted by the Contractor will be considered as general only and to aid the contractor in expediting his work. such approval as may be given does not in any way relieve the Contractor from the necessity of furnishing the materials and performing all work as required by the drawings and specifications.

1.1.14 LOCAL RESTRICTIONS

A. The Contractor shall become familiar with all rules and regulations of the City, County and State, or any other authority having jurisdiction over this project. If it is the Contractor's opinion that any work or materials shown on the drawings or specifications do not comply with these rules and regulations as to size, type, capacity and quality, he must make it known prior to the submission of his bid, which shall be deemed evidence of compliance; otherwise, the Contractor shall be responsible for the approval of all work or material and, in the event that such Authority should indicate disapproval, he shall correct same with materials approved by the Architect at no additional cost to the Owner.

1.1.15 ELECTRICAL WIRING

A. Except for such items as are normally wired up at their point of manufacture and so delivered, and unless specifically noted to the contrary herein, the Electrical Subcontractor will do all electric wiring of every character for power supply. The Mechanical Subcontractor shall erect all motors in place ready for connections and shall furnish with each such motor a starter of the type specified and deliver it in good condition to the Electrical Subcontractor at the job. The Electrical Subcontractor will mount all such starters, as directed, furnishing supporting structures where necessary. The Owner and other Subcontractors shall furnish with each item requiring electrical connections, the necessary instructions and wiring diagrams to the Electrical Subcontractor. The Electrical Subcontractor shall refer to the Specifications to determine the Scope of the Work.

1.1.16 LARGE APPARATUS AND EQUIPMENT

A. All large apparatus and equipment which is specified or shown to be furnished or installed under this Contract, and which may be too large to be moved into its final position through the normal building openings planned, shall be placed by this Subcontractor in its approximate final position. This shall be accomplished through cooperation and coordination with other Subcontractors before any obstructing structure is installed. All apparatus shall be cribbed up from the floor by this Subcontractor and cared for as specified under "Storage and Protection" or as directed by the Architect.

SECTION 4 - HEATING, VENTILATION AND AIR-CONDITIONING SYSTEMS

4.1.1 SCOPE

A. Provide complete air supply, return, outside air and exhaust systems including fans, terminal devices and other components specified herein.

4.1.2 SUBMITTALS

A. Shop Drawings: Submit complete shop drawings, in accordance with Section 1, indicating materials, quantities, sizes and installation details.

4.1.3 COORDINATION

A. Install materials and equipment at proper time to keep pace with the general construction and the work of the other trades involved.

4.1.4 WARRANTY

A. The Mechanical Sub-contractor shall warranty all material, workmanship and equipment for a period of one year after final acceptance by the Owner. The warranty specifically implies that any defective portion becoming apparent during this period will be repaired, replaced or otherwise made good at no additional cost to the Owner. It shall further include replacement or refrigerant loss not due to Owner negligence. Compressors shall contain an additional four-year warranty.

4.6.3 GAS FIRED UNIT HEATER

A. Factory assembled, piped, and wired; and complying with ANSI Z83.8/CSA 2.6.
B. Fuel Type: Design burner for natural gas having characteristics same as those of gas available at Project site.
C. Venting: Gravity vented.
D. Indoor External Housing: Steel cabinet with integral support inserts and removable bottom arranged to serve as drain pan.
E. External Casings and Cabinets: Baked enamel over corrosion-resistant-treated surface.
F. Suspension Attachments: Reinforce suspension attachments at connection to gas-fired duct heaters.
G. Internal Casing: Aluminized steel, arranged to contain airflow, with duct flanges at inlet and outlet.
H. Heat Exchanger: Stainless steel.
I. Burner Material: Aluminized steel with stainless-steel inserts.
J. Controls:
a. Regulated redundant gas valve containing pilot solenoid valve, electric gas valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff all in one body.
b. Gas Control Valve: Single stage. Ignition: Electronically controlled electric spark with flame sensor.
c. Fan Thermal Switch: Operates fan on heat-exchanger temperature.
d. Vent Flow Verification: Flame rollout switch
e. Differential pressure switch to verify open vent.
f. Control transformer.
g. High Limit: Thermal switch or fuse to stop burner.

4.6.4 CONDENSATE DRAIN PIPING

A. Refrigerant piping shall be pre-charged type "l" copper or type "l" hard copper with wrought solder joint fittings.
B. Condensate drain piping shall be type "m" copper or schedule 40 pvc, where permitted by Local Code.

4.6.5 SYSTEM CHARGING AND STARTUP

A. Supply the initial charge of refrigerant as required to completely charge the system. Any loss of refrigerant or oil during testing period or initial runs shall be replaced by the Mechanical Sub-contractor at his cost.
B. The systems shall be charged only after they have been tested and rendered free of leaks and thoroughly evacuated using a vacuum pump and a reliable vacuum dehydration indicator, following standard recommended procedures.
C. Mechanical Sub-contractor shall operate all systems until the satisfactory performance of specification requirements is demonstrated to the complete satisfaction of the Contractor. Prior to,and during operation, all controls and other appurtenances and devices shall be adjusted and calibrated. Test all safety devices and make ready for automatic operation. All systems shall be calibrated, and all fans and other rotating parts shall be properly lubricated and checked for correct alignment.
D. The Mechanical Sub-contractor, during operation and balancing periods, shall instruct the Contractor's and Owner's Personnel in the operation and control of the systems and maintenance schedule.

4.8.1 EXHAUST FANS

A. Propeller Exhaust Fans shall be belt drive, forward curved, centrifugal blower type. fan wheel and scroll shall be constructed of galvanized steel. Fan wheel shall be dynamically balanced. The fan housing shall be constructed of galvanized steel and acoustically lined for quiet operation.
Provide fan with an integral aluminum gravity back-draft damper. The motor shall be permanently lubricated with built-in thermal overload protection.
Provide a safety disconnect switch mounted to the exterior of the fan enclosure.
Fans shall be AMCA rated.

4.11.1 PACKAGED TERMINAL AIR-CONDITIONERS

A. Quality Assurance
1. Energy-Efficiency Ratio: ASHRAE/IESNA 90.1.
2. Coefficient of Performance: ASHRAE/IESNA 90.1.
B. Warranty
1. Materials and Workmanship for Sealed Refrigeration System: Five years.
2. Materials and Workmanship for Nonsealed System Parts: Five years.
3. Materials and Workmanship for Heat Exchangers: Five years.
C. Manufactured Units
1. Cabinet:
a. Mounting: Wall with wall sleeve.
b. Discharge Grille: Extruded aluminum or reversible polycarbonate.
c. Louvers: Extruded aluminum with enamel finish; bronze color.
d. Finish: Epoxy coating.
e. Access Door: Hinged door in top of cabinet for access to controls.
f. Cabinet Extension: Matching cabinet construction.
g. Wall Sleeves: Galvanized steel with polyester finish.
2. Refrigeration System: Direct-expansion indoor coil with capillary restrictor, hermetically sealed scroll compressor, and outdoor coil and fan.
a. Accumulator, constant-pressure expansion valve, and reversing valve for heat-pump units.
3. Indoor Fan: Forward curved, centrifugal, with motor and positive-pressure ventilation damper with concealed manual operator.
4. Washable filters in molded plastic frame.
5. Condensate Drain: Direct condensate to outdoor coil.
6. Outdoor Fan: Forward curved, centrifugal or propeller type driven by indoor fan motor.
7. Heating: Electric-resistance coil.
8. Controls: Unit-mounted digital panel with touchpad; low ambient lockout control.
b. Temperature-limit control.
c. Building automation system interface.
d. Reverse-cycle defrost.
e. Remote control.
D. Source Quality Control
1. Unit Performance Ratings: Factory tested to comply with ARI 310/380/CSA C744.

2 / MP400 MECHANICAL SPECIFICATIONS N.T.S.

SOLARE
ENGINEERING UNLIMITED, INC.
1300 Summit Avenue, Suite 514
Fort Worth, Texas 76102
Tel 817-529-6800
www.solare-eng.com
Texas Registration # F-10963

CITY OF TEMPLE
AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TEXAS 76504
605 S. 31ST STREET

06/24/22
JOHN S. O'KELLEY
31583
REGISTERED
PROFESSIONAL ENGINEER

S. Kanetzky Engineering,LLC.
14425 Falcon Head Blvd.
Building B, Suite 100
Bee Cave, Texas 78738
(512) 326-3380
www.skaneng.com
TBPE Firm No. F-2356

SKE PROJECT # 3740121

Filename:
Scale: AS NOTED
Drawn By: BR/CA
Checked By: JSO
Date: 06/24/2022

DWG Number:

Title:
MECHANICAL & PLUMBING SPECIFICATIONS

Sheet:
MP400

FOR REVIEW ONLY, NOT FOR CONSTRUCTION

1. ALL WATER MAINS TO BE ONE OR A COMBINATION OF THE FOLLOWING MATERIALS HAVING DUCTILE IRON OUTSIDE DIAMETERS:
   A. DUCTILE IRON MUST:
      1. MEET OR EXCEED AWWA SPECIFICATIONS C150 & C 151;
      2. MECHANICAL JOINT BELL & SPIGOT JOINTS WITH A SINGLE RUBBER GASKET, MEETING AWWA SPECIFICATIONS C111;
      3. PRESSURE CLASS SHALL BE RECOMMENDED BY THE ENGINEER OF RECORD
   B. POLYVINYL CHLORIDE (PVC)
      1. 4 INCH AND LARGER AWWA C900 CL150 W/RING-TITE SEAL, SDR-18;
      2. 3 INCH OR LESS CL200 SDR-21 (MINIMUM) W/RING-TITE SEAL.
2. TAPPING SLEEVE & VALVE:
   A. TAPPING SLEEVE TO MEET AWWA SPECIFICATIONS WITH A MINIMUM WORKING PRESSURE OF 150 P.S.I.
   B. TAPPING VALVE SHALL MEET AWWA SPECIFICATIONS WITH A MINIMUM WORKING PRESSURE OF 175 P.S.I.
   C. ALL SIZE ON SIZE TAPS SHALL BE MADE USING A DUCTILE IRON FULL BODY TAPPING SLEEVE. ALL REDUCED SIZE TAPS MAY BE MADE USING AND EPOXY COATED F AB RICA TED STEEL TAPPING SLEEVE WITH STAINLESS STEEL BOLTS, OR A STAINLESS STEEL FULL CIRCLE TAPPING SLEEVE WITH DUCTILE IRON FLANGE.
3. BENDS & FITTINGS:
   A. ALL ENDS AND FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT (D.I.M.J.) MEETING THE SPECIFICATIONS OF ANSI/AWWA C110-77 OR AWWA C153.
   B. ALL FITTINGS TO BE "MJ", NOT FLANGED (WITH EXCEPTION OF FULL BODIED TAPPING SLEEVE.)
   1 C. ALL FITTINGS LOCATED AT TEES AND/OR VALVES SHALL BE RESTRAINED BY SWIVEL FITTING, FOSTER ADAPTER, OR OTHER APPROVED MECHANICAL RESTRAINT.
4. TIED JOINT RESTRAINT SYSTEMS (ALL-THREAD ROD CONNECTIONS):
   A. DIRECT CONNECTION OF THE ALL-THREAD ROD TO THE FLANGE OF THE FITTING WILL NOT BE PERMITTED. THE APPROPRIATE "TIEBOL T", NUT AND WASHER IS THE ONLY ACCEPTABLE MEANS OF MAKING THIS CONNECTION (TIEBOL T) SHOULD BE EQUAL TO OR EXCEED STAR "SUPER TIE-BOLT".
   B. ALL-THREAD ROD WILL BE OF THE FOLLOWING DIMENSION:
      1. 3 INCH OR SMALLER WATER LINE--5/8" DIAMETER ROD.
      2. 4 INCH OR LARGER WATERLINE--3/4" DIAMETER ROD.
   C. ALL THREAD RODS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL. SPECIFICATIONS FOR TIEBOL T SHALL MEET OR EXCEED THOSE OF THE "SUPERSTAR TIEBOL T".
5. FLUSHING OF WATER MAINS:
   THE FLUSHING OF ALL WATER MAINS SHALL BE ACCOMPLISHED THROUGH AN ACCEPTABLE FLUSHING (BLOWOFF) ARRANGEMENT COMPRISING OF A GATE VALVE AND REQUIRED LENGTH OF PIPE. tHOROUGH FLUSHING AT A MINIMUM VELOCITY OF 2.5 FEET PER SECOND SHALL BE ACHIEVED USING THE OUTLET SIZE OPENINGS LISTED BELOW. (40 P.S.I. RESIDUAL PRESSURE MUST BE MAINTAINED IN THE WATER MAIN).

APPROVED BY: Michael Newman, P.E.	DSAB APPROVED DATE:	CITY OF TEMPLE ENGINEERING DEPARTMENT 3210 E. Avenue H, Bldg. A TEMPLE, TX. 76501-8402	
DRAWN BY: Chris Peal	FILE NAME: WATER_GENERAL NOTES.dwg	GENERAL WATER NOTES	SCALE: N.T.S.

PIPE SIZE (IN)	REQUIRED GPM AT 2.5 FPS	FLUSH VALVE AND PIPE SIZE (IN)
6	220	4"
8	400	4"
10	660	6"
FOR ALL OTHER PIPE SIZES, ENGINEER TO SPECIFY FLUSH VALVE AND PIPE SIZE PER AWWA C851		

REFER TO FLUSH ASSEMBLY DETAIL

2021-117 TEMPLE AVE G PUMP STATION-D-01

ALL DEAD END WATER MAINS SHALL HAVE AN ADEQUATELY SIZED FLUSH ASSEMBLY TO FACILITATE PERIODICAL FLUSHING OF THE WATER LINES. CONTRACTOR SHALL STUDY THE PLANS AND MAKE PROVISIONS TO COMPLY WITH THIS REQUIREMENT. ANY ADDITIONAL COST TO THE CONTRACTOR FOR COMPLYING WITH THIS REQUIREMENT SHALL BE BORNE BY THE CONTRACTOR.

6. JOINT RESTRAINES OR ADAPTER FLANGES:
   WHEN RESTRAINER FLANGES ARE SPECIFIED ON PLANS, OR WHERE THE CONTRACTOR ELECTS TO USE THEM, THE FLANGES WILL MEET OR EXCEED THE REQUIREMENTS/SPECIFICATIONS OF UNI-FLANGE SERIES 1300 OR 1500 FOR PVC PIPE OR SERIES 200 FOR DUCTILE IRON PIPE. INSTALLATION OF THESE ITEMS WILL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS FOR THE TYPE OF MATERIAL USED. (THE CONTRACTOR WILL SUPPLY THE INSPECTOR WITH COPIES OF THE MANUFACTURER'S INSTALLATION SPECIFICATIONS PRIOR TO INSTALLATION OF THESE ITEMS).
7. ALL WATER LINES MUST BE CONSTRUCTED IN ACCORDANCE WITH CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, CHAPTER 290.
8. ALL WATER MAINS SHALL BE PRESSURE TESTED FOR A PERIOD NOT LESS THAN 4 HOURS AND AT A PRESSURE NOT LESS THAN 150 PSI (REFER TO TABLE 506.5(a) OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION--NOT CENTRAL TEXAS). THOROUGHLY DISINFECTED (AWWA C651), AND PASS MICROBIOLOGICAL ANALYSIS BEFORE BEING PLACED IN SERVICE.
9. MINIMUM DEPTH FOR ALL WATER MAIN LINES SHALL BE 42 INCHES FROM FINAL GRADE TO TOP OF PIPE.
10. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE WRAPPED IN 8 MIL POLYETHYLENE IN ACCORDANCE WITH ANSI/AWWA C105/A21.5-99 (POLYETHYLENE ENCASEMENT) FOR CORROSION PROTECTION.
11. PIPE CLEANLINESS:
    EVERY EFFOR SHALL BE MADE TO KEEP PIPE LINES CLEAN DURING INSTALLATION, FOREIGN MATERIAL SHALL BE PREVENTED FROM ENTERING THE PIPE WHILE IT IS BEING PLACED IN THE TRENCH.
12. METER BOXES:
    METER BOXES TO BE FURNISHED AND INSTALLED BY THE CITY OF TEMPLE AND PAID FOR BY PERMITTEE AT THE TIME OF METER INSTALLATION.

1 MODIFICATIONS ARE PROJECT SPECIFIC AND APPLICABLE TO THIS PROJECT.

APPROVED BY: Michael Newman, P.E.	DSAB APPROVED DATE:	CITY OF TEMPLE ENGINEERING DEPARTMENT 3210 E. Avenue H, Bldg. A TEMPLE, TX. 76501-8402	
DRAWN BY: Chris Peal	FILE NAME: GENERAL WATER NOTES.dwg	GENERAL WATER NOTES	SCALE: N.T.S.

NO.	DATE	REVISION	BY

Plot Date: Apr 13, 2022 - 6:42pm
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS RICK N. KASBERG 70163 REGISTERED PROFESSIONAL ENGINEER

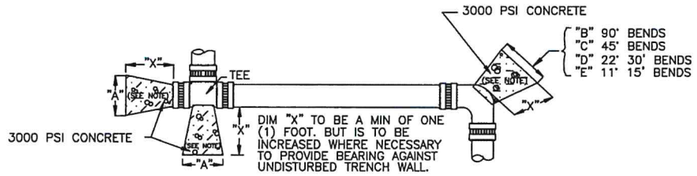
KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
DETAILS
STANDARD DETAILS

SHEET NO. D-01 OF 07 SHEETS

P:\Temple\2021\2021-117 AVENUE G PUMP STATION\CAD\PLANS\DETAILS.dwg

BLOCKING DETAIL



NOTE:
WRAP PLUG & ALL SURFACES IN CONTACT W/CONCRETE THRUST BLOCK IN 8 MIL POLYETHYLENE.
THRUST BLOCKING IS THE RESPONSIBILITY OF ENGINEER TO MEET EXISTING SOIL CONDITIONS.

HORIZONTAL BLOCKING TABLE

PIPE SIZE	"X" DIM.	PLUGS & TEES			90° BENDS			5° BENDS			22° 30' BENDS			11° 15' BENDS		
		"A"	*MIN. AREA	+MAX. VOL.	"B"	*MIN. AREA	+MAX. VOL.	"C"	*MIN. AREA	+MAX. VOL.	"D"	*MIN. AREA	+MAX. VOL.	"E"	*MIN. AREA	+MAX. VOL.
4"	1'-0"	1'-0"	.83	.05	1'-0"	.83	.05	1'-0"	.83	.05	1'-0"	.83	.05	1'-0"	.83	.05
6"	1'-6"	1'-0"	1.06	.06	1'-2"	1.50	.09	1'-0"	.83	.05	1'-0"	.83	.05	1'-0"	.83	.05
8"	1'-6"	1'-3"	1.89	.11	1'-6"	2.66	.15	1'-3"	1.44	.08	1'-0"	.83	.05	1'-0"	.83	.05
10"	1'-6"	1'-9"	2.95	.17	2'-0"	4.17	.24	1'-6"	2.26	.13	1'-3"	1.15	.07	1'-0"	.83	.05
12"	1'-6"	2'-0"	4.25	.24	2'-3"	6.00	.34	1'-9"	3.25	.18	1'-3"	1.65	.10	1'-0"	.83	.05
16"	2'-0"	2'-7"	7.54	.56	3'-0"	10.65	.79	2'-3"	5.76	.43	1'-8"	2.94	.22	1'-2"	1.48	.11
18"	2'-0"	2'-11"	7.70	.57	3'-5"	10.89	.82	2'-6"	5.89	.44	1'-10"	3.01	.22	1'-5"	1.51	.11
20"	2'-0"	3'-3"	7.86	.59	3'-9"	11.12	.84	2'-9"	6.01	.45	2'-0"	3.07	.23	1'-7"	1.54	.12
24"	6'-0"	3'-8"	11.33	.84	4"-3"	16.00	1.20	3'-2"	8.65	.65	2'-0"	4.42	.33	1'-10"	2.22	.17

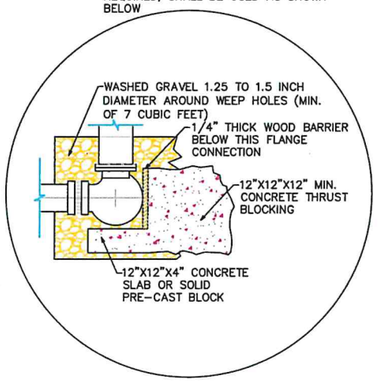
* CALCULATIONS IN MIN. AREA COLUMN ARE IN SQ. FT.
\+ CALCULATIONS IN MAX. VOLUME COLUMN ARE IN CUBIC YARDS.
CALCULATIONS ARE MINIMUM, LOCAL SOIL CONDITIONS REQUIRE ADDITIONAL DESIGN CONSIDERATION BY ENGINEER.

SHEET 1 OF 1

APPROVED BY: Michael Newman, P.E.	DSAB APPROVED DATE:	CITY OF TEMPLE ENGINEERING DEPARTMENT
DRAWN BY: Chris Peal	FILE NAME: FLUSH BLOCKING.dwg	3210 E. Avenue H, Bldg. A, TEMPLE, TX. 76501-8402
		FLUSH BLOCKING DETAIL — SCALE: N.T.S.

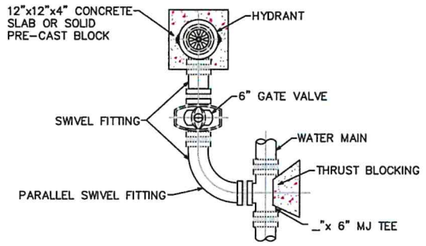
STANDARD FIRE HYDRANT

NOTE: IN CONSTRUCTION WHERE SWIVEL FITTINGS CANNOT BE UTILIZED, ALL-THREAD RODS AND TIE-BOLTS WITH CONCRETE THRUST BLOCKING AS REQUIRED, SHALL BE USED AS SHOWN BELOW

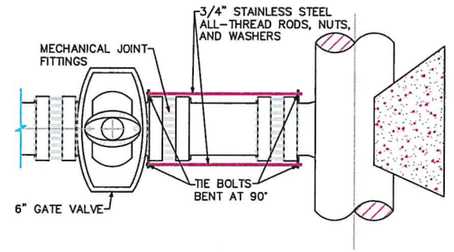


1. TYPE OF FIRE HYDRANT: ALL REQUIRED FIRE HYDRANTS SHALL BE OF THE NATIONAL SCALE STANDARD THREE (3) WAY BREAKAWAY TYPE WITH NO LESS THAN A (5-1/4") MAIN VALVE OPENING (M.V.O.) AND SHALL CONFORM TO PROVISIONS OF THE LATEST A.W.W.A. SPECIFICATIONS C-502 AND SHALL BE PLACED UPON APPROVED WATER-MAINS NOT LESS THAN SIX (6) INCHES IN DIAMETER. ONLY MUELLER A-423 CENTURION AND CLOW MEDALLION F-2546B ARE ACCEPTABLE UNLESS OTHERWISE ACCEPTED BY THE DIRECTOR OF UTILITIES.
2. VALVES SHALL BE PLACED WITHIN 3 FEET OF AND RESTRAINED TO WATER MAIN ON ALL FIRE HYDRANT LEADS.
3. REQUIRED FIRE HYDRANTS SHALL BE INSTALLED SO THAT THE BURY LINE WILL BE NO LESS THAN THREE (3) INCHES, AND NO GREATER THAN SIX (6) INCHES ABOVE THE GRADE SURFACE.
4. FIRE HYDRANTS WHEN LOCATED ON PUBLIC PROPERTY SHALL BE LOCATED A MINIMUM OF TWO (2) FEET AND A MAXIMUM OF EIGHT (8) FEET BEHIND THE CURB LINE.
5. ALL REQUIRED FIRE HYDRANTS SHALL BE INSTALLED SO THAT THE STEAMER CONNECTIONS WILL FACE THE FIRE LANE OR STREET.
6. ALL FIRE HYDRANTS SHALL BE RIGHT HAND THREAD, OPEN - COUNTER CLOCKWISE, CLOSE - CLOCKWISE.
7. PAINT COLOR SCHEME SHALL BE FACTORY PAINTED FLYNT ALUMINUM FOR THE NOZZLE SECTION AND RUST PRIMER FOR THE BONNET.
8. HYDRANT SHOE INTERIOR AND EXTERIOR SHALL HAVE 8 TO 10 MILS OF FUSION BONDED EPOXY.
9. CONCRETE STRENGTH SHALL BE MINIMUM 3,000 PSI
10. REFER TO THRUST BLOCK DETAIL TABLE FOR THRUST BLOCK REQUIREMENTS
11. THE GUTTER, FACE, AND TOP OF CURB SHALL BE PAINTED RED FIVE FEET EITHER SIDE OF A FIRE HYDRANT, FOR A TOTAL OF 10 FEET CENTERED ON THE FIRE HYDRANT.
12. WHERE BURY LINE IS NOT CAST TO HYDRANT RISER, THE MANUFACTURER MUST PAINT A BURY LINE WHERE IT WOULD NORMALLY OTHERWISE BE LOCATED

PARALLEL FIRE HYDRANT ASSEMBLY

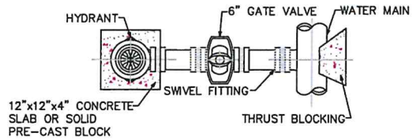


*CONTRACTOR MAY SUBSTITUTE THE APPROPRIATE SIZED PARALLEL SWIVEL TEE FOR PARALLEL SWIVEL FITTING AND TEE

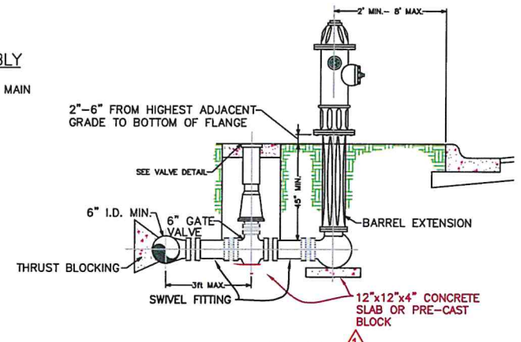


*WHERE ALL-THREAD ROD CONNECTIONS ARE REQUIRED ON MECHANICAL JOINT FITTINGS, THEY WILL BE ANCHORED TO A RIGID FITTING THAT IS RESTRAINED TO THE WATER MAIN

STANDARD FIRE HYDRANT ASSEMBLY



*CONTRACTOR MAY SUBSTITUTE THE APPROPRIATE SIZED SWIVEL TEE FOR SWIVEL FITTIN AND TEE



SECTION 1

1 MODIFICATIONS ARE PROJECT SPECIFIC AND APPLICABLE TO THIS PROJECT.

APPROVED BY: Michael Newman, P.E.	DSAB APPROVED DATE:	CITY OF TEMPLE ENGINEERING DEPARTMENT
DRAWN BY: Chris Peal	FILE NAME: Hydrant & Gate Valve.dwg	3210 E. Avenue H, Bldg. A, TEMPLE, TX. 76501-8402
		FIRE HYDRANT ASSEMBLY DETAIL — SCALE: NTS

NO.	DATE	REVISION	BY

Plot Date: Apr 13, 2022 - 6:43pm
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS — RICK N. KASBERG — 70163 — REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
DETAILS
STANDARD DETAILS

SHEET NO. D-02
OF 07 SHEETS

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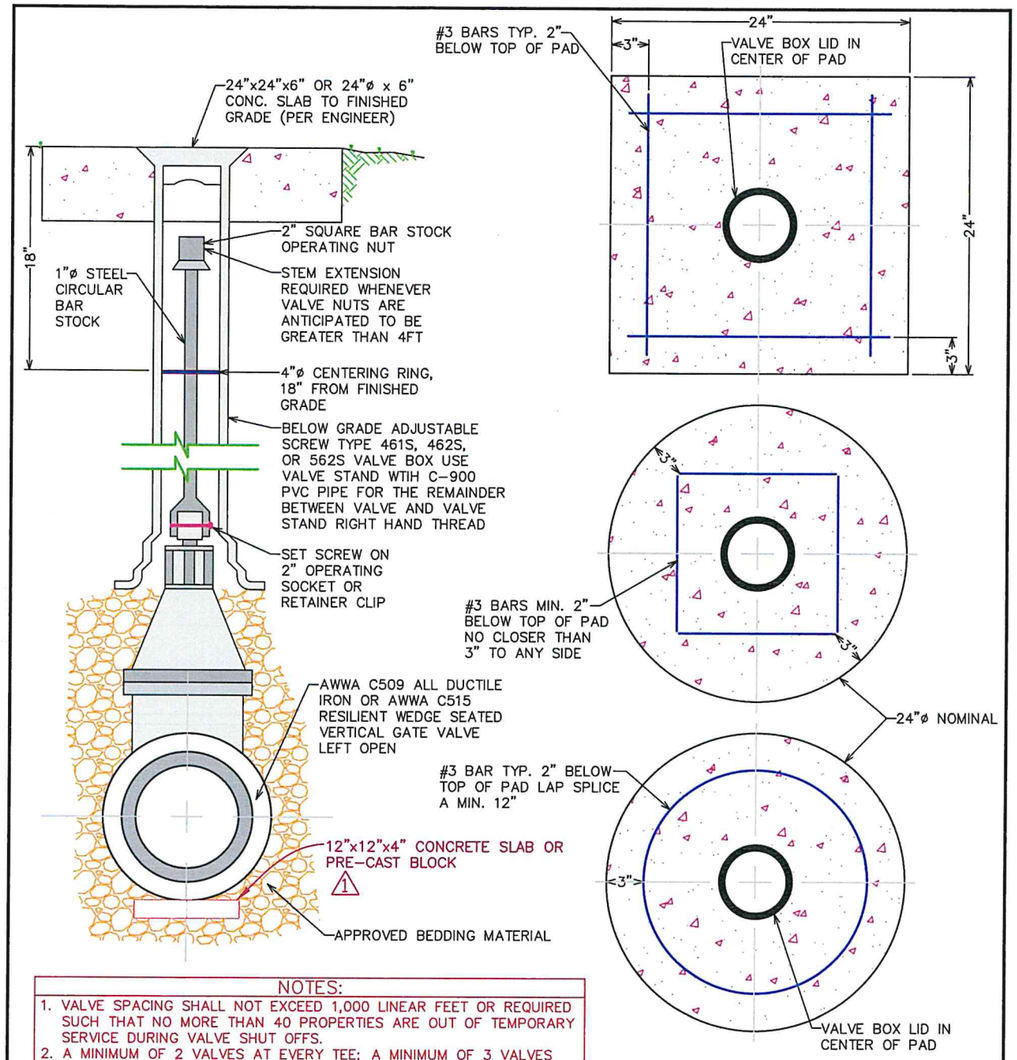


TOP VIEW-CONCRETE PAD
CONCRETE PAD NOT REQUIRED WHEN VALVE IS LOCATED IN PAVED AREAS

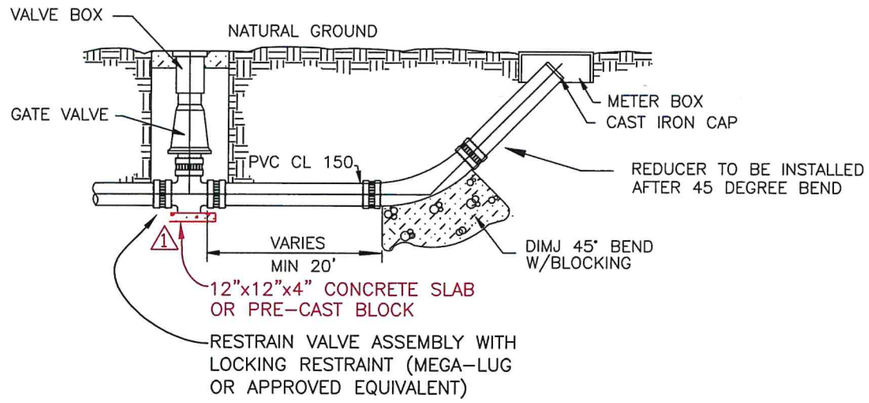
NOTES:
1. VALVE SPACING SHALL NOT EXCEED 1,000 LINEAR FEET OR REQUIRED SUCH THAT NO MORE THAN 40 PROPERTIES ARE OUT OF TEMPORARY SERVICE DURING VALVE SHUT OFFS.
2. A MINIMUM OF 2 VALVES AT EVERY TEE; A MINIMUM OF 3 VALVES AT EVERY CROSS.
3. VALVES AT TEE'S AND CROSSED INTERSECTIONS SHALL HAVE A RIDGID CONNECTION TO A TEE OR CROSS OR BE LOCATED WITHIN 2FT OF THE CONNECTION.

SHEET 1 OF 1

1 MODIFICATIONS ARE PROJECT SPECIFIC AND APPLICABLE TO THIS PROJECT.		CITY OF TEMPLE ENGINEERING DEPARTMENT	
APPROVED BY: Michael Newman, P.E.	DSAB APPROVED DATE: 5 August 2011	3210 E. Avenue H, Bldg. A	TEMPLE, TX. 76501-5402
DRAWN BY: Chris Peal	FILE NAME: GATE VALVE.dwg	GATE VALVE DETAIL	SCALE: 1:10

FLUSH ASSEMBLY DETAIL

1 MODIFICATIONS ARE PROJECT SPECIFIC AND APPLICABLE TO THIS PROJECT.



PIPE SIZE (IN)	REQUIRED GPM AT 2.5 FPS	FLUSH VALVE AND PIPE SIZE (IN)
6"	220	1 6"
8"	400	1 8"
10"	600	1 10"
1 12"	900	12"
1 16"	1600	16"
1 18"	2000	18"
1 24"	3500	24"

FOR ALL OTHER PIPE SIZES, ENGINEER TO SPECIFY FLUSH VALVE AND PIPE SIZE PER AWWA C-651

SHEET 1 OF 1

		CITY OF TEMPLE ENGINEERING DEPARTMENT	
APPROVED BY: Michael Newman, P.E.	DSAB APPROVED DATE:	3210 E. Avenue H, Bldg. A	TEMPLE, TX. 76501-5402
DRAWN BY: Chris Peal	FILE NAME: FLUSHASSEMBLY.dwg	FLUSH ASSEMBLY DETAIL	SCALE: N.T.S.

NO.	DATE	REVISION	BY

Plot Date: Apr 13, 2022 - 6:43pm
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS
DETAILS
STANDARD DETAILS

SHEET NO. D-03
OF 07 SHEETS

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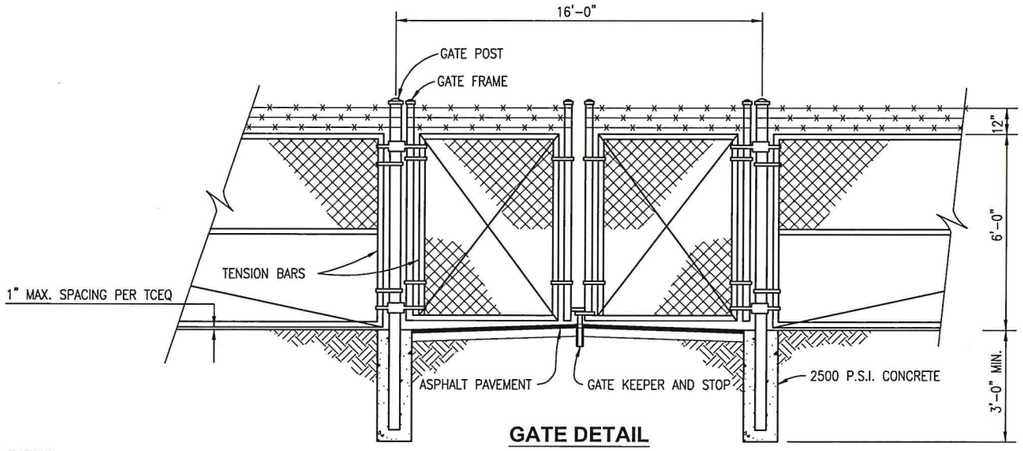
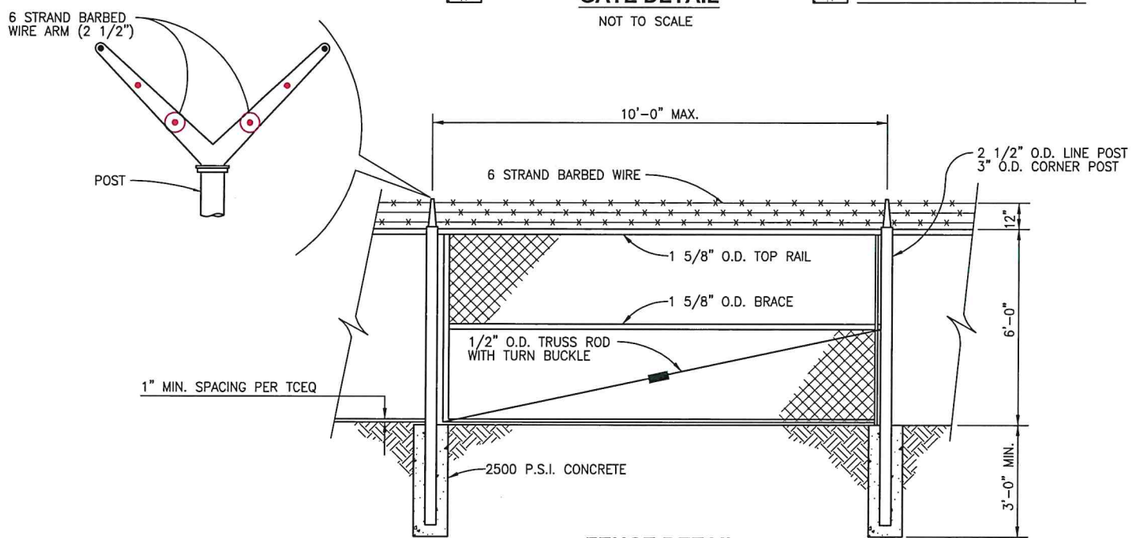


GATE DETAIL

NOT TO SCALE



FENCE DETAIL

NOT TO SCALE

NOTES:

1. *ALL FENCING INCLUDING GATES AND POST ALONG THE FRONTAGE OF STATE HIGHWAY 36 SHALL BE BLACK VINYL COATED MATCHING THE EXISTING FENCING ALONG SAID FRONTAGE.*
2. *ALL FITTINGS ARE GALV. STEEL. NO ALUMINUM FITTINGS ALLOWED.*
3. *2500 P.S.I. CONCRETE FOR FOOTINGS SHALL BE 12" DIAMETER FOR END POST AND 10" DIAMETER FOR LINE POSTS.*
4. *ALL FABRIC SHALL BE #9 "GA-2" MESH, KNUCKLED TOP AND BOTTOM SELVAG.*

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NO.	DATE	REVISION	BY

Plot Date: Jun 14, 2022 - 5:45pm
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

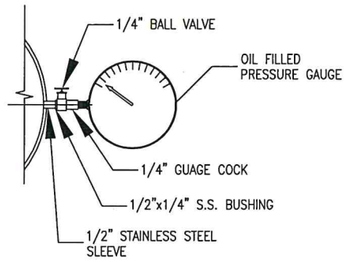
STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

KPA

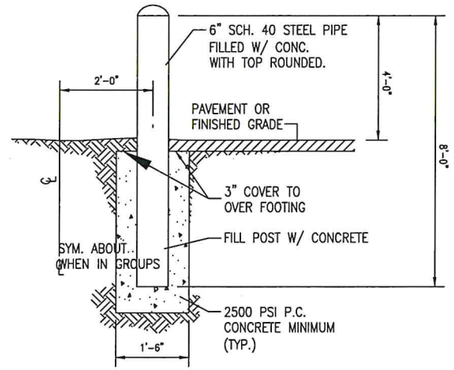
KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
DETAILS
STANDARD DETAILS

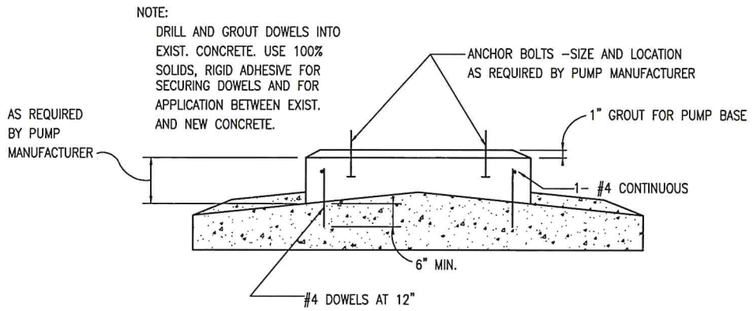
SHEET NO. **D-04**
OF **07** SHEETS



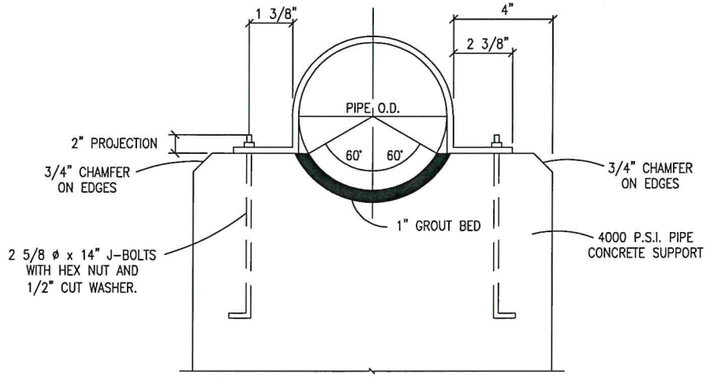
TYPICAL PRESSURE GAUGE
NTS



PERMANENT PIPE BOLLARD
NTS



PUMP SUPPORT PAD
NTS



CONCRETE PIPE SUPPORT
NTS

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NO.	DATE	REVISION	BY

Plot Date: Aug 30, 2022 - 6:18pm
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

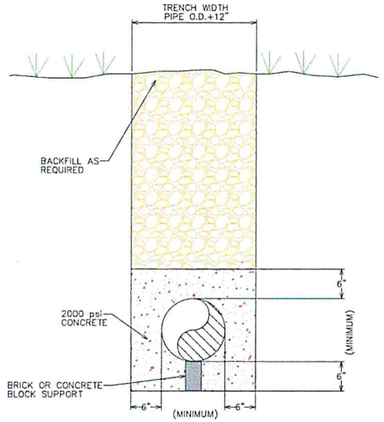
STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

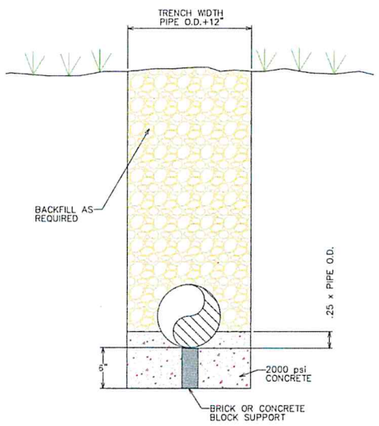
CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
IMPROVEMENTS

DETAILS
STANDARD DETAILS

SHEET NO. D-05
OF 07 SHEETS



CONCRETE ENCASEMENT



CONCRETE CRADLE

BEDDING MATERIAL SPECIFICATIONS:

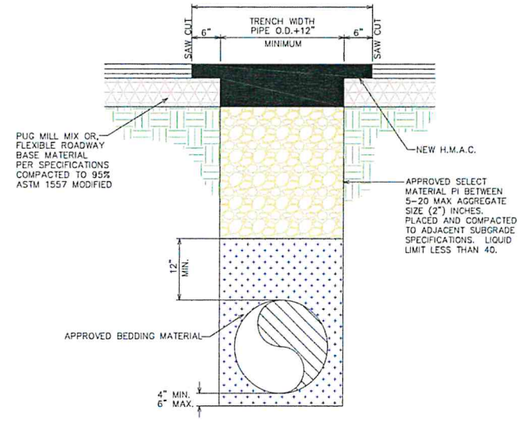
1. ALL AGGREGATES NATURAL OR MANUFACTURED MATERIAL. PARTICLES.
2. CLEAN, WASHED SAND SHALL CONFORM TO THE FOLLOWING GRADATION:

SIEVE	% PASS
3/8"	100
No. 4	95–100
No. 16	50–85
No. 200	0–5

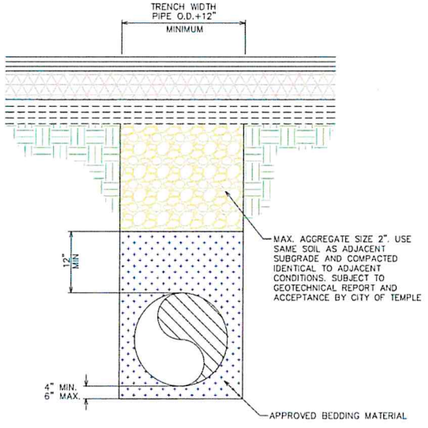
3. WASHED OR SCREENED GRAVEL SHALL CONFORM TO THE FOLLOWING GRADATION:

SIEVE	% PASS
1/2"	100
3/8"	80–100
No. 4	15–70
No. 10	0–10

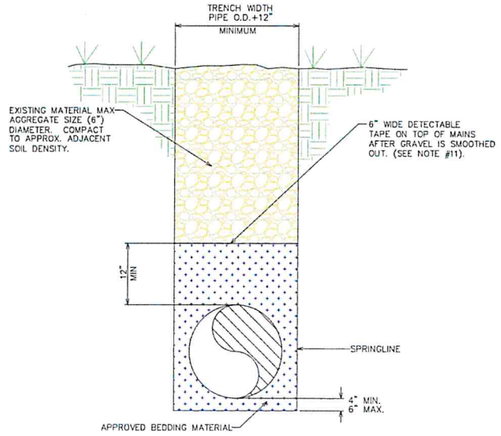
4. WHERE GROUNDWATER IS ENCOUNTERED, GRAVEL SHALL BE USED FOR BEDDING MATERIAL.
5. BEDDING MATERIAL SHALL BE PLACED AND CONSOLIDATED TO ELIMINATE VOIDS.
6. MANUFACTURERS RECOMMENDATIONS WHERE "STRUCTURAL" INTEGRITY IS" REQUIRED.
7. WASTEWATER LINES REQUIRE GRAVEL TO BE USED AS BEDDING MATERIAL.
8. BEDDING MATERIAL SHALL BE NON-ANGULAR.



CONSTRUCTION IN
EXISTING ROADWAY
CLASS 1



CONSTRUCTION IN
PROPOSED FUTURE ROADWAY
CLASS 2



OUT OF ROAD
INSTALLATION
CLASS 3

NOTES:

1. SAW CUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT AND PRIOR TO OPENING THE DITCH
2. "ROADWAY"=B/C TO B/C +4" IN EACH DIRECTION
3. TRENCH WIDTHS SHOWN ARE MINIMUM FOR PROPER PLACEMENT AND COMPACTION OF EMBEDMENT
4. THE MINIMUM CLEAR WIDTH OF TRENCH (SHEETED OR UNSHEETED) MEASURED AT SPRINGLINE OF PIPE SHALL BE 12" GREATER THAN THE OUTSIDE DIAMETER OF THE PIPE.
5. WHERE PIPE INSTALLATION IS IN ROCK (OR OTHER INCOMPRESSIBLE FOUNDATION), THE CONTRACTOR SHALL EXCAVATE SO AS TO PROVIDE A MINIMUM OF 8" GRANULAR CUSHION BENEATH THE PIPE.
6. INSTALLATION OF ANY PIPE WITHIN 4' OF THE BACK OF CURB OR EDGE OF STREET, SHALL REQUIRE THE SAME EMBEDMENT AS FOR INSTALLATION IN STREETS.
7. CONTRACTOR SHALL SHAPE EMBEDMENT MATERIAL TO ACCOMODATE THE BELLED JOINTS OF PIPES TO INSURE SUPPORT THROUGHOUT THEIR LENGTH. BELLED JOINTS SHALL HAVE A MINIMUM OF 2" OF FILL BENEATH THEM.
8. IF EXCAVATED MATERIAL IS NOT ACCEPTABLE TO THE ENGINEER FOR BACKFILL, CONTRACTOR WILL PROVIDE SELECT IMPORT MATERIAL AS REQUIRED.
9. FOR TRENCHING, BEDDING, AND BACKFILL, SEE TCEQ CHAPTER 317.2 "BEDDING".
10. FOR ROCK AND OTHER CONDITIONS NOT SPECIFIED HERE, REFER TO ENGINEER FOR BACKFILL DESIGN.
11. GREEN TAPE TO BE USED FOR WASTEWATER MAINS, BLUE TAPE TO BE USED FOR WATER MAINS.

1 MODIFICATIONS ARE PROJECT SPECIFIC AND APPLICABLE TO THIS PROJECT.

CITY OF TEMPLE
ENGINEERING DEPARTMENT
WATER & WASTEWATER PVC PIPE EMBEDMENT AND BACKFILL DETAILS
D-06

NO.	DATE	REVISION	BY

Plot Date: Apr 13, 2022 - 6:44pm
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
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TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
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SHEET NO. D-06
OF 07 SHEETS

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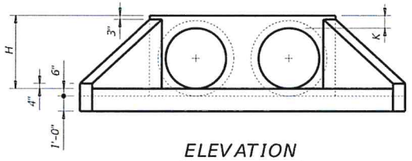
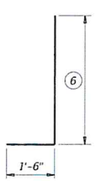
TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Dia of Pipe (D)	Values for One Pipe: W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	Values to be Added for Each Addt'l Pipe: X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4' - 7 1/2"	2' - 6"	2' - 10"	3' - 3 1/2"	88	0.6	1' - 9"	20	0.2
	15"	5' - 5 3/4"	2' - 9 1/2"	3' - 4"	3' - 10 1/4"	103	0.7	2' - 2"	24	0.3
	18"	6' - 4 1/4"	3' - 1"	3' - 10"	4' - 5"	124	0.9	2' - 8"	32	0.3
	21"	7' - 2 3/4"	3' - 4 1/2"	4' - 4"	5' - 0"	143	1.1	3' - 1"	43	0.4
	24"	8' - 2 1/2"	3' - 9 1/2"	4' - 10"	5' - 7"	164	1.3	3' - 7"	50	0.5
	27"	9' - 1"	4' - 1"	5' - 4"	6' - 2"	179	1.5	3' - 11"	56	0.6
	30"	9' - 11 1/2"	4' - 4 1/2"	5' - 10"	6' - 8 3/4"	203	1.7	4' - 4"	65	0.8
	33"	10' - 10"	4' - 8"	6' - 4"	7' - 3 3/4"	224	2.0	4' - 8"	71	0.9
	36"	11' - 8 1/4"	4' - 11 1/2"	6' - 10"	7' - 10 3/4"	249	2.2	5' - 1"	81	1.0
	42"	13' - 5 1/4"	5' - 6 1/2"	7' - 10"	9' - 0 1/2"	298	2.8	5' - 10"	97	1.3
	48"	15' - 9"	6' - 1 1/2"	9' - 4"	10' - 9 1/2"	360	3.8	6' - 7"	117	1.7
	54"	17' - 5 3/4"	6' - 8 1/2"	10' - 4"	11' - 11 1/4"	427	4.5	7' - 6"	151	2.1
	60"	19' - 2 3/4"	7' - 3 1/2"	11' - 4"	13' - 1"	481	5.3	8' - 3"	174	2.5
	66"	20' - 11 1/2"	7' - 10 1/2"	12' - 4"	14' - 3"	544	6.2	8' - 9"	194	2.9
	72"	22' - 8 1/2"	8' - 5 1/2"	13' - 4"	15' - 4 3/4"	601	7.1	9' - 4"	213	3.3
3:1	12"	6' - 3"	2' - 6"	4' - 3"	4' - 11"	118	0.8	1' - 9"	22	0.2
	15"	7' - 5"	2' - 9 1/2"	5' - 0"	5' - 9 1/4"	137	1.1	2' - 2"	28	0.3
	18"	8' - 6 3/4"	3' - 1"	5' - 9"	6' - 7 3/4"	170	1.3	2' - 8"	37	0.5
	21"	9' - 8 3/4"	3' - 4 1/2"	6' - 6"	7' - 6"	195	1.6	3' - 1"	48	0.6
	24"	11' - 0"	3' - 9 1/2"	7' - 3"	8' - 4 1/2"	227	2.0	3' - 7"	58	0.7
	27"	12' - 2"	4' - 1"	8' - 0"	9' - 2 3/4"	251	2.3	3' - 11"	67	0.8
	30"	13' - 4"	4' - 4 1/2"	8' - 9"	10' - 1 1/2"	293	2.7	4' - 4"	77	1.0
	33"	14' - 5 3/4"	4' - 8"	9' - 6"	10' - 11 3/4"	318	3.1	4' - 8"	84	1.2
	36"	15' - 7 3/4"	4' - 11 1/2"	10' - 3"	11' - 10"	351	3.5	5' - 1"	96	1.4
	42"	17' - 11 1/2"	5' - 6 1/2"	11' - 9"	13' - 6 3/4"	432	4.5	5' - 10"	119	1.7
	48"	21' - 1 3/4"	6' - 1 1/2"	14' - 0"	16' - 2"	537	6.1	6' - 7"	146	2.3
	54"	23' - 5 1/2"	6' - 8 1/2"	15' - 6"	17' - 10 3/4"	630	7.3	7' - 6"	186	2.9
	60"	25' - 9 1/4"	7' - 3 1/2"	17' - 0"	19' - 7 1/2"	719	8.7	8' - 3"	219	3.4
	66"	28' - 1"	7' - 10 1/2"	18' - 6"	21' - 4 1/4"	811	10.1	8' - 9"	242	3.9
	72"	30' - 4 3/4"	8' - 5 1/2"	20' - 0"	23' - 1 1/4"	924	11.7	9' - 4"	272	4.4
4:1	12"	7' - 10 3/4"	2' - 6"	5' - 8"	6' - 6 1/2"	148	1.1	1' - 9"	24	0.3
	15"	9' - 4"	2' - 9 1/2"	6' - 8"	7' - 8 1/2"	181	1.5	2' - 2"	32	0.4
	18"	10' - 9 1/2"	3' - 1"	7' - 8"	8' - 10 1/4"	221	1.9	2' - 8"	42	0.5
	21"	12' - 2 3/4"	3' - 4 1/2"	8' - 8"	10' - 0"	260	2.3	3' - 1"	57	0.7
	24"	13' - 9 1/2"	3' - 9 1/2"	9' - 8"	11' - 2"	301	2.8	3' - 7"	67	0.9
	27"	15' - 3"	4' - 1"	10' - 8"	12' - 3 3/4"	334	3.3	3' - 11"	77	1.0
	30"	16' - 8 1/4"	4' - 4 1/2"	11' - 8"	13' - 5 3/4"	385	3.8	4' - 4"	89	1.3
	33"	18' - 1 3/4"	4' - 8"	12' - 8"	14' - 7 1/2"	425	4.5	4' - 8"	101	1.4
	36"	19' - 7"	4' - 11 1/2"	13' - 8"	15' - 9 1/4"	472	5.1	5' - 1"	115	1.7
	42"	22' - 5 3/4"	5' - 6 1/2"	15' - 8"	18' - 1"	583	6.5	5' - 10"	141	2.1
	48"	26' - 6 1/4"	6' - 1 1/2"	18' - 8"	21' - 6 3/4"	730	8.9	6' - 7"	175	2.8
	54"	29' - 5"	6' - 8 1/2"	20' - 8"	23' - 10 1/4"	875	10.7	7' - 6"	226	3.6
	60"	32' - 3 3/4"	7' - 3 1/2"	22' - 8"	26' - 2"	996	12.7	8' - 3"	264	4.3
	66"	35' - 2 1/2"	7' - 10 1/2"	24' - 8"	28' - 5 3/4"	1,140	14.9	8' - 9"	300	4.9
	72"	38' - 1 1/4"	8' - 5 1/2"	26' - 8"	30' - 9 1/2"	1,297	17.3	9' - 4"	334	5.6
6:1	12"	11' - 2"	2' - 6"	8' - 6"	9' - 9 3/4"	224	1.9	1' - 9"	28	0.4
	15"	13' - 2 1/4"	2' - 9 1/2"	10' - 0"	11' - 6 1/2"	268	2.5	2' - 2"	37	0.5
	18"	15' - 2 1/2"	3' - 1"	11' - 6"	13' - 3 1/2"	330	3.2	2' - 8"	50	0.7
	21"	17' - 2 3/4"	3' - 4 1/2"	13' - 0"	15' - 0 1/4"	387	3.9	3' - 1"	69	0.9
	24"	19' - 4 1/2"	3' - 9 1/2"	14' - 6"	16' - 9"	453	4.8	3' - 7"	80	1.2
	27"	21' - 4 3/4"	4' - 1"	16' - 0"	18' - 5 3/4"	512	5.7	3' - 11"	96	1.4
	30"	23' - 5 1/2"	4' - 4 1/2"	17' - 6"	20' - 2 1/2"	593	6.7	4' - 4"	110	1.7
	33"	25' - 5 1/2"	4' - 8"	19' - 0"	21' - 11 1/4"	675	7.8	4' - 8"	127	2.0
	36"	27' - 5 3/4"	4' - 11 1/2"	20' - 6"	23' - 8"	735	9.0	5' - 1"	144	2.3
	42"	31' - 6 1/2"	5' - 6 1/2"	23' - 6"	27' - 1 1/2"	922	11.5	5' - 10"	179	3.0
	48"	37' - 3 1/2"	6' - 1 1/2"	28' - 0"	32' - 4"	1,191	15.9	6' - 7"	231	4.0
	54"	41' - 4 1/2"	6' - 8 1/2"	31' - 0"	35' - 9 1/2"	1,424	19.2	7' - 6"	300	5.0
	60"	45' - 4 3/4"	7' - 3 1/2"	34' - 0"	39' - 3"	1,631	22.9	8' - 3"	353	6.0

DATE:
FILE:



ELEVATION
(Showing dimensions.)



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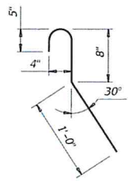


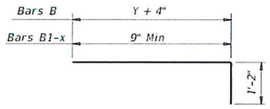
BARS CL
(Length = 2'-5")

TABLE OF (5) REINFORCING STEEL

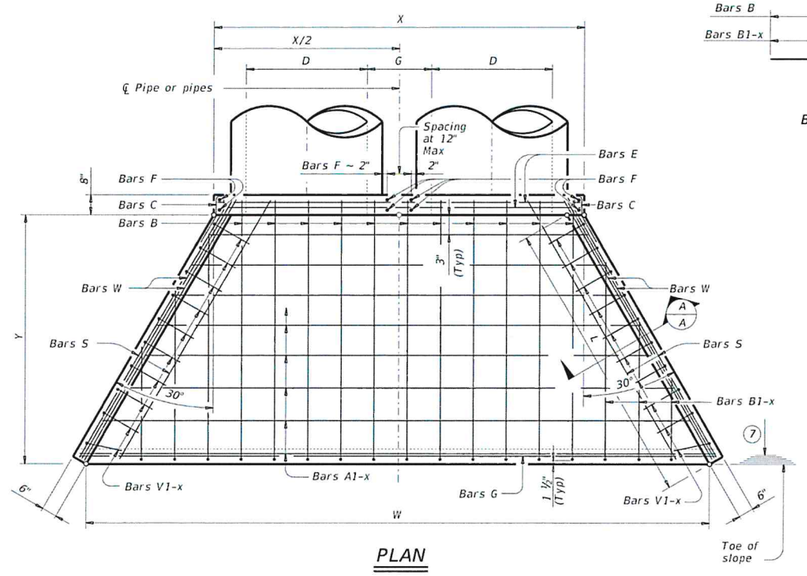
Bar	Size	Spa	No.
A	#4	1' - 0"	~
B	#3	1' - 6"	~
C	#4	1' - 0"	~
D	#3	1' - 0"	~
E	#5	~	4
F	#5	~	~
G	#3	~	2
S	#4	~	6
V	#4	1' - 0"	~
W	#5	~	4

TABLE OF CONSTANT DIMENSIONS

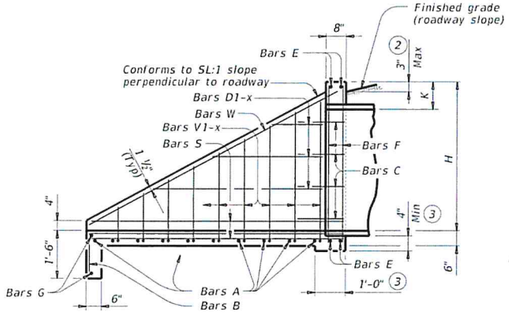
Dia of Pipe (D)	G	K (4)	H
12"	0' - 9"	1' - 0"	2' - 0"
15"	0' - 11"	1' - 0"	2' - 3"
18"	1' - 2"	1' - 0"	2' - 6"
21"	1' - 4"	1' - 0"	2' - 9"
24"	1' - 7"	1' - 0"	3' - 0"
27"	1' - 8"	1' - 0"	3' - 3"
30"	1' - 10"	1' - 0"	3' - 6"
33"	1' - 11"	1' - 0"	3' - 9"
36"	2' - 1"	1' - 0"	4' - 0"
42"	2' - 4"	1' - 0"	4' - 6"
48"	2' - 7"	1' - 3"	5' - 3"
54"	3' - 0"	1' - 3"	5' - 9"
60"	3' - 3"	1' - 3"	6' - 3"
66"	3' - 5"	1' - 3"	6' - 9"
72"	3' - 4"	1' - 3"	7' - 3"



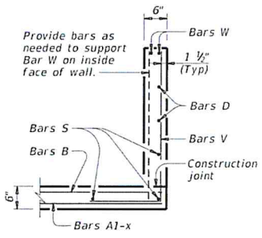
BARS B and B1-x



PLAN



TYPICAL WING ELEVATION



SECTION A-A

(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.

(4) Dimensions shown are usual and maximum.

(5) Quantities shown are for one structure end only (one headwall).

(6) Min Length = $6" + 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right)$

Max Length = $12 \times H - 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right) - 1"$

(7) Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE: chfw00se-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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NO.	DATE	REVISION	BY

Plot Date: Apr 13, 2022 - 6:44pm
Plotted By: BVB

PROJECT NO. 2021-117
DRAWN BY Douglas L. Krumnow
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 7/7/22

STATE OF TEXAS — RICK N. KASBERG — 70163 — REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION IMPROVEMENTS
DETAILS
TxDOT CH-FW-0

SHEET NO. D-07
OF 07 SHEETS

CITY OF TEMPLE, TEXAS
Ave G Pump Station Improvements

ADDENDUM NO. 1
September 16, 2022

The construction plans and specifications for the Avenue G Pump Station Improvements project, on which bids are to be received until 2:30 PM on Wednesday, September 28, 2022, are hereby modified as follows:

I. GENERAL/CONTRACT DOCUMENTS

1. A Non-Mandatory pre-submittal conference was held on September 15, 2022, in Microsoft Teams Meeting at 2:00 PM. Attached are copies of the agenda. The attendance list for this conference can be found on the City of Temple Purchasing Department website https://app.negometrix.com/buyer/4733/tenders .

II. PLAN SHEETS

1. Refer to sheet G-08. Revised Note 1 for proposed 24" suction line, not 30" in the sentence, "The proposed wet tap and gate valve for connecting the proposed 24" DIP suction line to the existing 30" C-301 suction line shown on sheet P-07 shall be performed by certified technicians with Thompson Pipe. Attached is revised Sheet G-08 dated September 16, 2022, which reflects these changes.

2. Refer to Sheet P-16. Attached is revised Sheet P-16 dated September 16, 2022, which reflects the changes and additions described below.

   a. Pump Station Operation Sequence by Stage, Stage 1. The existing pump station pumps, motors and electrical shall remain in full operation during construction of the proposed 24" (Meter Vault A) discharge line piping and wet taps and 24"/30" suction line piping and wet tap. Added to note, "The proposed 24" wet tap and gate valve for connecting the proposed 24" DIP suction line to the existing 30" C-301 suction line shown on Sheet P-07 shall be performed by certified technicians with Thompson Pipe."

   b. Pump Station Operation Sequence by Stage, Stage 1A, has been added to address a potential conflict with the existing underground electrical feed to the existing pump station.

   c. Pump Station Operation Sequence by Stage, Stage 2. Added the following:

      Prior to beginning construction, Contractor shall perform exploratory excavation to locate ends of a full joint of the existing 30" C-301 prestressed concrete pipe in the area shown in the green highlight. The entire joint of pipe shall be removed, and dished head plugs shall be welded to the respective ends/joints of the existing 30" pipe to remain in place. Furnish concrete blocking for the installed plugs.

   d. Pump Station Operation Sequence by Stage, Stage 4. Added Note block, Note 1. Existing gate valves, at the existing meter vaults to be abandoned, shall be removed and blind flanges furnished and installed at each tee under Stage 4. Existing gate valves (EGV-1 and EGV-2) shall be closed to allow removal of valves and installation of blind flanges. Flanges are shown in red.

III. TECHNICAL SPECIFICATIONS

1. Refer to Appendix A of Technical Specification. Attached are copies of the BNSF Temporary Occupancy and Pipeline Permit Conditions for inclusion under Appendix A-2 and A-3, respectively. Contractor shall comply with all Permit Conditions included in these permits. Please note that Appendix A-3 has been renamed from General License to Pipeline.

2. Refer to Technical Specification M01-Horizontal Split Case Pumps and Motors.

   a. Under Subsection M01.04, Subpart A, to assure unity of responsibility, the motors, couplings, guards and supporting bases shall be furnished by the pump supplier, not the pump manufacturer.

   b. Under Subsection M01.11, Subpart C, pump motors shall have Open Drip Proof (ODP) enclosures. Remove TEFC. Add verbiage, 'Motors driven by VFD shall have ODP enclosures with insulated bearings and shaft grounding brushes'

IV. BID SUBMITTAL

1. Bidders shall acknowledge receipt of this Addendum in the space provided in the proposal and on the outer envelope of their bid.

9/16/22
Rick N. Kasberg, P.E. Date
Kasberg, Patrick & Associates, LP
19 North Main St.
Temple, Texas 76501

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

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NO.	DATE	REVISION	BY

Plot Date: Dec 08, 2022 - 12:20pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY DLK
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 1/12/23

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS 76501

CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
PROPOSED IMPROVEMENTS

ADDENDA

SHEET NO. **A-01**
OF **3** SHEETS

CITY OF TEMPLE, TEXAS
Ave G Pump Station Improvements

ADDENDUM NO. 2
September 23, 2022

The construction plans and specifications for the Avenue G Pump Station Improvements project, on which bids are to be received until 2:30 PM on Wednesday, September 28, 2022, are hereby modified as follows:

I. PLAN SHEETS

1. Refer to Sheet E2.4. Provide and install interlock wiring and relays between the exhaust fans and louvers. When exhaust fans receive a run signal from the thermostat, louvers to open. ¾"C, 4#14 from each exhaust fan to each louver.

2. Refer to Sheet P-11. In Section H-H change the suction pipe reducers labeled "H" to Eccentric Reducers. The flat side of the eccentric reducers shall be faced upward to prevent air pockets from forming on the suction side of the pump.

3. Refer to Sheet S4.7, Detail 2 – Header Pit Cross Section. Galvanized Pipe Straps will not be required.

4. Refer to Sheets P-02 thru P-04. All furniture, desk, chairs, book shelfs, and office machines and devices will be removed by the Owner prior to beginning of construction.

5. Refer to Sheets P-11 thru P-13. Proposed couplings shown on these plan sheets shall be Flanged Dresser Style 128 as manufactured by Smith Blair or approve equal.

6. Refer to Sheet E6.0.

   a. Delete the two (2) Phoenix Radios shown on the RTU Schematic. These were shown in error.
   b. The radio shown in the RTU Schematic shall be a Phoenix Model #2901540 or approved equal.
   c. The Ethernet Switch shown in the RTU Schematic shall be a Automation Direct Stride Model #SE-SWSU-WT or Moxa or approved equal.

II. TECHNICAL SPECIFICATIONS

1. Refer to Technical Specifications Section G06 – Ductile Iron Pipe & Fittings.

   a. Under Subsection G06.02, add Subpart E. Nuts and Bolts as follows:

      1. Aboveground:
         a. Hex head bolts and nuts:
            1) Bolts per ANSI B18.2.1.
            2) Nuts per ANSI B18.2.2.
         b. Number, size, and length per Table 15.2 of AWWA C115.

      c. Material:

         Stainless Steel 316 (for installation on all flanged and ductile iron pipe in proposed pump station building and pipe chases – supply nylon isolation washers on both the nut and bolt head sides .

      2. Underground:
         a. Tee-head bolts and hexagonal nuts per AWWA C111.
         b. Number, size, and length per Table 11.1 of AWWA C111.
         c. Material:

            Low alloy steel or high strength cast iron in accordance with AWWA C111.

2. Refer to Technical Specifications Section G08 – Valves and Backflow Preventers.

   a. Change Subsection G08.07 to be G08.09. Add Subsection G08.07. Butterfly Valves, as follows:

      1. General: Butterfly valves shall comply with AWWA C504 and following requirements:
         a. Suitable for throttling operations and infrequent operations after periods of inactivity.
         b. Flanged end, short body type, Class 150.
         c. Elastomer seats bonded or vulcanized to body shall have adhesive integrity of bond between seat and body assured by testing with minimum 75-pound pull in accordance with ASTM D429, Method B.
         d. Bubble-tight with rated pressure applied from either side.
         e. No travel stops for the disc on interior of the body.
         f. Self-adjusting V-type or O-ring shaft seals.
         g. Isolate metal-to-metal thrust bearing surfaces from flow stream.
         h. Buried valves shall be designed for buried service.
         i. Butterfly valves shall be as manufactured by DeZurik or Pratt or approved equal.

   b. Add Subsection G08.08. Flap Valves, as follows:

      1. General: Flap Valve shown in Section K-K on Sheet P-12 and labeled "LL" shall be a 12" Model A25406 as manufactured by Troy Valve or approved equal.

3. Refer to Technical Specifications Section M01 – Horizontal Split Case Pumps and Motors.

   1. Add Subsection M01.01, B, as follows: "Pumps must meet NSF – 61 requirements "

   2. Under Subsection M01.09, A, add Patterson Pumps Model 10x8 M-C as a pre-approved equal. The pumps within each service type shall be identical in every respect with all parts interchangeable. Integral pump nozzles shall be 180 degrees apart and shall have the same centerline axis. Integral pump nozzle sizes for the Patterson Pumps shall be minimum 8" discharge & 10" suction and shall be supplied with ANSI Class 125 flanges. Minimum nozzle sizes shall not be attained by addition of standard ACIP reducing/increasing fittings. Contractor shall coordinate

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NO.	DATE	REVISION	BY

Plot Date: Dec 08, 2022 - 12:20pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY DLK
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 1/12/23

STATE OF TEXAS · RICK N. KASBERG · 70163 · REGISTERED PROFESSIONAL ENGINEER

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KASBERG, PATRICK & ASSOCIATES, LP
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CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
PROPOSED IMPROVEMENTS

ADDENDA

SHEET NO. **A-02**
OF **3** SHEETS

changes to the suction and discharge reducers required if proposing Patterson Pumps.

3. Under Subsection M01.09, B, Change the Maximum Allowable NPSHR at Design Duty Point (feet) of 10 to "Maximum Allowable NPSHR across entire published pump curve shall not exceed 25 feet. "

4. Under Subsection M01.11 C, motors shall be inverter duty type.

5. Under Subsection M01.13 A.1. remove the wording "except for NPSHR'.

6. Under Subsection M01.13 add Subsection C as follows:

   C. Perform NPSHR testing on the 1st unit ready for testing. Determine the Net Positive Suction Head required under both "1% head drop" and at "3% head drop" conditions and provide a composite curve for each. Conduct in accordance with Hydraulic Institute Standards, but at both the 1% head drop and 3% head drop conditions. Take at least five (5) points for NPSHR condition over the pump's Allowable Operating Range (A.O.R.). One point shall be at each end of the A.O.R. One point will be at approximately at rated point, design point, and minimum head point for continuous operation.

III. BID SUBMITTAL

1. Bidders shall acknowledge receipt of this Addendum in the space provided in the proposal and on the outer envelope of their bid.

9/23/22
Date

Rick N. Kasberg, P.E.
Kasberg, Patrick & Associates, LP
19 North Main St.
Temple, Texas 76501

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY

Plot Date: Dec 08, 2022 - 12:21pm
Plotted By: DLK

PROJECT NO. 2021-117
DRAWN BY DLK
DESIGNED BY Rick N. Kasberg, P.E.
APPROVED BY
DATE 1/12/23

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
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CITY OF TEMPLE, TEXAS
AVENUE G PUMP STATION
PROPOSED IMPROVEMENTS

ADDENDA

SHEET NO. A-03
OF 3 SHEETS

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