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- C0.00 TCEQ LIFT STATION GENERAL NOTES
- C1.00 OVERALL SANITARY SEWER PLAN – FM1
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- C1.03 SANITARY SEWER PLAN & PROFILE – LINE "FM1"
- C1.04 SANITARY SEWER PLAN & PROFILE – LINE "FM1"

- C2.00 LIFT STATION 1 SITE PLAN
- C2.01 WET WELL 1 PLAN & PROFILE

- C3.D1 LIFT STATION DETAILS
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ELECTRICAL SHEETS

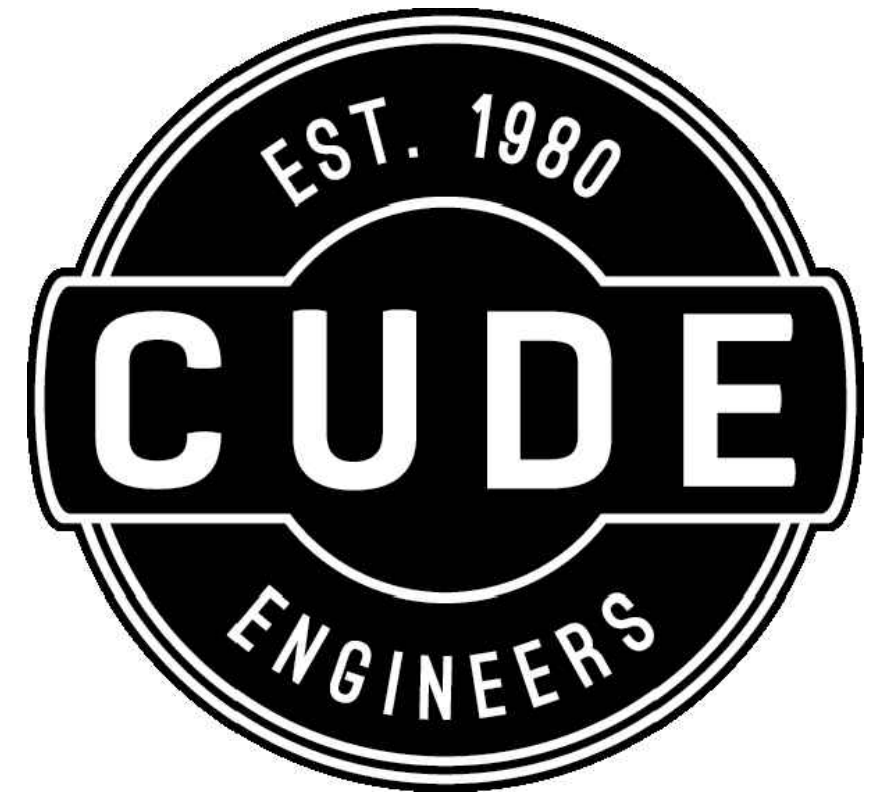
- E0.01 ELECTRICAL ABBREVIATIONS, LEGENDS, AND GENERAL NOTES
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FLYING W MUNICIPAL UTILITY DISTRICT  
CONSTRUCTION DOCUMENTS FOR

FLYING W SUBDIVISION  
LIFT STATIONS

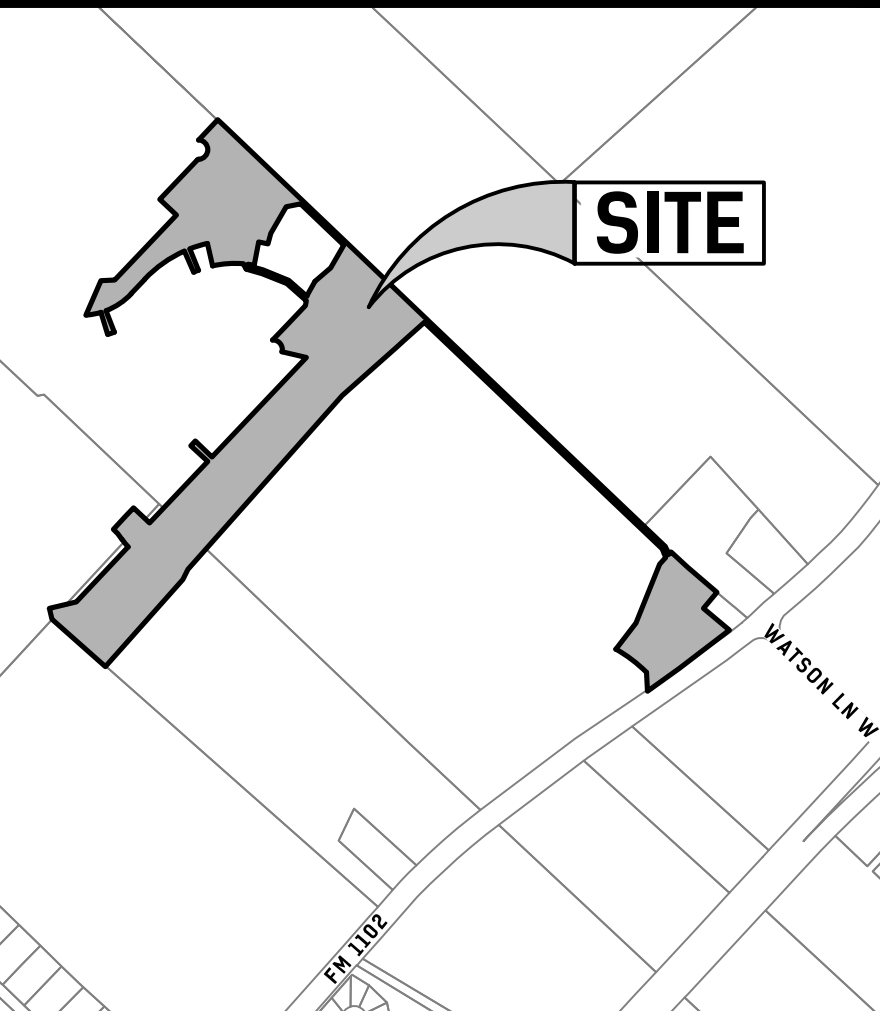


VICINITY MAP  
N.T.S.



SAN ANTONIO | AUSTIN | SAN MARCOS

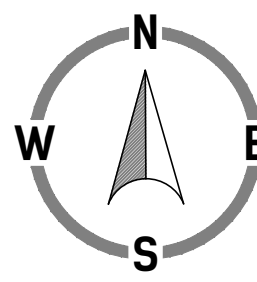
4122 POND HILL ROAD, SUITE 101  
SAN ANTONIO, TEXAS 78231  
P:(210) 681.2951 F:(210) 523.7112  
TBPE FIRM NO. 455  
TBPLS FIRM NO. 10048500  
SBE CERTIFIED FIRM



LOCATION MAP  
SCALE: 1" = 1000'



DEVELOPER:  
PULTE HOMES  
CONTACT PERSON: STEPHAN MORENO  
927 E. SONTERRA, STE. 316  
SAN ANTONIO, 78258  
TEL: 210.496.1985  
FAX: 210.496.0449



MDP NUMBER:  
MP23-0118

PLAT NUMBER:

PROJECT NUMBER:  
04024.003



THIS PLAN SET HAS BEEN PREPARED,  
DESIGNED AND REVIEWED UNDER MY  
DIRECT SUPERVISION.



TEXAS COMMISSION ON ENVIROMENTAL QUALITY  
LIFT STATIONS AND FORCE MAINS  
GENERAL CONSTRUCTION NOTES

1. THIS LIFT STATION AND/OR FORCE MAIN MUST BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) EDWARDS AQUIFER RULES 30 TEXAS ADMINISTRATIVE CODE (TAC) §213.5(c), THE DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS 30 TAC CHAPTER 217, AND THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS.
2. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED LIFT STATION/FORCE MAIN SYSTEM APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF A LIFT STATION/FORCE MAIN SYSTEM APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.
3. PRIOR TO COMMENCING ANY REGULATED ACTIVITY, THE APPLICANT OR HIS AGENT MUST NOTIFY THE SAN ANTONIO REGIONAL OFFICE, IN WRITING, OF THE DATE ON WHICH THE REGULATED ACTIVITY WILL BEGIN.
4. UPON COMPLETION OF THE WET WELL EXCAVATION, A GEOLOGIST MUST CERTIFY THAT THE EXCAVATION HAS BEEN INSPECTED FOR THE PRESENCE OF SENSITIVE FEATURES AND THE CERTIFICATION MUST BE SUBMITTED TO THE APPROPRIATE REGIONAL OFFICE. FURTHER ACTIVITIES MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY FROM THE LIFT STATION. CONSTRUCTION MAY CONTINUE IF THE GEOLOGIST CERTIFIES THAT NO SENSITIVE FEATURE OR FEATURES ARE PRESENT.
5. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY OF THE FEATURE DISCOVERY. A GEOLOGIST'S ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING WITHIN TWO WORKING DAYS. THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.
6. LIFT STATIONS SHALL BE DESIGNED TO WITHSTAND AND OPERATE DURING A 100-YEAR FLOOD EVENT AND SHALL BE ACCESSIBLE DURING A 25-YEAR FLOOD. ALL LIFT STATIONS SHALL BE INTRUDER-RESISTANT WITH A CONTROLLED ACCESS.
7. DRY WELL SUMP PUMPS:  
(a) A DRY WELL MUST USE DUAL SUMP PUMPS, EACH WITH A MINIMUM CAPACITY OF 1,000 GALLONS PER HOUR AND CAPABLE OF HANDLING THE VOLUME OF LIQUID GENERATED DURING PEAK OPERATIONS.  
(b) A PUMP MUST HAVE A SUBMERSIBLE MOTOR AND WATERTIGHT WIRING.  
(c) A DRY WELL FLOOR MUST SLOPE TOWARD A SUMP SIZED FOR PROPER DRAINAGE.  
(d) THE MINIMUM SUMP DEPTH IS 6.0 INCHES AND MUST PREVENT STANDING WATER ON A DRY WELL FLOOR UNDER NORMAL OPERATION.  
(e) A SUMP PUMP MUST OPERATE AUTOMATICALLY BY USE OF A FLOAT SWITCH OR OTHER LEVEL DETECTING DEVICE.  
(f) A SUMP PUMP MUST USE SEPARATE PIPES CAPABLE OF DISCHARGING MORE THAN THE MAXIMUM LIQUID LEVEL OF AN ASSOCIATED WET WELL.  
(g) A SUMP PUMP OUTLET PIPE MUST BE AT LEAST 1.5 INCHES IN DIAMETER AND HAVE AT LEAST TWO CHECK VALVES IN SERIES.
8. PUMP CONTROLS.  
(a) A LIFT STATION PUMP MUST OPERATE AUTOMATICALLY, BASED ON THE WATER LEVEL IN A WET WELL.  
(b) THE LOCATION OF A WET WELL LEVEL MECHANISM MUST ENSURE THAT THE MECHANISM IS UNAFFECTED BY CURRENTS, RAGS, GREASE, OR OTHER FLOATING MATERIALS.  
(c) A LEVEL MECHANISM MUST BE ACCESSIBLE WITHOUT ENTERING THE WET WELL.  
(d) WET WELL CONTROLS WITH A BUBBLER SYSTEM REQUIRE DUAL AIR SUPPLY AND DUAL CONTROLS.  
(e) MOTOR CONTROL CENTERS MUST BE MOUNTED AT LEAST 4.0 INCHES ABOVE GRADE TO PREVENT WATER INTRUSION AND CORROSION FROM STANDING WATER IN THE ENCLOSURE.  
(f) ELECTRICAL EQUIPMENT AND ELECTRICAL CONNECTIONS IN A WET WELL OR A DRY WELL MUST MEET NATIONAL FIRE PREVENTION ASSOCIATION 70 NATIONAL ELECTRIC CODE EXPLOSION PREVENTION REQUIREMENTS, UNLESS CONTINUOUS VENTILATION IS PROVIDED.
9. WET WELLS.  
(a) A WET WELL MUST BE ENCLOSED BY WATERTIGHT AND GAS TIGHT WALLS.  
(b) A PENETRATION THROUGH A WALL OF A WET WELL MUST BE GAS TIGHT.  
(c) A WET WELL MUST NOT CONTAIN EQUIPMENT REQUIRING REGULAR OR ROUTINE INSPECTION OR MAINTENANCE, UNLESS INSPECTION AND MAINTENANCE CAN BE DONE WITHOUT STAFF ENTERING THE WET WELL.  
(d) A GRAVITY PIPE DISCHARGING TO A WET WELL MUST BE LOCATED SO THAT THE INVERT ELEVATION IS ABOVE THE LIQUID LEVEL OF A PUMPS' ON" SETTING.  
(e) GATE VALVES AND CHECK VALVES ARE PROHIBITED IN A WET WELL.  
(f) GATE VALVES AND CHECK VALVES MAY BE LOCATED IN A VALVE VAULT NEXT TO A WET WELL OR IN A DRY WELL.  
(g) PUMP CYCLE TIME, BASED ON PEAK FLOW, MUST EQUAL OR EXCEED THOSE IN THE FOLLOWING TABLE:

PUMP HORSEPOWER	MINIMUM CYCLE TIMES (MINS)
<50	6
50-100	10
> 100	15

(h)AN EVALUATION OF MINIMUM WET WELL VOLUME REQUIRES THE FOLLOWING FORMULA:

$$V = \frac{T \times Q}{4 \times 7.48}$$

WHERE:

V = ACTIVE VOLUME (CUBIC FEET)

Q = PUMP CAPACITY (GALLONS PER MINUTE)

T = CYCLE TIME (MINUTES)

7.48 = CONVERSION FACTOR (GALLONS/CUBIC FOOT)

13. HOISTING EQUIPMENT. A LIFT STATION MUST HAVE PERMANENT HOISTING EQUIPMENT OR BE ACCESSIBLE TO PORTABLE HOISTING EQUIPMENT FOR REMOVAL OF PUMPS, MOTORS, VALVES, PIPES, AND OTHER SIMILAR EQUIPMENT.
14. A FLOOR DRAIN FROM A VALVE VAULT TO A WET WELL MUST PREVENT GAS FROM ENTERING A VALVE VAULT OR BE PROVIDED BY INCLUDING FLAP VALVES, "P" TRAPS, SUBMERGED OUTLETS, OR A COMBINATION OF THESE DEVICES.
15. PUMPS.  
(a) GENERAL REQUIREMENTS. A RAW WASTEWATER PUMP, WITH THE EXCEPTION OF A GRINDER PUMP, MUST:  
(1) BE DESIGNED TO PREVENT CLOGGING;  
(2) BE CAPABLE OF PASSING A SPHERE OF 2.5 INCHES IN DIAMETER OR GREATER; AND  
(3) HAVE GREATER THAN 3.0 INCH DIAMETER SUCTION AND DISCHARGE OPENINGS.  
(b) SUBMERSIBLE AND NON-SUBMERSIBLE PUMPS.  
(1) A NON-SUBMERSIBLE PUMP MUST HAVE INSPECTION AND CLEANOUT PLATES ON BOTH THE SUCTION AND DISCHARGE SIDES OF EACH PUMPING UNIT THAT FACILITATE LOCATING AND REMOVING BLOCKAGE-CAUSING MATERIALS, UNLESS THE PUMP DESIGN ACCOMMODATES EASY REMOVAL OF THE ROTATION ELEMENTS.  
(2) A PUMP SUPPORT MUST PREVENT MOVEMENT AND VIBRATION DURING OPERATION.  
(3) A SUBMERSIBLE PUMP MUST USE A RAIL-TYPE PUMP SUPPORT SYSTEM WITH MANUFACTURER-APPROVED MECHANISMS DESIGNED TO ALLOW PERSONNEL TO REMOVE AND REPLACE ANY SINGLE PUMP WITHOUT ENTERING OR DEWATERING THE WET WELL.  
(4) SUBMERSIBLE PUMP RAILS AND LIFTING CHAINS MUST BE CONSTRUCTED OF A MATERIAL THAT PERFORMS TO AT LEAST THE STANDARD OF SERIES 300 STAINLESS STEEL.
- (c) LIFT STATION PUMPING CAPACITY. THE FIRM PUMPING CAPACITY OF A LIFT STATION MUST HANDLE THE EXPECTED PEAK FLOW.
- (d) PUMP HEAD CALCULATIONS.  
(1) AN OWNER SHALL SELECT A PUMP BASED UPON ANALYSIS OF THE SYSTEM HEAD AND PUMP CAPACITY CURVES THAT DETERMINE THE PUMPING CAPACITIES ALONE AND WITH OTHER PUMPS AS THE TOTAL DYNAMIC-HEAD INCREASES DUE TO ADDITIONAL FLOWS PUMPED THROUGH A FORCE MAIN.  
(2) THE PIPE HEAD LOSS CALCULATIONS, USING THE HYDRAULIC INSTITUTE STANDARDS, PERTAINING TO HEAD LOSSES THROUGH PIPES, VALVES, AND FITTINGS, MUST BE INCLUDED IN THE REPORT.  
(3) THE SELECTED FRICTION COEFFICIENT (HAZEN-WILLIAMS "C" VALUE) USED IN FRICTION HEAD LOSS CALCULATIONS MUST BE C VALUES FOR PROPOSED AND EXISTING PIPE.  
(4) FOR A LIFT STATION WITH MORE THAN TWO PUMPS, A FORCE MAIN IN EXCESS OF ONE-HALF MILE, OR FIRM PUMPING CAPACITY OF 100 GALLONS PER MINUTE OR GREATER, SYSTEM CURVES MUST BE PROVIDED FOR BOTH THE NORMAL AND PEAK OPERATING CONDITIONS AT C VALUES FOR PROPOSED AND EXISTING PIPE.
- (e) FLOW CONTROL.  
(1) A LIFT STATION OR A TRANSFER PUMPING STATION LOCATED AT OR DISCHARGING DIRECTLY TO A WASTEWATER TREATMENT SYSTEM MUST HAVE A PEAK PUMP CAPACITY EQUAL TO OR LESS THAN THE PEAK DESIGN FLOW, UNLESS EQUALIZATION IS PROVIDED.  
(2) A WASTEWATER TREATMENT SYSTEM WITH A PEAK FLOW THAT IS GREATER THAN 300,000 GALLON PER DAY MUST USE TWO PUMPS IN SERIES, A PRESSURE DUPLEX, AUTOMATICALLY CONTROLLED, VARIABLE CAPACITY PUMPS ARE PROVIDED.
- (f) SELF-PRIMING PUMPS.  
(1) A SELF-PRIMING PUMP MUST BE CAPABLE OF PRIMING WITHOUT RELIANCE UPON A SEPARATE PRIMING SYSTEM, AN INTERNAL FLAP VALVE, OR ANY EXTERNAL MEANS FOR PRIMING.  
(2) A SELF-PRIMING PUMP MUST USE A SUCTION PIPE VELOCITY AT LEAST 3.0 FEET PER SECOND BUT NOT MORE THAN 7.0 FEET PER SECOND, AND MUST INCORPORATE ITS OWN SUCTION PIPE.  
(3) A SELF-PRIMING PUMP MUST VENT AIR BACK INTO THE WET WELL DURING PRIMING.
- (g) VACUUM-PRIMING PUMPS.  
(1) A VACUUM-PRIMED PUMP MUST BE CAPABLE OF PRIMING BY USING A SEPARATE POSITIVE PRIMING SYSTEM WITH A DEDICATED VACUUM PUMP FOR EACH MAIN WASTEWATER PUMP.  
(2) A VACUUM-PRIMING PUMP MUST USE A SUCTION PIPE VELOCITY AT LEAST 3.0 FEET PER SECOND BUT LESS THAN 7.0 FEET PER SECOND AND MUST HAVE ITS OWN SUCTION PIPE.
- (h) VERTICAL POSITIONING OF PUMPS. A RAW WASTEWATER PUMP MUST HAVE POSITIVE STATIC SUCTION HEAD DURING NORMAL ON-OFF CYCLING, EXCEPT A SUBMERSIBLE PUMP WITH "NO SUCTION" PIPES, A VACUUM-PRIMED PUMP, OR A SELF-PRIMING UNIT CAPABLE OF SATISFACTORY OPERATION UNDER ANY NEGATIVE SUCTION HEAD ANTICIPATED FOR THE LIFT STATION.  
(i) INDIVIDUAL GRINDER PUMPS. A GRINDER PUMP SERVING ONLY ONE RESIDENTIAL OR COMMERCIAL STRUCTURE THAT IS PRIVATELY OWNED, MAINTAINED, AND OPERATED IS NOT SUBJECT TO THE RULES OF THIS CHAPTER.  
(j) PUMP FOR LOW-FLOW LIFT STATION. A PUMP USED FOR A LIFT STATION WITH A PEAK FLOW OF LESS THAN 120 GALLONS PER MINUTE MUST BE SUBMERSIBLE AND INCLUDE A GRINDER-UTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE OWNER AND THE ENGINEER.
16. PIPING.  
(a) HORIZONTAL PUMP SUCTIONS.  
(1) EACH PUMP MUST HAVE A SEPARATE SUCTION PIPE THAT USES AN ECCENTRIC REDUCER.  
(2) PIPES IN A WET WELL MUST HAVE A TURNDOWN TYPE FLARED INTAKE.  
(b) VALVES.  
(1) THE DISCHARGE SIDE OF EACH PUMP FOLLOWED BY A FULL-CLOSING ISOLATION VALVE MUST ALSO HAVE A CHECK VALVE.  
(A) A CHECK VALVE MUST BE A SWING TYPE VALVE WITH AN EXTERNAL LEVER.  
(B) A VALVE MUST INCLUDE A POSITION INDICATOR TO SHOW ITS OPEN AND CLOSED POSITIONS, UNLESS A FULL-CLOSING VALVE IS A RISING-STEM GATE VALVE.  
(2) A GRINDER PUMP INSTALLATION MAY USE A RUBBER-BALL CHECK VALVE OR A SWING-TYPE CHECK VALVE.  
(3) A BUTTERFLY VALVE, TILTING-DISC CHECK VALVE, OR ANY OTHER VALVE USING A TILTING-DISC IN A FLOW PIPE IS PROHIBITED.
- (c) PIPES.  
(1) A LIFT STATION PIPE MUST HAVE FLANGED OR FLEXIBLE CONNECTIONS TO ALLOW FOR REMOVAL OF PUMPS AND VALVES WITHOUT INTERRUPTION OF THE LIFT STATION OPERATIONS.  
(2) WALL PENETRATIONS MUST ALLOW FOR PIPE FLEXURE WHILE EXCLUDING EXFILTRATION OR INFILTRATION.  
(3) PIPE SUCTION VELOCITIES MUST BE AT LEAST 3.0 FEET PER SECOND BUT NOT MORE THAN 7.0 FEET PER SECOND.
17. EMERGENCY PROVISIONS FOR LIFT STATIONS.  
(a) A COLLECTION SYSTEM LIFT STATION MUST BE EQUIPPED WITH A TESTED QUICK-CONNECT MECHANISM OR A TRANSFER SWITCH PROPERLY SIZED TO CONNECT TO A PORTABLE GENERATOR, IF NOT EQUIPPED WITH AN ONSITE GENERATOR.  
(b) LIFT STATIONS MUST INCLUDE AN AUDIOVISUAL ALARM SYSTEM AND THE SYSTEM MUST TRANSMIT ALL ALARM CONDITIONS THROUGH USE OF AN AUTO-DIALER SYSTEM, SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM, OR TELEMETERING SYSTEM CONNECTED TO A CONTINUOUSLY MONITORED LOCATION.  
(c) AN ALARM SYSTEM MUST SELF-ACTIVATE FOR A POWER OUTAGE, PUMP FAILURE, OR A HIGH WET WELL WATER LEVEL.  
(d) A LIFT STATION CONSTRUCTED TO PUMP RAW WASTEWATER MUST HAVE SERVICE RELIABILITY BASED ON:  
(1) RETENTION CAPACITY.  
(A) THE RETENTION CAPACITY IN A LIFT STATION'S WET WELL AND INCOMING GRAVITY PIPES MUST PREVENT DISCHARGES OF UNTREATED WASTEWATER AT THE LIFT STATION OR ANY POINT UPSTREAM FOR A PERIOD OF TIME EQUAL TO THE LONGEST ELECTRICAL OUTAGE RECORDED DURING THE PAST 24 MONTHS, BUT NOT LESS THAN 20 MINUTES.  
(B) FOR CALCULATION PURPOSES, THE OUTAGE PERIOD BEGINS WHEN A LIFT STATION PUMP FINISHED ITS LAST NORMAL CYCLE, EXCLUDING A STANDBY PUMP.  
(2) ON-SITE GENERATORS. A LIFT STATION MAY BE PROVIDED EMERGENCY POWER BY ON-SITE, AUTOMATIC ELECTRICAL GENERATORS SIZED TO

- OPERATE THE LIFT STATION AT ITS FIRM PUMPING CAPACITY OR AT THE AVERAGE DAILY FLOW, IF THE PEAK FLOW CAN BE STORED IN THE COLLECTION SYSTEM.
- (3) PORTABLE GENERATORS AND PUMPS.  
(A) A LIFT STATION MAY USE PORTABLE GENERATORS AND PUMPS TO GUARANTEE SERVICE IF THE REPORT INCLUDES:  
i. THE STORAGE LOCATION OF EACH GENERATOR AND PUMP;  
ii. THE AMOUNT OF TIME THAT WILL BE NEEDED TO TRANSPORT EACH GENERATOR OR PUMP TO A LIFT STATION;  
iii. THE NUMBER OF LIFT STATIONS FOR WHICH EACH GENERATOR OR PUMP IS DEDICATED AS A BACKUP; AND  
iv. THE TYPE OF ROUTINE MAINTENANCE AND UPKEEP PLANNED FOR EACH PORTABLE GENERATOR AND PUMP TO ENSURE THAT THEY WILL BE OPERATIONAL WHEN NEEDED.  
(A) AN OPERATOR THAT IS KNOWLEDGEABLE IN OPERATION OF THE PORTABLE GENERATORS AND PUMPS SHALL BE ON CALL 24 HOURS PER DAY EVERY DAY.  
(B) THE SIZE OF A PORTABLE GENERATOR MUST HANDLE THE FIRM PUMPING CAPACITY OF THE LIFT STATION.
- (e) SPILL CONTAINMENT STRUCTURES  
(1) THE USE OF A SPILL CONTAINMENT STRUCTURE AS A SOLE MEANS OF PROVIDING SERVICE RELIABILITY IS PROHIBITED.  
(2) A LIFT STATION MAY USE A SPILL CONTAINMENT STRUCTURE IN ADDITION TO ONE OF THE SERVICE RELIABILITY OPTIONS DETAILED IN THIS IN SUBSECTION (A) OF THIS SECTION.  
(3) THE REPORT MUST INCLUDE A DETAILED MANAGEMENT PLAN FOR CLEANING AND MAINTAINING EACH SPILL CONTAINMENT STRUCTURE.  
(4) A SPILL CONTAINMENT STRUCTURE MUST HAVE A LOCKED GATE AND BE SURROUNDED AN INTRUDER RESISTANT FENCE THAT IS 6.0 FEET HIGH CHAIN LINK, MASONRY, OR BOARD FENCE WITH AT LEAST THREE STRANDS OF BARBED WIRE OR 8.0 FEET HIGH CHAIN LINK, MASONRY, OR BOARD FENCE WITH AT LEAST ONE STRAND OF BARBED WIRE.
- f) A LIFT STATION MUST BE FULLY ACCESSIBLE DURING A 25-YEAR 24-HOUR RAINFALL EVENT.
- g) LIFT STATION SYSTEM CONTROLS MUST PREVENT OVER-PUMPING UPON RESUMPTION OF NORMAL POWER AFTER A POWER FAILURE. BACKUP OR STANDBY USER MUST BE ELECTRICALLY INTERLOCKED TO PREVENT OPERATION AT THE SAME TIME THAT OTHER LIFT STATIONS PUMPS ARE OPERATING ONLY ON THE RESUMPTION OF NORMAL POWER AFTER A POWER FAILURE.
- III. WHERE A SEWER MAIN PARALLELS A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE (9) FEET, ALL PORTIONS OF THE SEWER MAIN WITHIN NINE (9) FEET OF THE WATER LINE SHALL BE CONSTRUCTED USING 150 PSI PRESSURE RATED PIPE AT LEAST EIGHTEEN (18) FEET IN LENGTH MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS (NO SEPARATE PAY ITEM)
- IV. WHERE A SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET, THE SEWER MAIN SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI WITHIN NINE FEET OF THE WATER MAIN, SHALL BE PLACED NO CLOSER THAN SIX (6") INCHES BETWEEN OUTER DIAMETERS, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OR A CAST IRON OR DUCTILE IRON MATERIAL. A SECTION OF PSI PRESSURE RATE PIPE OF A LENGTH GREATER THAN EIGHTEEN (18) FEET MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEM).
- V. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED ANY CLOSER THAN NINE FEET TO WATER MAINS.
- VI. PLAN AND PROFILE MUST SHOW TYPE OF CROSSING AND MATERIAL TO USE.

- IV. WHERE A SEWER MAIN PARALLELS A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET, THE SEWER MAIN SHALL BE BELOW THE WATER MAIN. SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI FOR BOTH PIPE AND JOINTS FOR A DISTANCE OF NINE FEET BEYOND THE POINT OF CONFLICT, SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE BETWEEN OUTER DIAMETERS OF TWO FEET VERTICALLY AND FOUR FEET HORIZONTALLY, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OR DUCTILE IRON MATERIALS.
- V. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED ANY CLOSER THAN NINE FEET TO WATER MAINS.
- VI. PLAN AND PROFILE MUST SHOW TYPE OF CROSSING AND MATERIAL TO USE.

SEWER GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN STRICT CONFORMANCE WITH CITY OF NEW BRAUNFELS REQUIREMENTS.
2. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH SPECIFICATIONS SECTION 30 TAC 217.54.
3. MANHOLE RINGS AND COVERS SHALL BE NEENAH FOUNDRY, DEETER FOUNDRY, ALAMO IRON WORKS, EAST JORDAN IRON WORKS, OR EQUAL. WHEN WATER TIGHT MANHOLE RINGS AND COVERS ARE SPECIFIED, THEY SHALL PROVIDE A-77 O.R. WATER TIGHT OR EQUAL AND MEET THE REQUIREMENTS OF SECTION 02515 1.2 OR THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS.
4. ALL MANHOLES SHALL BE PRECAST, INCLUDING BASES, "CHARLOTTES CONCRETE" OR APPROVED EQUAL WITH GASKETS ACCORDING TO ASTM C891.
5. MATERIAL FOR SANITARY SEWER PIPE MUST BE THE SAME FROM MANHOLE TO MANHOLE. CHANGES IN TYPE OF PIPE MAY BE MADE ONLY AT MANHOLES OR SPECIAL STRUCTURES, EXCEPT AS DIRECTED BY THE ENGINEER AND WHERE APPLICABLE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
6. ALL SEWER PIPE WITH LESS THAN TWO FEET (2) OF COVER SHALL BE CONCRETE ENCASED.
7. CONES, RISERS AND BASE MUST CONFORM TO ASTM C-478.
8. JOINTS BETWEEN MANHOLE SECTIONS MUST HAVE RUBBER GASKETS PER ASTM C-443.
9. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 150 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20" JOINT CENTERED AT WATER MAIN.
10. PIPE TYPE DESIGNATIONS ARE SDR 26 AND SHALL BE FROM THE FOLLOWING MANUFACTURERS OR APPROVED EQUALS: J-M MANUFACTURING, CERTAINTED CORPORATION, NORTH AMERICAN PIPE CORPORATION, IPEX INC., DIAMOND PLASTIC CORPORATION, FREEDOM PLASTICS, NATURAL PIPE AND PLASTICS, OR NORTHERN PIPE PRODUCTS. GASKET JOINTS AND ELECTROMETRIC SEALS SHALL CONFORM TO ASTM D3034 AND ASTM F477, RESPECTIVELY.

11. IN ORDER TO MINIMIZE EROSION AND SEDIMENTATION RESULTING FROM THE PROPOSED UTILITY INSTALLATION, THE PROJECT WILL BE RE-VEGETATED IN ACCORDANCE WITH TxDOT. THE OWNER AND CONTRACTOR WILL BE PROVIDED WITH A COPY OF TxDOT'S SPECIAL PROVISION FOR UTILITY PERMIT DATED 6/2001 AND TxDOT'S SPECIAL SPECIFICATION 10327 FURNISHING AND PLACING COMPOST, AT THE TIME OF BIDDING.
12. USE BEDDING AND INITIAL BACKFILL MATERIALS AS APPROVED BY THE CITY OF NEW BRAUNFELS AND CONFORM TO ASTM C33 GRADING AS SHOWN IN SECTION 02221 2.1C OF THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS.
13. COMPACT SECONDARY BACKFILL TO 98% MAX DRY DENSITY. CONTRACTOR TO PERFORM DENSITY TESTING AT INTERVALS OF 500' PER 8' LIFT OF SECONDARY BACKFILL FOR UTILITIES (CITY OF NEW BRAUNFELS REQUIREMENT). REPORTS TO BE PROVIDED TO CITY OF NEW BRAUNFELS PUBLIC WORKS DEPARTMENT.
14. CONTRACTOR TO CONTACT 1-800-344-8377 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND CONDUITS.
15. TCEQ GENERAL CONSTRUCTION NOTES: WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN SEWER LINES AND WATER LINES/ MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S RULES ([30 TAC 217.53(d) & 30 TAC 290.44(e)]).

NON-EDWARDS AQUIFER RECHARGE ZONE  
SANITARY SEWER SYSTEM GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL BE APPROVED BY THE CITY OF NEW BRAUNFELS AND COMPLY WITH:  
A. CURRENT "CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (JANUARY, 2011)  
B. TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S DESIGN CRITERIA FOR SEWERAGE SYSTEMS [30 TAC 217]
2. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE CITY OF NEW BRAUNFELS PUBLIC WORKS DEPARTMENT AT 1-830-248-8511, 48 HOURS PRIOR TO EXCAVATION.
3. CONTRACTOR TO CONTACT 1-800-344-8377, 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND UTILITIES
4. THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION.
5. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION AND COMAL COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT.
6. ALL WORK IN PUBLIC STREETS SHALL BE COORDINATED WITH AND APPROVED BY CITY OF NEW BRAUNFELS PUBLIC WORKS DEPARTMENT AND SHALL BE DONE IN ACCORDANCE WITH CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, THE CITY OF NEW BRAUNFELS MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROJECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREAS.
8. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION OF THE SANITARY SEWER LINES.

THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO:

1. PULL MANDEREL.  
2. PERFORM AIR TEST.  
3. PULL WIPER (AFTER STREET HAS BEEN ASPHALTED IN NEW SUBDIVISIONS).

MANHOLES:

9. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT TOP OF THE RING IS AT LEAST FOUR (4) INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN TxDOT R.O.W. IN TxDOT ROW AREAS, THE MANHOLE RING SHALL BE FLUSH WITH NATURAL GROUND.
10. ALL MANHOLES IN THE STREET AND 100 YEAR FLOODPLAIN AREAS SHALL HAVE WATERTIGHT RINGS AND COVERS IN ACCORDANCE WITH THE MOST CURRENT CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR CONSTRUCTION.

11. ON ANY MANHOLES TO BE ABANDONED, THE RINGS AND COVER SHALL BE SALVAGED IN ACCORDANCE WITH THE MOST CURRENT CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR CONSTRUCTION: PREPARATION OF RIGHT-OF-WAY. THE HOLE SHOULD BE BACKFILL TO THE SATISFACTION OF THE INSPECTOR. ALL PUBLIC MANHOLES WILL BE VACUUM TESTED AS PER 02515 3.2.

PIPING:

12. THE KIND AND DESCRIPTION OF THE PIPE CONDUIT IS SHOWN ON THE PLANS, (IF PVC, "SDR" AND ASTM/ANSI DESIGNATIONS, CLASS).
13. THE USE OF ASBESTOS CEMENT PIPE WILL BE PROHIBITED UNDER THIS CONTRACT. ALL DUCTILE IRON PIPE USED IN THIS SYSTEM SHALL BE CORROSION PROTECTED ON BOTH THE INTERIOR AND EXTERIOR SURFACES. ALL CORROSION PROTECTION SHALL BE APPLIED AND INSTALLED IN SUCH A MANNER AS TO MAINTAIN A CONTINUOUSLY PROTECTED SURFACE AFTER FINAL PIPE INSTALLATION.
14. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH, SDR 26 MINIMUM PIPE STIFFNESS OF 115 PSI.
15. ALL SEWER PIPES SHALL BE GOVERNED BY THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR CONSTRUCTION (JANUARY 2011)
16. SEWER PIPE CONNECTIONS TO PRE-CAST MANHOLES WILL BE COMPRESSION JOINTS AS APPROVED BY CITY OF NEW BRAUNFELS MECHANICAL JOINT "BOOT TYPE" CONNECTIONS ALONE WILL NOT BE ALLOWED. "BOOT TYPE" JOINTS MAY BE USED IN CONJUNCTION WITH COMPRESSION JOINTS AS APPROVED BY CITY OF NEW BRAUNFELS. SEWER PIPE CONNECTIONS TO MONOLITHIC MANHOLES SHALL BE REVIEWED AND APPROVED BY CITY OF NEW BRAUNFELS. CITY OF NEW BRAUNFELS MUST APPROVE ANY CHANGES FROM THESE METHODS.
17. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE ASTM/ANSI SPECIFICATIONS (REFERENCE 30 TAC 217.54; ASTM C12, (ANSI A106.2) OR ASTM D-2321 (ANSI K65.17).

18. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN EARLIER PROVIDED, THE CONNECTION MUST BE MADE WITH AN APPROVED SERVICE SADDLE AS PER CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
19. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE EXTENDED TO AT LEAST THE PROPERTY LINE AND CAPPED AND SEALED.
20. WHERE REQUIRED, CONCRETE ENCASEMENT SHALL BE PLACED FOR FULL WIDTH OF THE TRENCH TO A PLANE 8" ABOVE THE TOP OF THE PIPE, WITH PAY LIMITS AS SHOWN ON THE STANDARD DETAIL SHEET.
21. A MINIMUM OF 2 FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT SUBGRADE, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.
- BLASTING:  
22. NO BLASTING WILL BE ALLOWED.

TESTING:

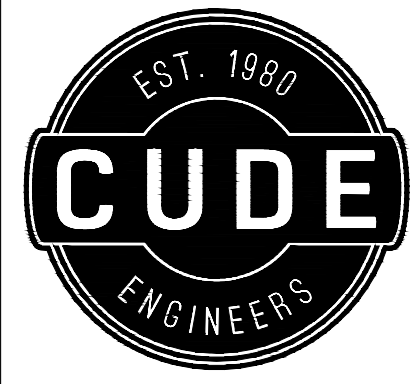
23. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH THE FOLLOWING;  
  
A. 30 TAC 217.54 (B)(1) OR THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR CONSTRUCTION 3.09 & 3.10 OF SECTION 025.30: DEFLECTION TEST FOR FLEXIBLE AND SEMI-RIGID PIPE CONDUCTED AFTER FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.  
B. 30 TAC 217.57 (A)(1) & 217.57 (A)(2) OR THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS INFILTRATION AND/OR EXFILTRATION AND/OR LOW-PRESSURE AIR TEST.  
C. 30 TAC 217.58 OR THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS. ALL MANHOLES AND WET WELLS MUST BE TESTED SEPARATELY AND INDEPENDENTLY OF THE COLLECTION LINES.
24. SEWER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE.
25. SANITARY SEWER MAIN CONNECTIONS MADE DIRECTLY TO EXISTING MANHOLES WILL REQUIRE SUCCESSFUL TESTING OF THE MANHOLE IN ACCORDANCE WITH THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
26. AFTER CONSTRUCTION, TESTING WILL BE DONE BY TV CAMERA BY THE CITY OF NEW BRAUNFELS FORCES AND OBSERVED BY INSPECTOR, WASTEWATER ENGINEERING PERSONNEL, AND CONTRACTOR AS CAMERA IS RUN THROUGH THE LINES. ANY ABNORMALITIES, SUCH AS BROKEN PIPE OR MISALIGNED JOINTS, MUST BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
27. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO THE CITY OF NEW BRAUNFELS PUBLIC WORKS DEPARTMENT.
28. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EVACUATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATION. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
29. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NO PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YER FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT. WASTE MATERIALS SHALL BE REMOVED FROM TxDOT NOW DAILY.
30. WATER JETTING THE BACKFILL WILL NOT BE PERMITTED. SANITARY SEWER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
31. WHERE THE MINIMUM 9-FOOT SEPARATION DISTANCE BETWEEN SEWER LINE AND WATER LINE/MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S RULES (30 TAC 217.53 (d) & 30 TAC 290.44 (e)).
32. THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION AND ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF SEWER COLLECTION SYSTEMS. DEVELOPER OR AUTHORIZED REPRESENTATIVE SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NOTES ON THE PROJECTS PLAN AND PROFILE SHEETS.
33. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AFTER FINAL ACCEPTANCE OF THE PROJECT BY THE CITY OF NEW BRAUNFELS PUBLIC WORKS AND TxDOT.
34. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.
35. THE DEVELOPER DEDICATES THE SANITARY SEWER MAINS UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE CITY OF NEW BRAUNFELS. THE CITY OF NEW BRAUNFELS WILL OWN AND MAINTAIN SAID WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF THE CITY OF NEW BRAUNFELS CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
36. OWNER PAYS DIRECTLY FOR ALL INITIAL (PASSING) DENSITY TEXT.

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COMAL COUNTY STANDARDS FOR ISSUING RIGHT OF WAY  
PERMITS FOR CONSTRUCTION ASSOCIATED WITH PUBLIC  
UTILITIES

1. CONTRACTOR SHALL PROVIDE VIDEO DOCUMENTATION OF EXISTING ROADWAY AND RIGHT OF WAY (ROW) WITHIN LIMITS OF PROPOSED CONSTRUCTION PRIOR TO STARTING PROJECT.
2. CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL BY COMAL COUNTY MATERIAL SPECIFICATION FOR CONSTRUCTION ACTIVITIES (FLOWABLE BACKFILL, HMAC, SEAL COAT, ETC.) PRIOR TO BEGINNING PROJECT. MATERIAL SPECIFICATIONS WILL BE IN ACCORDANCE TO APPROPRIATE TxDOT SPECIFICATION
3. PROVIDE AN SW3P PLAN FOR COMAL COUNTY APPROVAL
4. UTILITY TRENCHES OUTSIDE THE ROAD BED AND WITHIN FIVE (5) FEET OF EDGE OF PAVEMENT, FLOWABLE BACKFILL IS REQUIRED FOR ALL TRENCH BACKFILL. FLOWABLE BACKFILL WILL BE IN ACCORDANCE TO TxDOT ITEM 401. TRENCHES GREATER THAN FIVE (5) FEET FROM EDGE OF PAVEMENT BACK FILL REQUIREMENTS ARE 95% DENSITY CONTROL COMPACTION OR ORDINARY COMPACTION IN ACCORDANCE TO TxDOT ITEM 132 AT THE DIRECTION OF COMAL COUNTY.
5. MINIMUM OF 4 INCHES OF TOPSOIL WILL BE PLACED ON ALL DISTURBED AREAS IN ACCORDANCE TO TxDOT item 160.
6. CONTRACTOR SHALL SUBMIT A PERMANENT SEEDING AND EROSION CONTROL PLAN FOR DISTURBED AREAS IN ACCORDANCE TO TxDOT item 164 FOR COMAL COUNTY APPROVAL.
7. CONTRACTOR SHALL SUBMIT A SOIL RETENTION PLAN (AS REQUIRED) IN ACCORDANCE TO TxDOT ITEM 169 FOR COMAL COUNTY APPROVAL.
8. CONTRACT SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR APPROVAL BY COMAL COUNTY. WORKERS INVOLVED WITH TRAFFIC CONTROL MUST COMPLY WITH ITEM 7, TxDOT STANDARD SPECIFICATION.
9. CONTRACTOR SHALL PROVIDE A COPY OF LIABILITY INSURANCE TO COMAL COUNTY REQUIREMENTS LISTING COMAL COUNTY AS AS ADDITIONAL INSURED.
10. CONTRACTOR SHALL CONTRACT ALL PROPERTY OWNERS WITH DRIVEWAY WITHIN THE PROJECT LIMITS. THE UTILITY SHALL BE BORED UNDER ALL DRIVEWAYS UNLESS THE CONTRACTOR HAS WRITTEN PERMISSION TO OPEN CUT THE DRIVEWAY.
11. A MAINTENANCE PERIOD OF ONE YEAR WILL APPLY TO ALL DISTURBED AREAS WITHIN THE PROJECT LIMITS. CONTRACTOR WILL MAINTAIN THE PROJECT FOR ONE CALENDAR YEAR OR UNTIL DISTURBED AREA IS REESTABLISHED AFTER COMPLETION OF THE UTILITY CONSTRUCTION.
12. THE UTILITY WILL PROVIDE PROJECT DRAWINGS, ENGINEERED PLANS, AND AS BUILTS AS REQUIRED BY COMAL COUNTY
13. COMAL COUNTY MAY CONTROL LIMITS OF CONSTRUCTION WITHIN ROW CONSIDERING FACTORS INCLUDING BUT NOT LIMITED TO REPAIR OF ROW, ROADWAY, MAILBOXES, FENCE, HEADWALLS, CULVERTS, ETC., CONTRACTOR PERFORMANCE, WEATHER, PUBLIC INCONVENIENCE, AND PUBLIC SAFETY.
14. COMAL COUNTY REQUIRES PRE-DESIGN MEETING WITH UTILITY'S ENGINEER.
15. CONTRACTOR SHALL PROVIDE PLANS FOR POTABLE WATER TRANSMISSION AND DISTRIBUTION FOR REVIEW AND COMMENT BY THE COMAL COUNTY FIRE MARSHALL
16. CONTRACTOR MAY SUBMIT A BOND OR OTHER SURETY COVERING DAMAGE.

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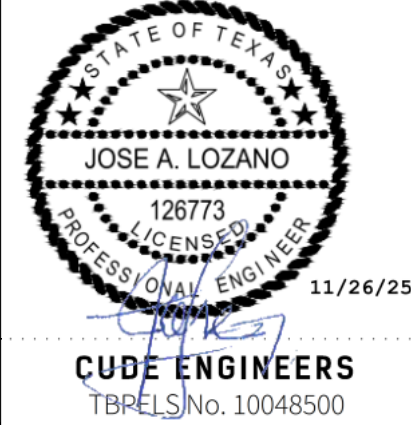


4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P:(210) 681.2951 F:(210) 523.7112

FLYING W  
SANITARY SEWER IMPROVEMENTS  
TCEQ LIFT STATION GENERAL NOTES

DATE  
11/24/2025  
PROJECT NO.  
04024-003  
DRAWN BY  
JRR/ML/WDS  
CHECKED BY  
JC/AL/AM

REVISIONS  
1 2 3 4 5 6 7 8

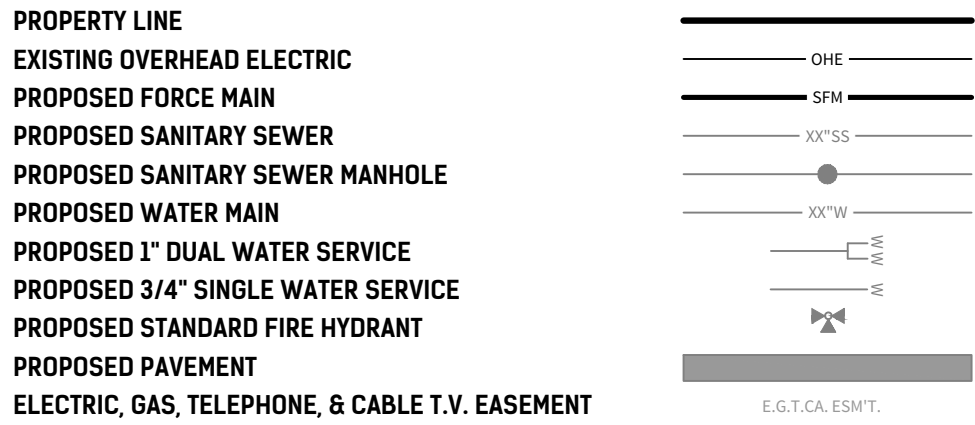


PLAT NO.

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LEGEND



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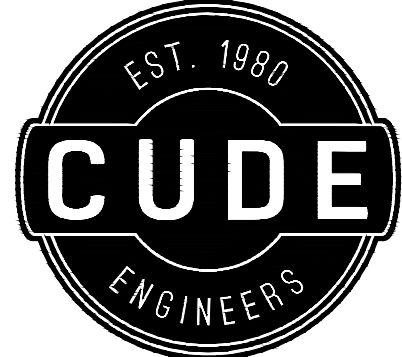
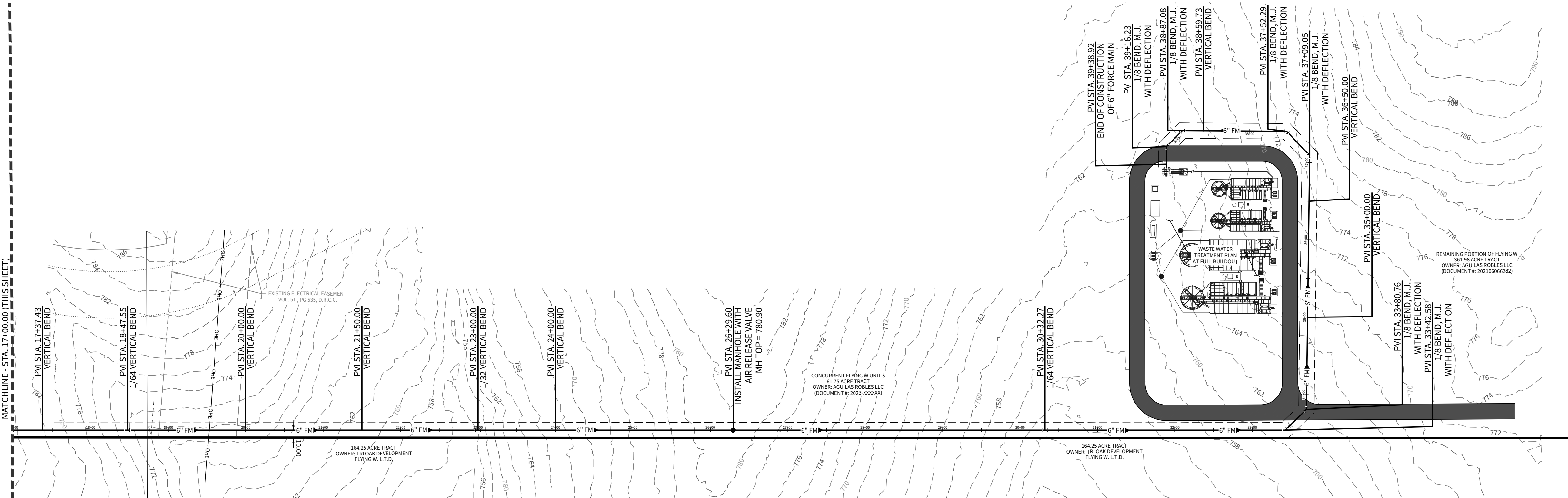
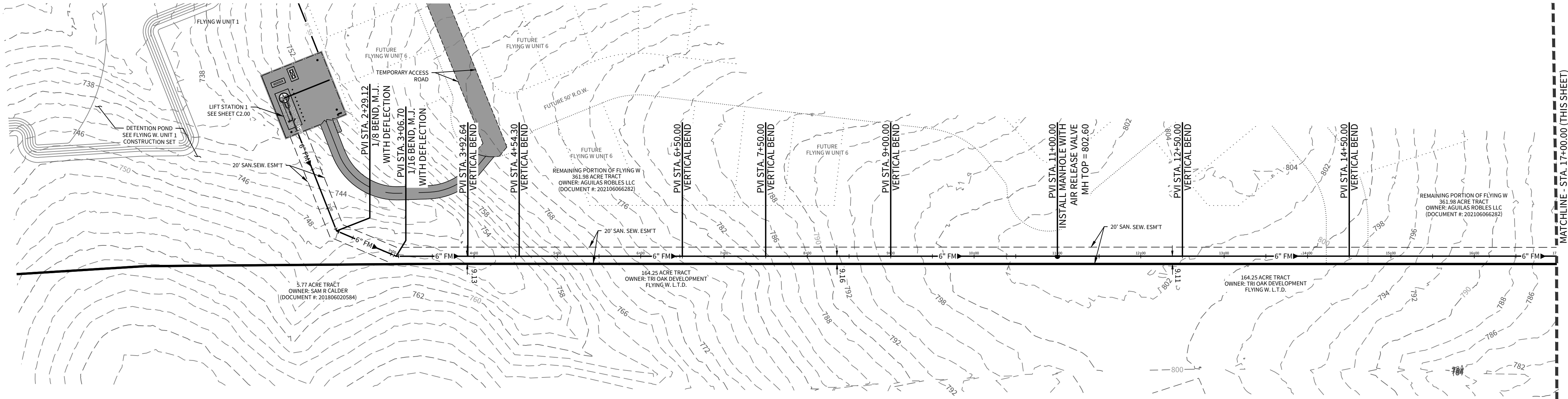
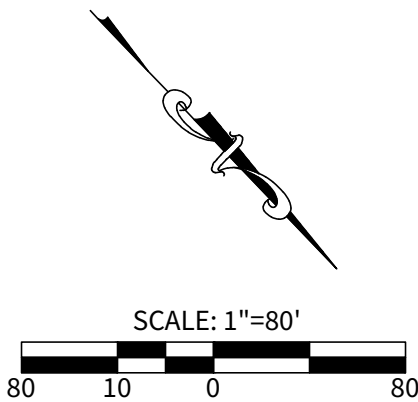
THE CONTRACTOR SHALL BE AWARE THAT UNDER GROUND ELECTRIC, AND OVERHEAD ELECTRIC LINE EXIST WITHIN THE LIMITS OF CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS. PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

GENERAL SEWER NOTES:

- ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
- ALL GRAVITY SANITARY SEWER PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECIFICATION D-3034, SDR-26 UNLESS OTHERWISE NOTED.
- ALL SANITARY SEWER FORCE MAIN PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECS F714, DR11 UNLESS OTHERWISE NOTED.
- THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES INCLUDING SERVICE LATERALS AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.
- CONTRACTOR SHALL SHORE POWER POLES AS NECESSARY AND COORDINATE WITH NEW BRAUNFELS UTILITIES ELECTRIC CO-OP AS NEEDED.
- THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND CABLE INDICATED ON THESE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE, AND ARE NOT GUARANTEED TO BE ACCURATE. THE CONTRACTOR SHOULD CALL FOR LOCATES THROUGH THE "ONE CALL" UTILITY LOCATE SERVICE (1-800-344-8377) 48 HOURS PRIOR TO CONSTRUCTION OR EXCAVATION WORK. CONTRACTORS HAVE THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY FACILITIES DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE EXISTING UNDERGROUND CABLE RELOCATION IF A ALIGNMENT CONFLICT ARISES.
- CONTRACTOR TO REMOVE AND RELOCATE EXISTING SIGNS AND FENCES AS NECESSARY TO EXISTING OR BETTER CONDITION.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ADEQUATE TRAFFIC FLOW AND TRAFFIC MOVEMENTS. CONTRACTOR IS RESPONSIBLE FOR PRODUCING A TRAFFIC CONTROL PLAN AS REQUIRED BY THE CITY OF NEW BRAUNFELS AND/OR COMAL COUNTY.
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- CONTRACTOR IS REQUIRED TO PROVIDE ACCESS TO ALL EXISTING DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
- THE RADIUS OF ALL VERTICAL BENDS SHALL NOT EXCEED 14 FT.

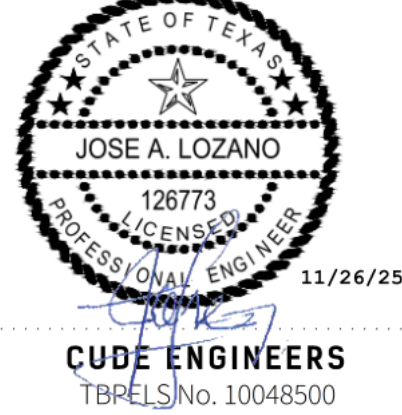


4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P:(210) 681.2951 F:(210) 523.7112

FLYING W  
SANITARY SEWER IMPROVEMENTS  
OVERALL SANITARY SEWER PLAN - FM1

DATE  
11/25/2025  
PROJECT NO.  
04024-003  
DRAWN BY  
JRR/ML/WDS  
CHECKED BY  
JC/AL/AM

REVISIONS	1.	2.	3.	4.	5.	6.	7.	8.



PLAT NO.

C1.00



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CAUTION!!

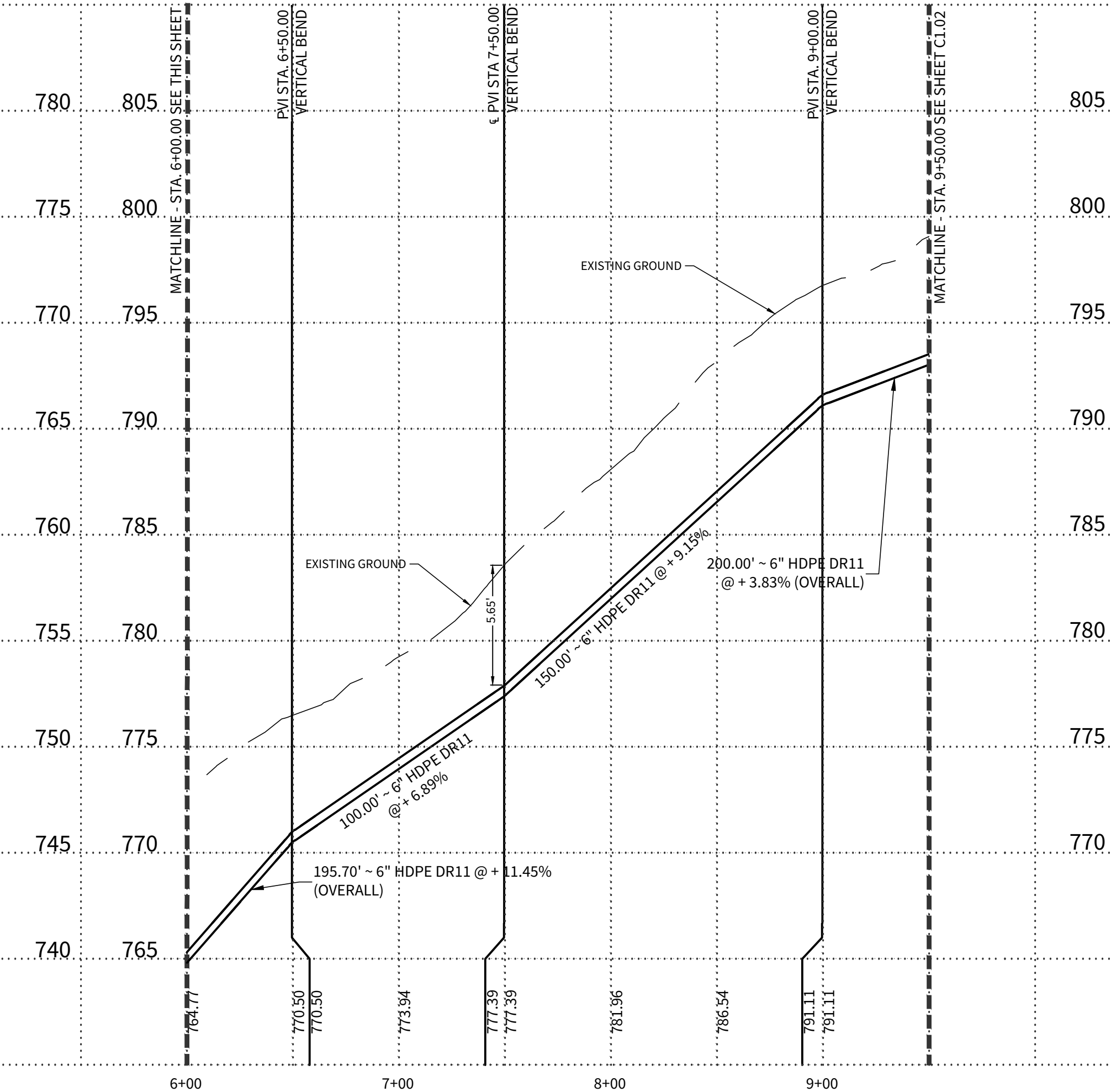
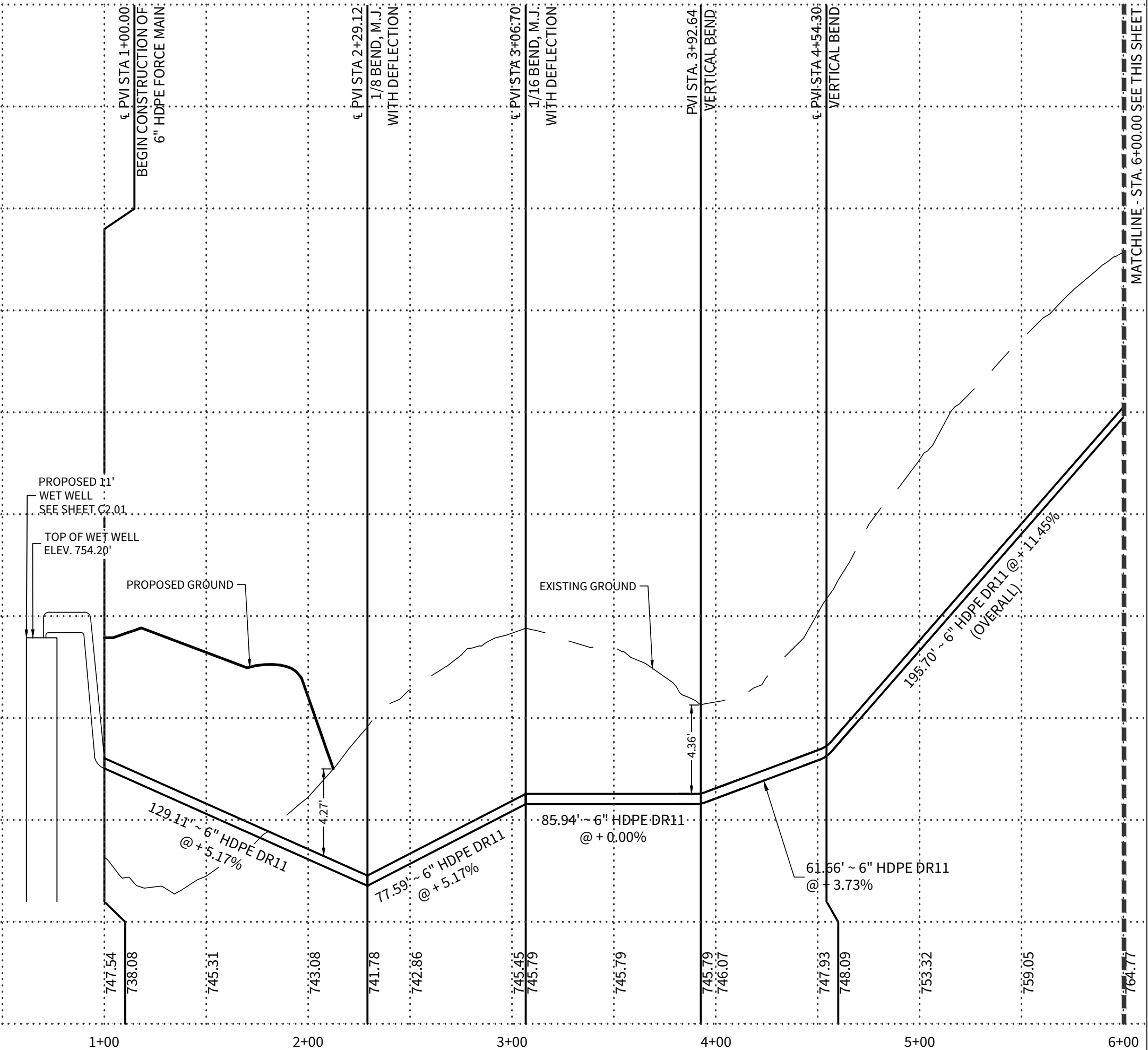
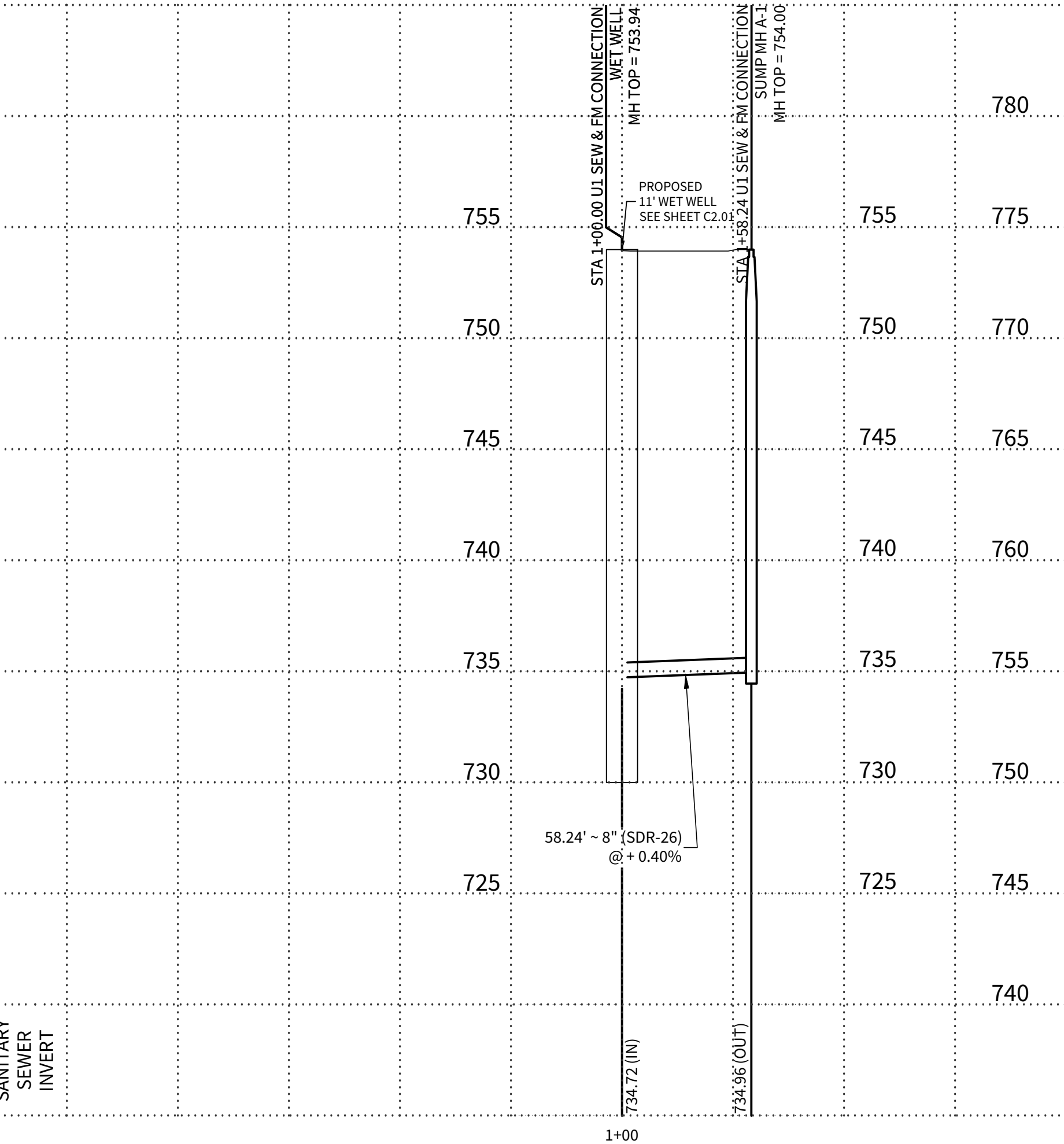
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TRENCH EXCAVATION PROTECTION

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LINE "A"

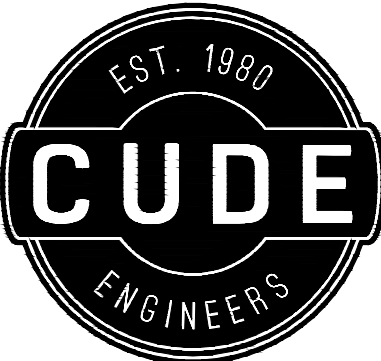
STA. 1+00.00 TO STA. 1+58.49



LINE "FM1"

STA. 1+00.00 TO STA. 9+50.00

HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 5'



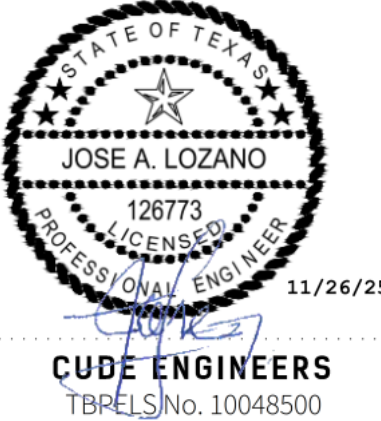
4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P:(210) 681.2951 F:(210) 523.7112

FLYING W  
SANITARY SEWER IMPROVEMENTS

SANITARY SEWER PLAN & PROFILE - LINE "FM1"  
STA. 1+00.00 - 9+50.00

DATE	11/25/2025
PROJECT NO.	04024-003
DRAWN BY	JRR/ML/WDS
CHECKED BY	JC/AL/AM

REVISIONS	1.	2.	3.	4.	5.	6.	7.	8.
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CUDE ENGINEERS  
TBPES No. 10048500

PLAT NO.

C1.01



GENERAL SEWER NOTES:

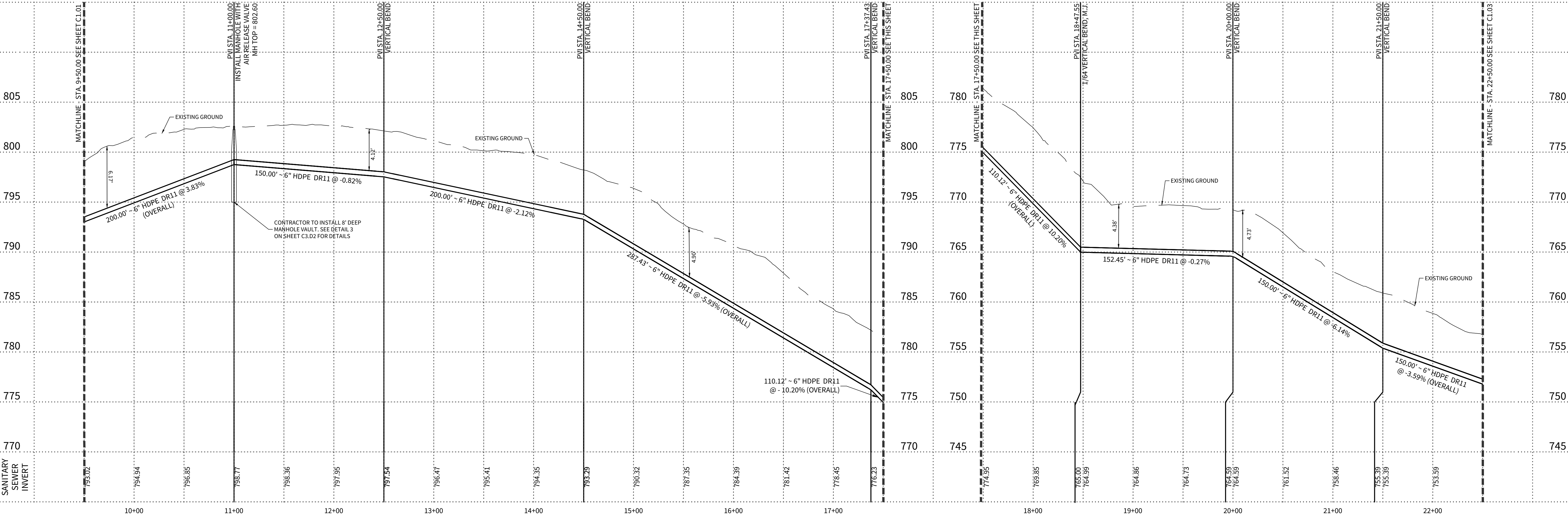
- ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
- ALL GRAVITY SANITARY SEWER PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECIFICATION D-3034, SDR-26 UNLESS OTHERWISE NOTED.
- ALL SANITARY SEWER FORCE MAIN PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECS F714, DR11 UNLESS OTHERWISE NOTED.
- THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES, INCLUDING SERVICE LATERALS AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.
- CONTRACTOR SHALL SHORE POWER POLES AS NECESSARY AND COORDINATE WITH NBU ELECTRIC CO-OP AS NEEDED.
- THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND CABLE INDICATED ON THESE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE, AND ARE NOT GUARANTEED TO BE ACCURATE. THE CONTRACTOR SHOULD CALL FOR LOCATES THROUGH THE "ONE CALL" UTILITY LOCATE SERVICE (1-800-344-8377) 48 HOURS PRIOR TO CONSTRUCTION OR EXCAVATION WORK. CONTRACTORS HAVE THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY FACILITIES DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE EXISTING UNDERGROUND CABLE RELOCATION IF A ALIGNMENT CONFLICT ARISES.
- CONTRACTOR TO REMOVE AND RELOCATE EXISTING SIGNS AND FENCES AS NECESSARY TO EXISTING OR BETTER CONDITION.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ADEQUATE TRAFFIC FLOW AND TRAFFIC MOVEMENTS. CONTRACTOR IS RESPONSIBLE FOR PRODUCING A TRAFFIC CONTROL PLAN AS REQUIRED BY THE CITY OF NEW BRAUNFELS AND/OR COMAL COUNTY.
- CONTRACTOR IS RESPONSIBLE FOR REVEGETATING ALL DISTURBED AREAS WITH IN THE RIGHT OF WAY OR UTILITY EASEMENTS.
- CONCRETE ENCASUREMENT TO BE INSTALLED FOR AREAS WITH LESS THAN 2 FEET OF COVER OVER THE PROPOSED SEWER MAIN.
- CONTRACTOR IS REQUIRED TO PROVIDE ACCESS TO ALL EXISTING DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
- THE RADIUS OF ALL VERTICAL BENDS SHALL NOT EXCEED 14 FT.

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT UNDER GROUND ELECTRIC, AND OVERHEAD ELECTRIC LINE EXIST WITHIN THE LIMITS OF CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

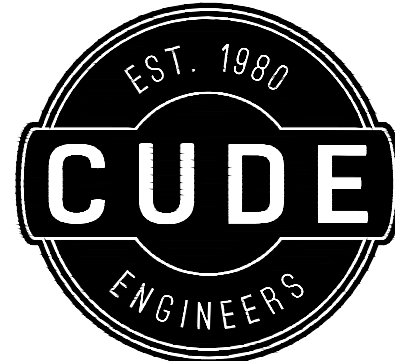


SANITARY  
SEWER  
INVERT

LINE "FM 1"

STA. 9+50.00 TO STA. 22+50.00

HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 5'

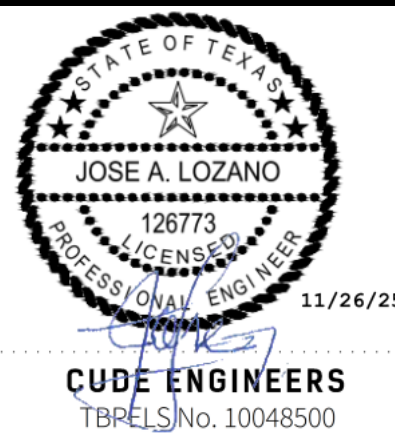


4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
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FLYING W  
SANITARY SEWER IMPROVEMENTS  
SANITARY SEWER PLAN & PROFILE - LINE "FM1"  
STA. 9+50.00 - 22+50.00

DATE	11/25/2025
PROJECT NO.	04024-003
DRAWN BY	JRR/ML/WDS
CHECKED BY	JC/AL/AM

REVISIONS	1.	2.	3.	4.	5.	6.	7.	8.
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PLAT NO.

C1.02



GENERAL SEWER NOTES:

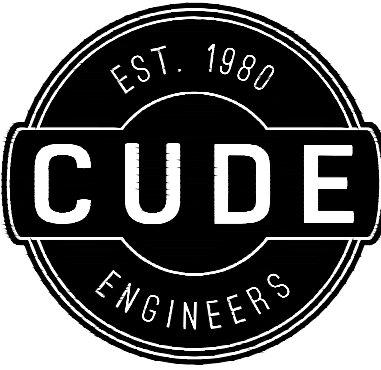
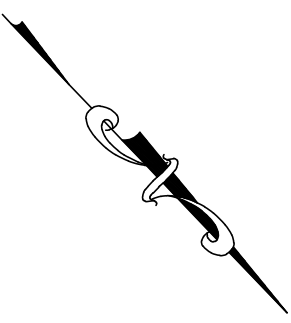
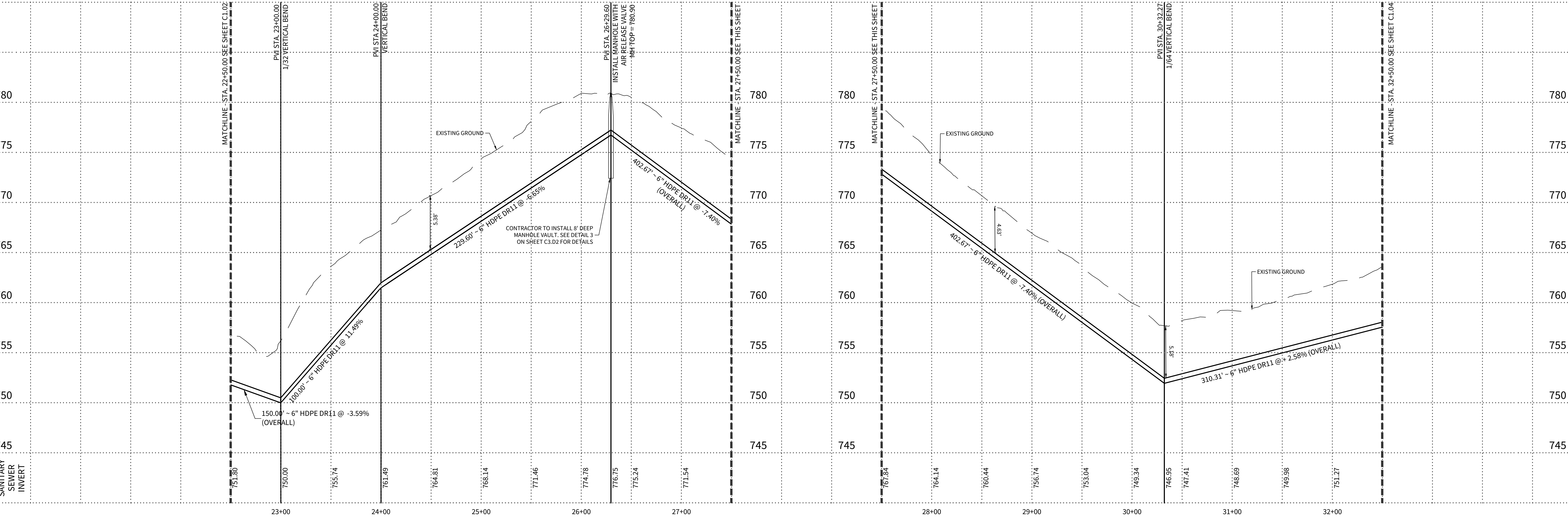
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- THE RADIUS OF ALL VERTICAL BENDS SHALL NOT EXCEED 14 FT

CAUTION!!

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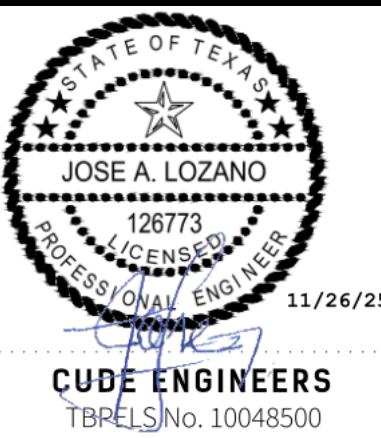
4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P:(210) 681.2951 F:(210) 523.7112

FLYING W  
SANITARY SEWER IMPROVEMENTS

SANITARY SEWER PLAN & PROFILE - LINE "FM1"  
STA. 22+50.00 - 32+50.00

DATE	11/25/2025
PROJECT NO.	04024-003
DRAWN BY	JRR/ML/WDS
CHECKED BY	JC/AL/AM

REVISIONS	1.	2.	3.	4.	5.	6.	7.	8.
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CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.

C1.03



GENERAL SEWER NOTES:

- ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADE SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
- ALL GRAVITY SANITARY SEWER PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECIFICATION D-3034, SDR-26 UNLESS OTHERWISE NOTED.
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CAUTION!!

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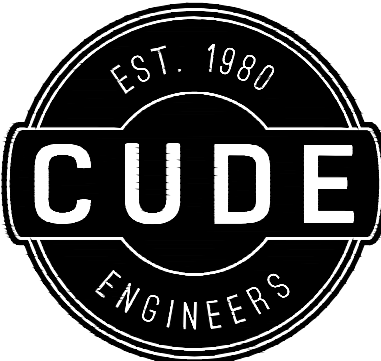
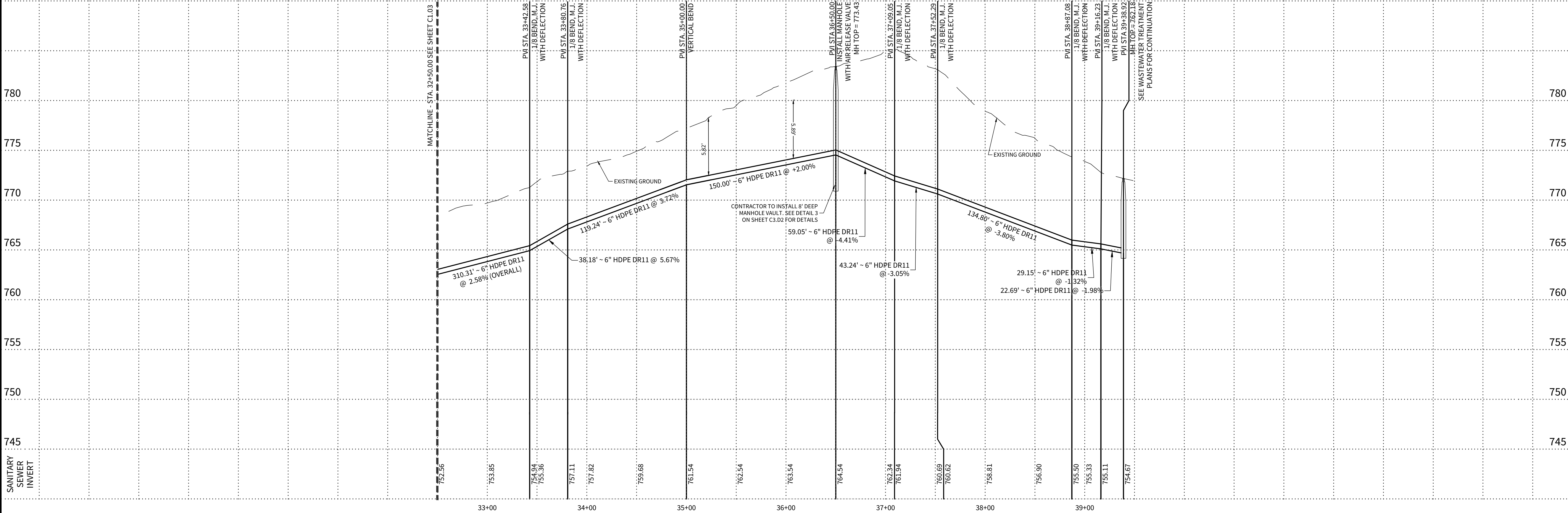
TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

LINE "FM 1"

STA. 32+50.00 TO END

HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 5'



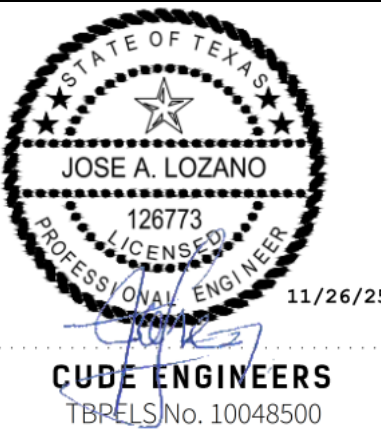
4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P:(210) 681.2951 F: (210) 523.7112

FLYING W  
SANITARY SEWER IMPROVEMENTS

SANITARY SEWER PLAN & PROFILE - LINE "FM1"  
STA. 32+50.00 - 39+12.67

DATE	11/25/2025
PROJECT NO.	04024-003
DRAWN BY	JRR/ML/WDS
CHECKED BY	JC/AL/AM

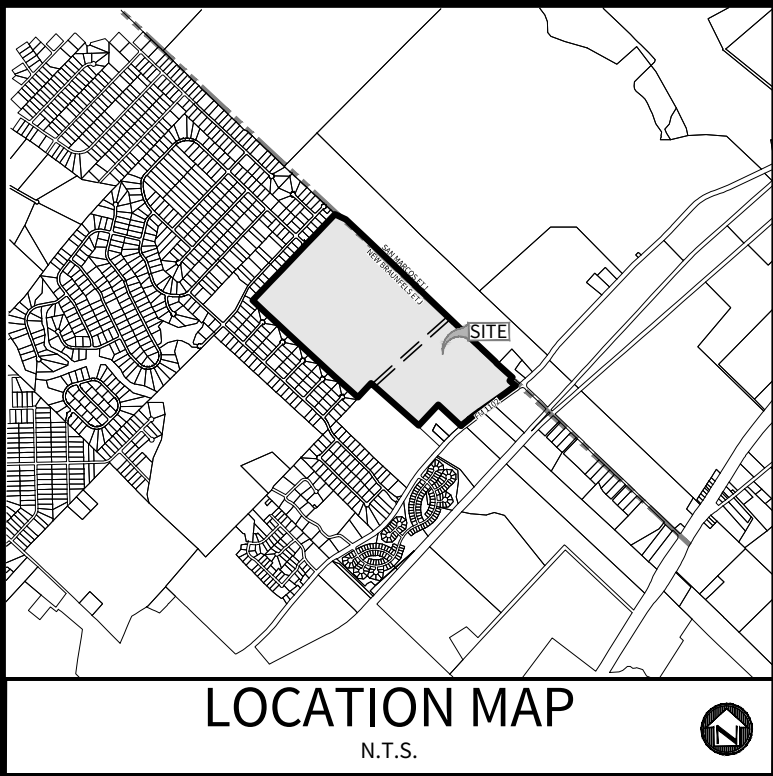
REVISIONS	1.	2.	3.	4.	5.	6.	7.	8.
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PLAT NO.

C1.04





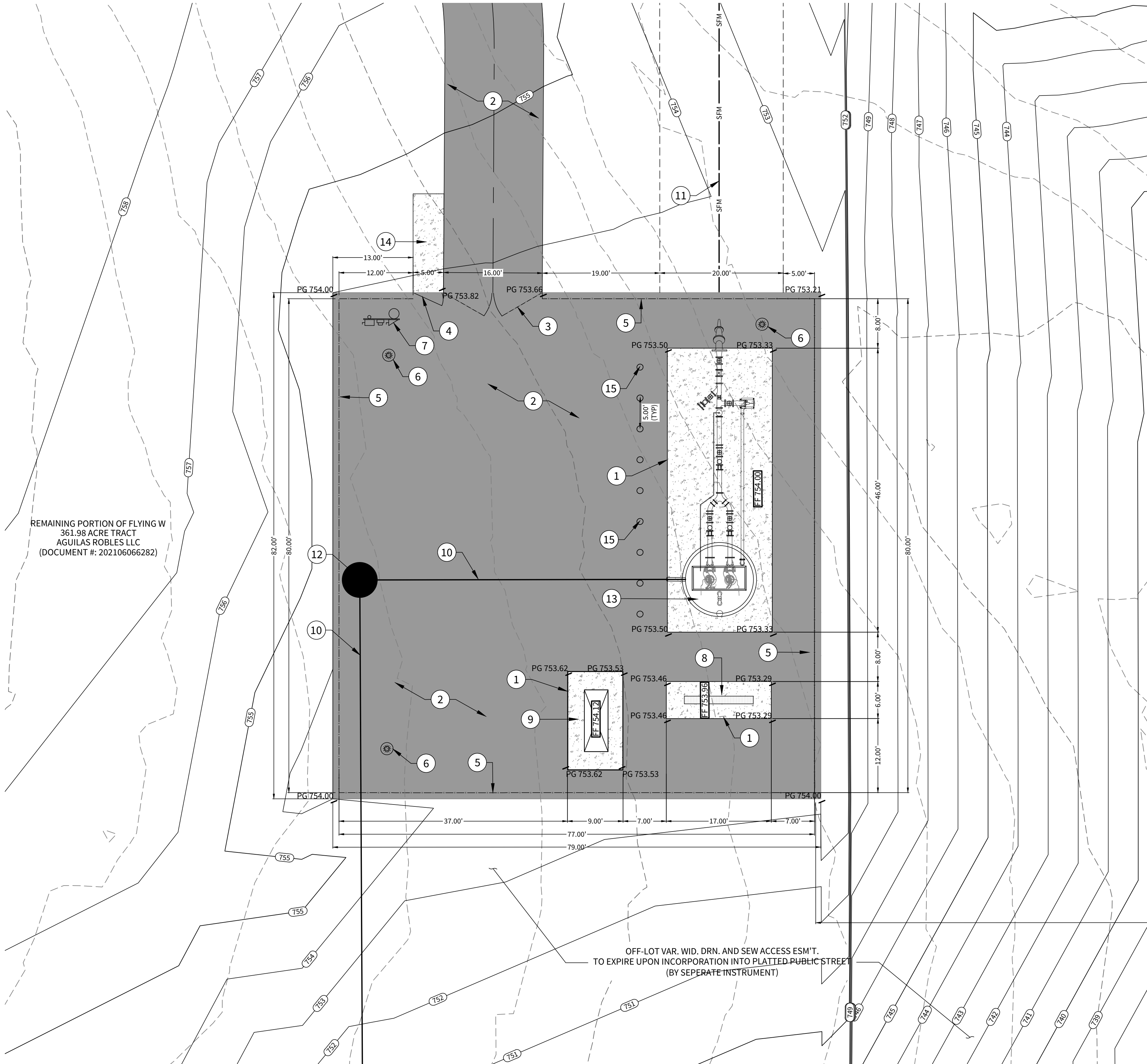
**OWNER/DEVELOPER:**  
TRIOAK DEVELOPMENT  
CONTACT PERSON:  
ADDRESS:  
NEW BRAUNFELS, TX  
TEL: (210) 818-7104  
FAX: (210) 496-0449  
**CIVIL ENGINEER:**  
M.W. CUDE ENGINEERS, L.L.C.  
CONTACT PERSON: DAVID D. CUPIT II, P.E.  
4122 POND HILL ROAD, SUITE 101  
SAN ANTONIO, TX 78231  
TEL: (210) 681-2951  
FAX: (210) 523-7112

LEGEND	
PROPERTY LINE	---
VALLERIE LANE CENTER LINE	---
EASEMENT	---
EXISTING EDGE OF PAVEMENT	---
PROPOSED CHAINLINK FENCE	-X-X-X-
PROPOSED SEWER GRAVITY MAIN	SS
PROPOSED SEWER FORCE MAIN	SFM
PROPOSED CONCRETE PAD	Concrete Pad
PROPOSED ASPHALT PAVEMENT	Asphalt Pavement

- KEYNOTES:**
- CONCRETE SLAB - SEE DETAIL 10 ON SHEET C3.D1
  - ASPHALT PAVEMENT - SEE DETAIL 11 ON SHEET C3.D1
  - 2 - 8' WIDE DOUBLE SWING GATE
  - 5' PEDESTRIAN GATE
  - CHAINLINK FENCE - SEE DETAIL 13 ON SHEET C3.D1
  - LIGHT POST
  - ELECTRIC POWER SERVICE POLE & METER RACK
  - SERVICE RACK AND CANOPY
  - EMERGENCY GENERATOR WITH SOUND ATTENUATION ENCLOSURE.
  - 8" SEWER GRAVITY MAIN
  - 6" SEWER FORCE MAIN
  - 36" LID MANHOLE WITH SUMP ADJACENT TO WET WELL
  - 11" INSIDE DIAMETER WET WELL
  - CONCRETE SIDEWALK
  - REMOVABLE 4" GUARD POST

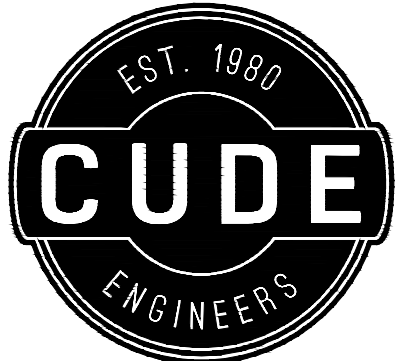
**NOTES:**

- THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND CABLE INDICATED ON THESE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE, AND ARE NOT GUARANTEED TO BE ACCURATE. THE CONTRACTOR SHOULD CALL FOR LOCATES THROUGH THE "ONE CALL" UTILITY LOCATE SERVICE (1-800-344-6377) 48 HOURS PRIOR TO CONSTRUCTION/EXCAVATION WORK. CONTRACTORS HAVE THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY FACILITIES DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE EXISTING UNDERGROUND CABLE RELOCATION IF A ALIGNMENT CONFLICT ARISES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY.
- REFERENCE ELECTRICAL PLANS AS NEEDED.
- CONTRACTOR SHALL GRADE THE SITE TO PROVIDE DRAINAGE AROUND CONCRETE SLABS.
- ALL CONCRETE PADS SHALL BE AT LEAST 6" ABOVE ADJACENT PROPOSED GROUND.
- THE DESIGN AND CONSTRUCTION OF THIS LIFT STATION SHALL FOLLOW ALL GUIDELINES SET BY TCEQ.



**CAUTION!!**  
THE CONTRACTOR SHALL BE AWARE THAT A OVERHEAD AND UNDERGROUND UTILITIES EXIST ALONG VALLERIE LANE ROAD AND IN THE VICINITY OF THE LIFT STATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

**TRENCH EXCAVATION PROTECTION**  
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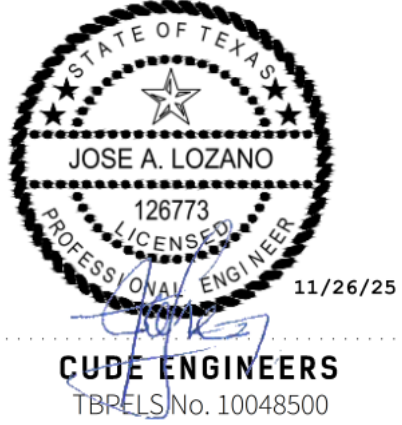


4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P:(210) 681.2951 F: (210) 523.7112

**FLYING W  
SANITARY SEWER IMPROVEMENTS  
LIFT STATION 1 SITE PLAN**

**DATE**  
11/25/2025  
**PROJECT NO.**  
04024-003  
**DRAWN BY**  
JRR/ML/WDS  
**CHECKED BY**  
JC/AL/AM

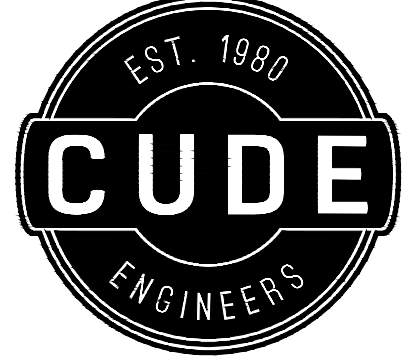
REVISIONS	
1.	2.
3.	4.
5.	6.
7.	8.



**PLAT NO.**

**C2.00**





4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P:(210) 681.2951 F:(210) 523.7112

FLYING W  
SANITARY SEWER IMPROVEMENTS  
WET WELL 1 PLAN & PROFILE

GENERAL NOTES:

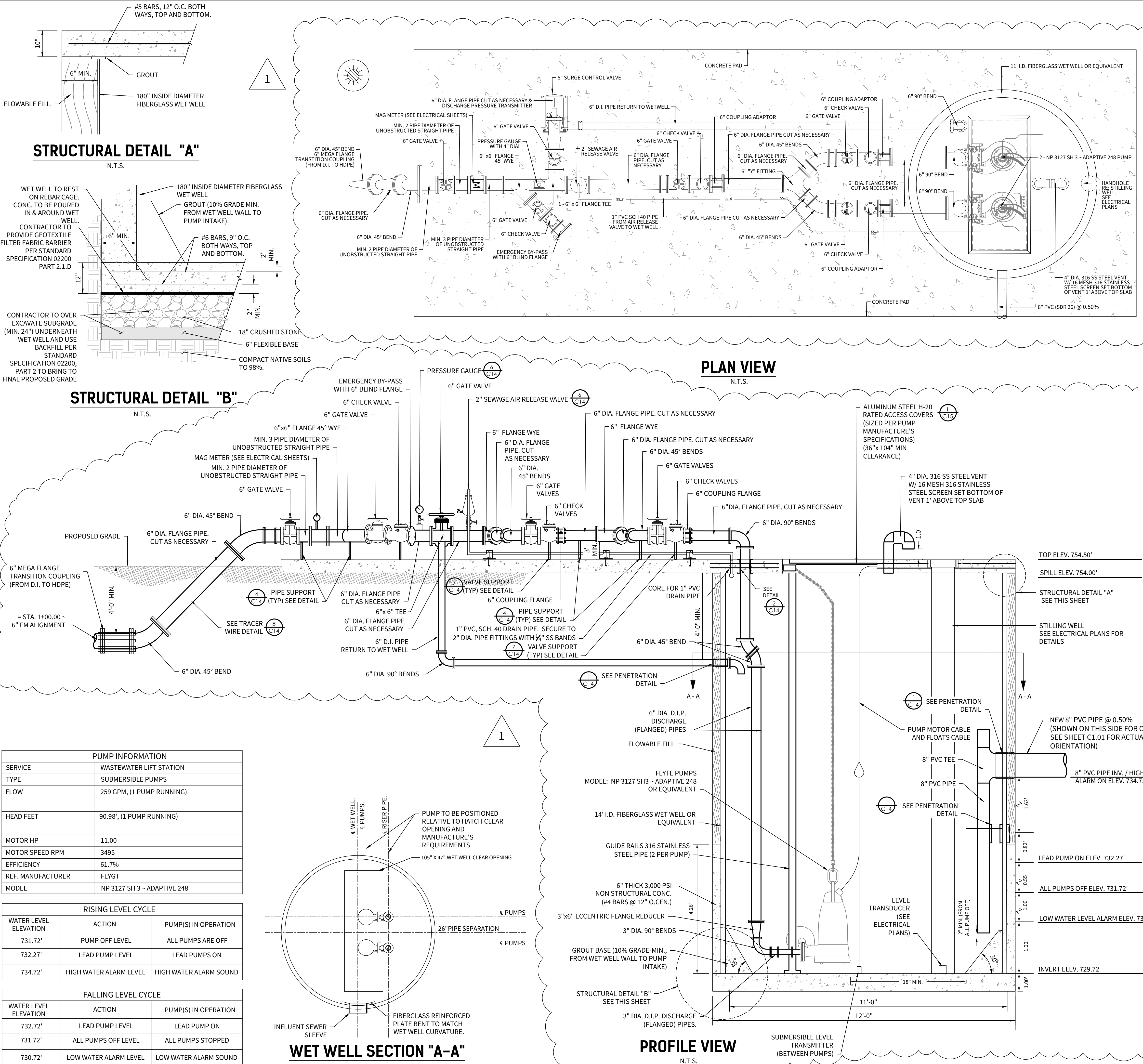
- CONTRACTOR TO USE 1" DIAMETER FIBERGLASS FOR WET WELL (L.F. MANUFACTURING OR EQUIVALENT).
- EPXY GROUT SEAL PIPING GOING THROUGH WALLS.
- PIPING TO BE PAINTED GRAY - PANTONE NUMBER 43U.
- WET WELL MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC 213.5(c) (3) (E) AND 30 TAC 317.2(c) (3) (H). CONTRACTOR SHALL FILL AROUND WET WELL WITH 3,000 PSI CONCRETE FOR THE FIRST 1/3 OF THE TOTAL WET WELL DEPTH MEASURED FROM THE BOTTOM UP) WITH THE REMAINING 2/3 BEING FLOWABLE FILL. FLOWABLE FILL SHALL BE 100% FLOWABLE FILL. FLOWABLE MATERIAL CHOSEN FROM THE EXCAVATION MAY BE USED FOR THE REMAINDER OF THE BACKFILL. THE MATERIAL CHOSEN SHALL BE FREE OF LARGE LUMPS OR CLOS, WHICH WILL NOT READILY BREAK DOWN UNDER COMPACTION. FLOWABLE FILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 5 FEET AND VIBRATED TO ENSURE THAT VOIDS ARE ELIMINATED. BACKFILL SHALL BE PLACED IN SUCH A MANNER AS TO NOT APPLY ANY WEDGING ACTION AGAINST THE STRUCTURE. LOCATION OF ALL ANCHOR BOLTS, RELATIVE POSITION OF PUMPS AND ACCESS COVER, MUST BE MAINTAINED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR TO PROVIDE EXTRA CABLE FOR "HIGH WATER ALARM AND 2ND PUMP ON" FLOAT. THE CABLE LENGTH SHOULD BE SUFFICIENT TO ENABLE LOWERING THE FLOAT TO THE SET POINT ON ELEVATION.
- GATE VALVES AND CHECK VALVES SHALL BE FROM APPROVED MANUFACTURER..
- TECHNICAL DATA FOR LIFT STATION EQUIPMENT & COMPONENTS SHALL BE SUBMITTED FOR APPROVAL.
- ALL MATERIALS AND LIFT STATION COMPONENTS WITHIN THE SCOPE OF THIS PROJECT SHALL BE IN COMPLIANCE WITH THE LIFT STATION DESIGN & CONSTRUCTION GUIDELINES.
- ALL D.I. & HDPE FORCE MAIN PIPE OUTSIDE OF WET WELL LIMITS SHALL BE MECHANICALLY RESTRAINED.
- ALL ABOVE GROUND PIPING 6" OR SMALLER SHALL HAVE FREEZE PROTECTION CONSISTING OF FOAM TUBING INSULATION.
- ALL HARDWARE (BRACKETS, SCREWS, ETC.) IN WETWELL SHALL BE 316 STAINLESS STEEL.
- ALL EXPOSED PIPE, VALVES, AND FITTINGS OUTSIDE THE WET WELL SHALL RECEIVE AFTER INSTALLATION A 100% SOLIDS EPOXY COATING SYSTEM WITH A TOP COAT SYSTEM OF URETHANE, SUITABLE FOR THE ENVIRONMENT. PRIOR TO APPLICATION, PREPARE SURFACES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ANY REFERENCE TO CLEANING IN THE MANUFACTURER'S INSTRUCTIONS SHALL BE UNDERSTOOD TO REFER TO THE APPLICABLE SSPC SPECIFICATIONS. THICKNESS, MIXING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. APPLY FINISH COAT IN ACCORDANCE WITH THE COLOR-CODING SET FORTH IN NOTE #3. APPROVED MANUFACTURERS ARE THERMAC, CARBOLINE, SHERWIN-WILLIAMS, PPG, AND A.B. PAINTS.
- ALL PUMP DISCHARGE PIPE AND FITTINGS WITHIN WET WELL, EXCEPT SS 316 AND PVC, SHALL RECEIVE AFTER INSTALLATION, A 100% SOLIDS COAT 100% SOLIDS EPOXY COATING SYSTEM WITH A TOP COAT SYSTEM OF URETHANE, SUITABLE FOR THE ENVIRONMENT. PRIOR TO APPLICATION, PREPARE SURFACES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ANY REFERENCE TO CLEANING IN THE MANUFACTURER'S INSTRUCTIONS SHALL BE UNDERSTOOD TO REFER TO THE APPLICABLE SSPC SPECIFICATIONS. THICKNESS, MIXING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. APPLY FINISH COAT IN ACCORDANCE WITH THE COLOR-CODING SET FORTH IN NOTE #3. APPROVED MANUFACTURERS ARE THERMAC, CARBOLINE, SHERWIN-WILLIAMS, PPG, AND A.B. PAINTS.
- WHEN PERMITTED, CONSTRUCTION OF CONCRETE WELLS SHALL INCLUDE A PRECAST WET WELL STRUCTURE WITH MONOLITHIC BASE. DESIGN ENGINEER SHALL EVALUATE THE THICKNESS OF WET WELL WALL AND SLABS, BUT THE FOLLOWING THICKNESS SHALL BE MET AS MINIMUM: WET WELL WALL THICKNESS 10 INCHES, WET WELL BASE SLAB 12 INCHES, WET WELL BASE SLAB 12 INCHES AND WET WELL TOP SLAB 10 INCHES.
- LINE INTERIOR OF CONCRETE WET WELLS WITH A 100% PURE CALCIUM ALUMINATE PREMIX LINING SYSTEM. SURFACE PREPARATION, THICKNESS, MIXING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WET WELL JOINTS SHALL BE SEALED PER THE MANUFACTURER'S RECOMMENDATIONS. APPROVED MANUFACTURER IS SEWPERCUT, OR APPROVED EQUAL.
- THE BOTTOM OF THE EXCAVATION FOR THE WET WELL STRUCTURE SHALL BE A LEVEL SURGRADE APPROXIMATELY 18 INCHES OF CRUSHED STONE BELOW THE BOTTOM OF THE WET WELL STRUCTURE AND NATIVE SOILS SHALL BE COMPACTED WITH EXCAVATION EQUIPMENT FOR THE INSTALLATION OF 6 INCHES OF FLEXIBLE BASE TO SUPPORT THE BASE OF THE STRUCTURE. COMPACTION OF NATIVE SOILS AND FLEXIBLE BASE SHALL ACHIEVE MINIMUM NINETY-EIGHT (98%) OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE TxDOT TESTING METHOD TEX 113-E.
- USE 1/8" MESH 316 STAINLESS STEEL SCREENS ON PASSIVE VENTILATION, GOSSENCK TYPE, TO PREVENT THE ENTRY OF BIRDS OR INSECTS INTO WET WELL. MECHANICAL AND ELECTRICAL EQUIPMENT IN THE WET WELL SHALL BE NEMA CLASS 1 DIVISION 1 CONSTRUCTION TYPE. SIZE THE PASSIVE VENTILATION TO VENT AT A RATE EQUAL TO THE MAXIMUM PUMPING RATE OF THE STATION AND NOT EXCEED 400 FPM THROUGH THE VENT PIPE. THE MINIMUM AIR VENT SIZE SHALL BE 4-INCH DIAMETER, AND IT SHALL BE MADE OF STAINLESS STEEL 316. VENT OUTLETS SHALL BE AT LEAST 1 FOOT ABOVE THE 100-YEAR FLOOD ELEVATION. ALL SCREENING SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW FOR FUTURE REPLACEMENT.
- ALL ACCESSORY HARDWARE IN WET WELL INCLUDING BUT NOT LIMITED TO CHAINS, CABLES, BOLTS, NUTS, FASTENERS, BRACKETS, ANCHOR BOLTS, WASHERS, CABLE HOLDERS AND SLIDE RAILS, SHALL BE 316 STAINLESS STEEL.
- FIBERGLASS REINFORCED POLYESTER (FRP) WET WELLS SHALL BE MANUFACTURED FROM COMMERCIAL GRADE UNSATURATED POLYESTER RESIN OR VINYL ESTER RESIN, WITH FIBERGLASS REINFORCEMENTS. THE WET WELL SHALL BE MANUFACTURED IN ONE-PIECE INCLUDING BODY, BOTTOM AND TOP, AND SHALL BE SET ON A CONCRETE SLAB TO RESIST BUOYANT FORCES. DESIGN ENGINEER SHALL DESIGN THE TOP CONCRETE SLAB, APPROVED MANUFACTURERS ARE L.F. MANUFACTURING, AND CONTAINMENT SOLUTIONS, OR APPROVED EQUAL.
- THE RESINS USED SHALL BE A COMMERCIAL GRADE UNSATURATED POLYESTER RESIN.
  - THE REINFORCING MATERIALS SHALL BE RELATIVELY SMOOTH WITH NO SHARP PROJECTIONS. HANDWORK FINISH IS ACCEPTABLE IF ENOUGH RESIN IS PRESENT TO ELIMINATE EXPOSED FIBER. THE EXTERIOR SURFACE SHALL BE FREE OF BLISTERS LARGER THAN 1/4 INCH IN DIAMETER, DELAMINATION AND EXPOSED FIBER.
  - IF REINFORCING MATERIALS ARE USED ON THE SURFACE EXPOSED TO THE CONTAINED SUBSTANCE, IT SHALL BE A COMMERCIAL GRADE CHEMICAL-RESISTANT GLASS THAT WILL PROVIDE A SUITABLE BOND WITH THE RESIN AND LEAVE A RESIN RICH SURFACE.
  - FILLERS, WHEN USED, SHALL BE INERT TO THE ENVIRONMENT AND WET WELL CONSTRUCTION. ADDITIVES, SUCH AS THIOXOTROPIC AGENTS, CATALYSTS, PROMOTERS, ETC., MAY BE ADDED AS REQUIRED BY THE SPECIFIC MANUFACTURING PROCESS TO BE USED. THE RESULTING REINFORCED PLASTIC MATERIAL SHALL MEET THE REQUIREMENT OF THIS SPECIFICATION.
  - THE EXTERIOR SURFACE SHALL BE RELATIVELY SMOOTH WITH NO SHARP PROJECTIONS. HANDWORK FINISH IS ACCEPTABLE IF ENOUGH RESIN IS PRESENT TO ELIMINATE EXPOSED FIBER. THE EXTERIOR SURFACE SHALL BE FREE OF BLISTERS LARGER THAN 1/4 INCH IN DIAMETER, DELAMINATION AND EXPOSED FIBER.
  - THE INTERIOR SURFACE SHALL BE RESIN RICH WITH NO EXPOSED FIBERS. THE SURFACE SHALL BE FREE OF GRADING, DELAMINATION, AND BUSTERS LARGER THAN 1/4 INCH IN DIAMETER, AND WRINKLES OF 1/8 INCH OR GREATER IN DEPTH. SURFACE PITS SHALL BE PERMITTED UP TO 6 SQUARE FEET IF THEY ARE LESS THAN 1/4 INCH IN DIAMETER AND LESS THAN 1/16 INCH DEEP.
  - THE BOTTOM TO BE FABRICATED USING FIBERGLASS MATERIAL. BOTTOM TO BE ATTACHED TO WET WELL PIPE WITH FIBERGLASS LAYUP TO COMPLY WITH A.S.T.M. - D3299 SPECIFICATIONS. REINFORCEMENT, IF NEEDED, SHALL BE FIBERGLASS CHANNEL LAMINATED TO WET WELL BOTTOM PER A.S.T.M. - D3299.
  - THE FIBERGLASS WET WELL TOP SHALL BE FABRICATED USING FIBERGLASS MATERIAL. TOP TO BE ATTACHED TO WET WELL PIPE WITH FIBERGLASS LAYUP TO COMPLY WITH A.S.T.M. - D3299 SPECIFICATIONS. REINFORCEMENT, IF NEEDED, SHALL BE FIBERGLASS CHANNEL LAMINATED TO WET WELL BOTTOM PER A.S.T.M. - D3299.
  - INFLUENT PIPE SHALL BE KOR-N-SEAL OR INSERT-A-TEE (REFER TO STANDARD DRAWINGS FOR DETAILS). SLEEVE SHALL BE EITHER PVC OR FIBERGLASS PIPE, AND IT SHALL BE INSTALLED AND TESTED BY THE MANUFACTURER. INSTALLATION OF SUBTOUTS TO BE FIBERGLASS LAYUP TO COMPLY WITH A.S.T.M. - D3299 SPECIFICATIONS.
  - REQUEST WET WELL BE DESIGNED FOR THE PROJECT SERVICE CONDITIONS (INITIAL AND ULTIMATE BUILD OUT), ASSUMING FULLY SATURATED SOIL, EXTERNAL LOADING AND BUOYANT UPLIFT, WITH RELATED DESIGN CALCULATIONS INCLUDED IN THE ENGINEERING REPORT.
  - THE (FRP) WET WELL SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE WET WELL MANUFACTURER'S RECOMMENDATION.
  - EACH WET WELL SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
    - MANUFACTURER'S NAME OR TRADEMARK
    - MANUFACTURING SPECIAL NUMBER
    - 3 TOTAL LENGTH AND NOMINAL DIAMETER
- TRACER WIRE SHALL BE BURIED AT A MAXIMUM DEPTH OF 4 FEET ALONG ENTIRE LENGTH OF FORCE MAIN. TRACER WIRE SHALL BE OF SOLID CORE (1/4 GAUGE INSULATION), AND SHALL BE CONNECTED TO THE MAIN AT 10' INCREMENTS. WIRE SHALL ALSO COME UP TO THE TOP OF AIR RELEASE, VACUUM VALVES, COMBINATION VALVES, AND TOP OF GROUND AT LIFT STATION SITE AND AT THE DISCHARGE POINT.
- EACH PUMP SHALL BE SEPARATED AND IMMERSED ACCORDING TO MANUFACTURER RECOMMENDATION, AND HAVE A SEPARATE SUCTION PIPE (FOR NON-SUBMERSIBLE PUMPS IF APPROVED). PIPE REDUCERS INSTALLED AT DISCHARGE BASE OF SUBMERSIBLE PUMPS OR SUCTION PORT OF NON-SUBMERSIBLE PUMPS SHALL BE ECCENTRIC TYPE. ECCENTRIC REDUCERS INSTALLED HORIZONTALLY ON SUCTION PIPES SHALL BE INSTALLED WITH FLAT SIDE UP TO PRECLUDE AIR ENTRAPMENT. REDUCERS INSTALLED AT DISCHARGE HEADER SHALL BE CONCENTRIC. REDUCERS IN WET WELLS OF SUCTION LIFT PUMPS SHALL BE EQUIPPED WITH A TURNDOWN TYPE FLARED INTAKE AND CONSIST OF DUCTILE IRON OR SS 316.
- LIFT STATION PIPING SHALL BE D.I. AND SHALL HAVE FLANGED CONNECTIONS TO ALLOW FOR REMOVAL OF PUMPS AND VALVES WITHOUT INTERRUPTION OF THE LIFT STATION OPERATIONS. WALL PENETRATIONS SHALL BE DESIGNED TO ALLOW FOR PIPE FLEXURE WHILE EXCLUDING EXPLORATION OR INFILTRATION.
- USE FORTY-FIVE (45) DEGREE CAST IRON ELBOWS FOR PUMP DISCHARGE PIPING TURNS WHERE THE FORCE MAIN BENDS TOWARD THE GROUND.
- DISCHARGE AND COMMON HEADER PIPE SHALL BE INSTALLED 3 FEET ABOVE CONCRETE SLAB, MEASURED FROM SLAB SURFACE TO PIPE CENTER LINE.
- GATE VALVES: INSTALL A GATE VALVE ON THE UPSTREAM SIDE OF EACH CHECK VALVE. GATE VALVES SHALL BE RESILIENT WEDGE, FLANGED JOINTS CONFORMING TO THE PIPE CABLE AND SHALL BE HANDLED AND INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE APPENDIX TO ANSI/AWWA C200 AND THE RECOMMENDATIONS OF THE MANUFACTURER. ALL INTERIOR AND EXTERIOR FERROUS METAL SUBANCES OF VALVES AND ACCESSORIES SHALL BE SHOP COATED FOR CORROSION PROTECTION. IF THE FULL-CLOSING VALVE IS OTHER THAN A RISING STEM GATE VALVE, THE VALVES SHALL INCLUDE A POSITION INDICATOR TO SHOW ITS OPEN OR CLOSED POSITION. APPROVED MANUFACTURERS ARE CLOW F-6102; MUELLER A-2360; KENNEDY 4501/4701; AND AMERICAN FLOW CONTROL SERIES 5200.
- CHECK VALVES: A FLANGED, NON-FLAMING CHECK VALVE SHALL BE INSTALLED ON THE DISCHARGE SIDE OF EACH PUMP AND ON BY-PASS QUICK CONNECTOR, FOLLOWED BY A FULL-CLOSING ISOLATION VALVE ON EACH PUMP. CHECK VALVES SHALL BE SWING TYPE WITH AN EXTERNAL LEVER AND MINIMUM PRESSURE RATING OF 250 PSI. APPROVED CHECK VALVE MANUFACTURERS ARE CLOW STYLE 106LW, MUELLER #2600-6-01, KENNEDY 180M SWING CHECK VALVE, AMERICAN "50" LINE WEIGHT AND LEVER.
- BUTTERFLY VALVES, TILTING DISC CHECK VALVES, OR OTHER VALVES UTILIZING A TILTING DISC IN THE FLOW LINES ARE NOT ALLOWED.
- AIR/VACUUM RELEASE VALVES: SHALL BE MOUNTED ON COMMON HEADER AND ALL HIGH POINTS ALONG FORCE MAINS. AIR/VACUUM RELEASE VALVES SHALL BE RATED FOR RAW SEWAGE, HAVE A MINIMUM 2" INLET, AND BE PROVIDED WITH FLUSH PORTS. VALVES SHALL BE SIZED FOR INTENDED SYSTEM INTRINSIC DISCHARGE, AND DREXELBROOK FOR CONTROLLER. SUBMERSIBLE LEVEL TRANSMITTER SHALL BE MOUNTED ON ISOLATION VALVES. THE AIR RELEASE PIPE SHALL BE A MINIMUM OF 1-INCH PVC SCH 40, AND IT SHALL BE INSTALLED IN A MANNER THAT DOESN'T REPRESENT A TRIPPING HAZARD, AND IT SHALL BE SOLIDLY FASTENED, UNLESS EMBEDDED IN CONCRETE SLAB, AND SHALL DISCHARGE INTO WET WELL WITH NO AIR ENTRAPMENT. AIR RELEASE PIPE, AIR/VACUUM RELEASE VALVES SHALL HAVE A PVC OR STAINLESS STEEL 316 BODY. APPROVED MANUFACTURER IS A.R.I. MODEL S-020 OR EQUIVALENT.
- SURGE RELIEF VALVES: WHEN REQUIRED, SURGE RELIEF VALVE SIZE SHALL BE SELECTED BASED ON FIRM PUMPING CAPACITY FLOW. IT SHALL BE RATED FOR RAW SEWAGE, AND IT SHALL HAVE ISOLATION VALVE ON THE INLET SIDE. OPENING SETTING SHALL NOT EXCEED 5 PSI ABOVE NORMAL OPERATING PRESSURE OF THE SYSTEM AT HEADER WHEN PUMP PUMPING CAPACITY FLOW IS BEING DISCHARGED. SURGE RELIEF PIPE SHALL BE ROUTED BACK TO EITHER WET WELL OR MANHOLE NEAR TO WET WELL. ENGINEER TO PROVIDE ENGINEERING REPORT THAT MUST INCLUDE ANALYSIS AND REFERENCE INFORMATION SHOWING HOW THE VALVE WAS SELECTED. WHEN THE ANALYSIS SHOWS DANGEROUS SURGE PRESSURE AT FIRM PUMPING CAPACITY, A SURGE RELIEF VALVE WILL BE INCLUDED IN THE DESIGN IN ADDITION TO THE SOFT STARTERS.
- INSTALL AN ISOLATING GATE VALVE ON ALL FORCE MAINS, LOCATED IMMEDIATELY BEFORE THEY TURN TOWARD THE UNDERGROUND.
- PRIMARY LEVEL MONITORING AND PUMP CONTROL MUST BE OF THE SUBMERSIBLE LEVEL TRANSMITTER TYPE. ACCEPTED MANUFACTURERS ARE SIEMENS MILLITRONICS HYDRODRANGER 2000, AND DREXELBROOK FOR CONTROLLER. SUBMERSIBLE LEVEL TRANSMITTER OF APPROVED MODEL, PUMP OR EQUIVALENT, AN EQUIVALENT UNIT MUST BE OF EQUIVALENT DESIGN AND WEIGHT AT LEAST 4 POUNDS. SUBMERSIBLE LEVEL SENSORS MUST INCLUDE A 10 POUND WEIGHT MADE OF CARBON STEEL, AND THE INSTRUMENT SHALL BE SOLIDLY FASTENED TO THE WEIGHT TO PREVENT THE INSTRUMENT FROM BEING DRAGGED INTO A PUMP INTAKE. A STAINLESS STEEL 316 STRANDED CABLE MUST BE USED TO ATTACH THE INSTRUMENT FOR REMOVAL. EASE. A 24VDC POWER SUPPLY SHALL BE INCLUDED IN THE PUMP CONTROL PANEL TO FEED THE SUBMERSIBLE LEVEL TRANSMITTER. FEED POWER TO SUBMERSIBLE LEVEL TRANSMITTER MUST BE INDEPENDENTLY POWERED BY SEPARATE 120 VAC/24 VDC POWER SUPPLY MOUNTED WITHIN PUMP CONTROL PANEL.

NOTES TO CONTRACTOR:

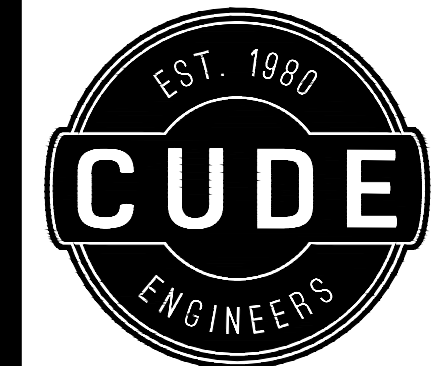
NO MODIFICATIONS CAN BE MADE TO THE LIFT STATION PRIOR TO APPROVAL. BY THE ENGINEER AND TCEQ. CONTRACTOR SHALL NOTIFY THE ENGINEER AND TCEQ INSPECTOR WHEN LIFT STATION CONSTRUCTION HAS PROCEEDED TO THE FOLLOWING MILESTONES:

- WHEN LIFT STATION PUMPS ARRIVED AT THE SITE.
- PRIOR TO PLACEMENT OF H/MAC AND CONCRETE DRIVEWAY.
- PIPELINE AND WET WELL HYDROSTATIC TESTING, FACILITY START UP, ALL FUNCTIONAL TESTING, PROJECT WALK THROUGH (S) AND FINAL ACCEPTANCE.
- COMPLETION OF STRUCTURAL STEEL PLACEMENT AND ERECTION OF FOUNDATIONS, AND PADS.
- UPON COMPLETION OF CONTROL PANEL CANOPY ERECTION.

WORK SHALL NOT CONTINUE ON THE LIFT STATION UNTIL THE ENGINEER AND TCEQ HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION OF EACH STAGE. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 48 HOURS ADVANCED NOTICE PRIOR TO THE TIME THAT THE LIFT STATION WILL BE AT THE REQUIRED STAGE.



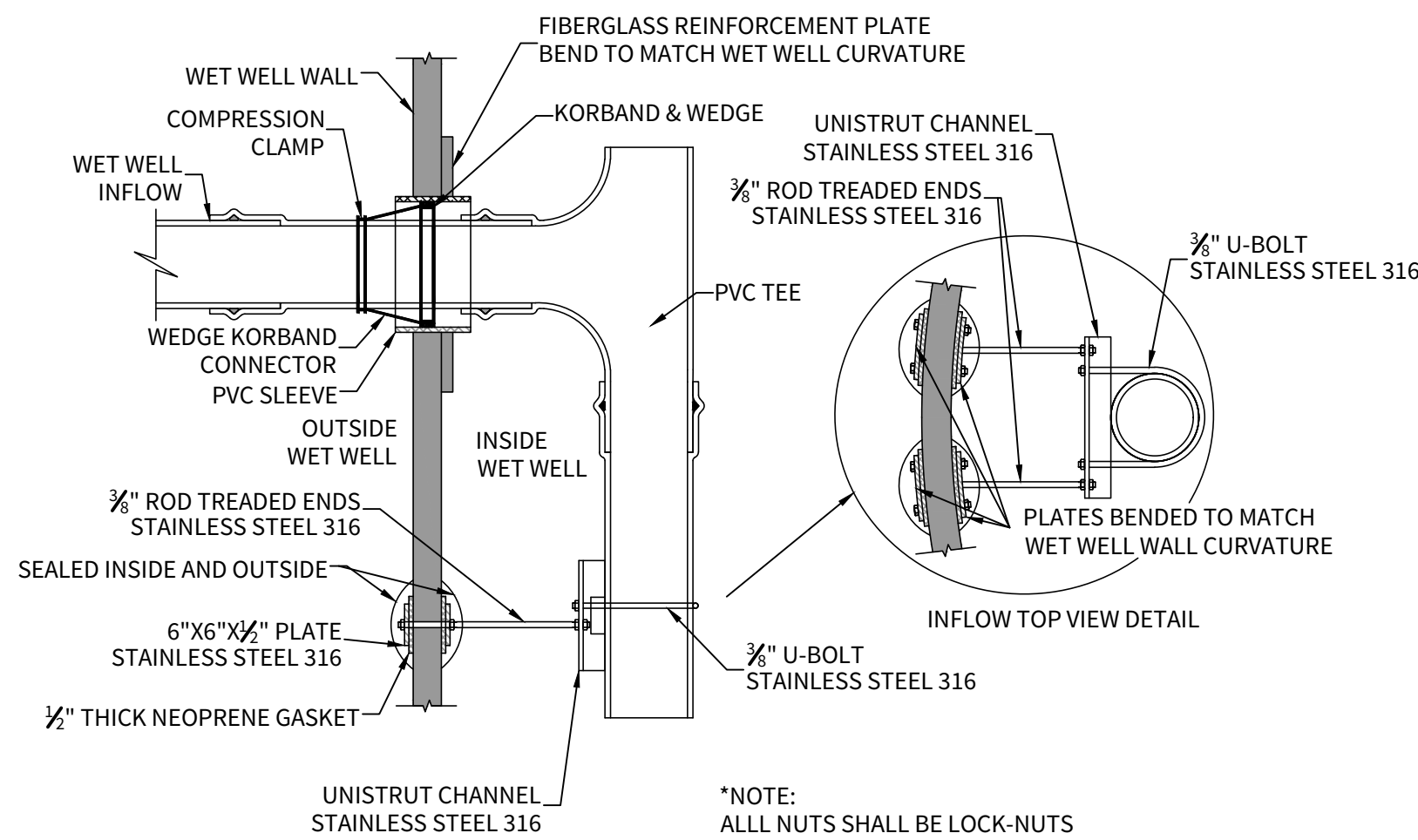




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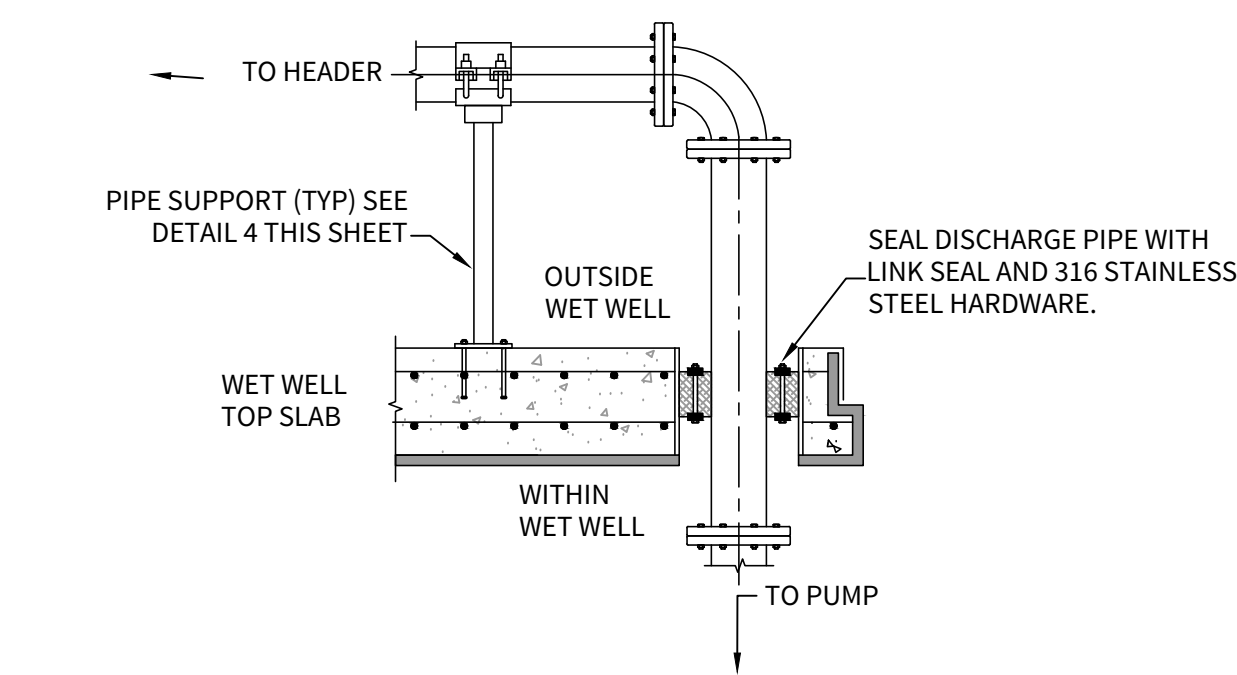
**FLYING W  
SANITARY SEWER IMPROVEMENTS**

LIFT STATION DETAILS



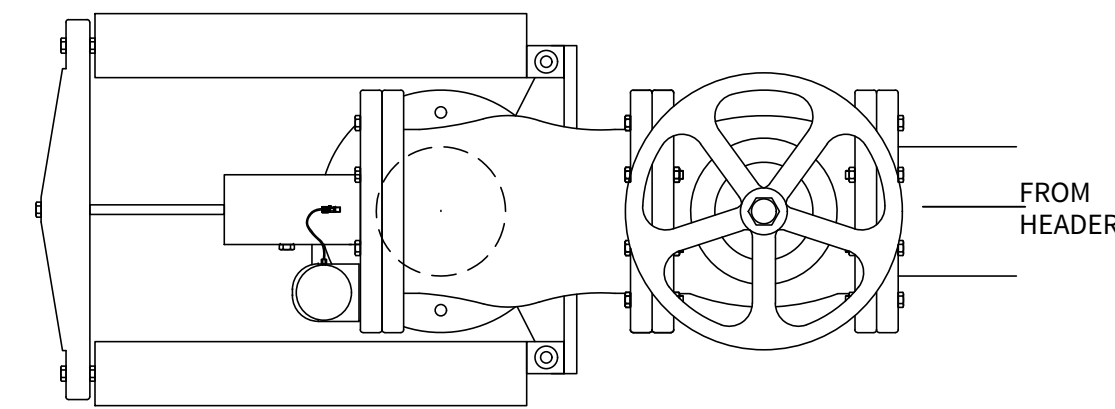
**WET WELL INFLOW PENETRATION DETAILS**  
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C14



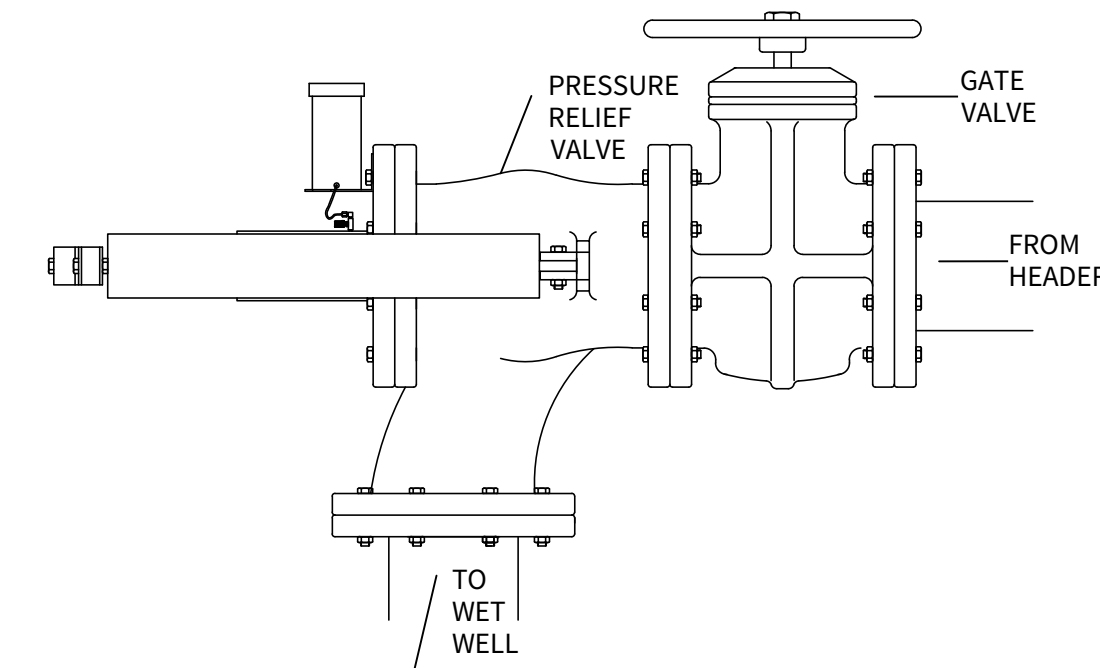
**DISCHARGE PIPE PENETRATION DETAIL**  
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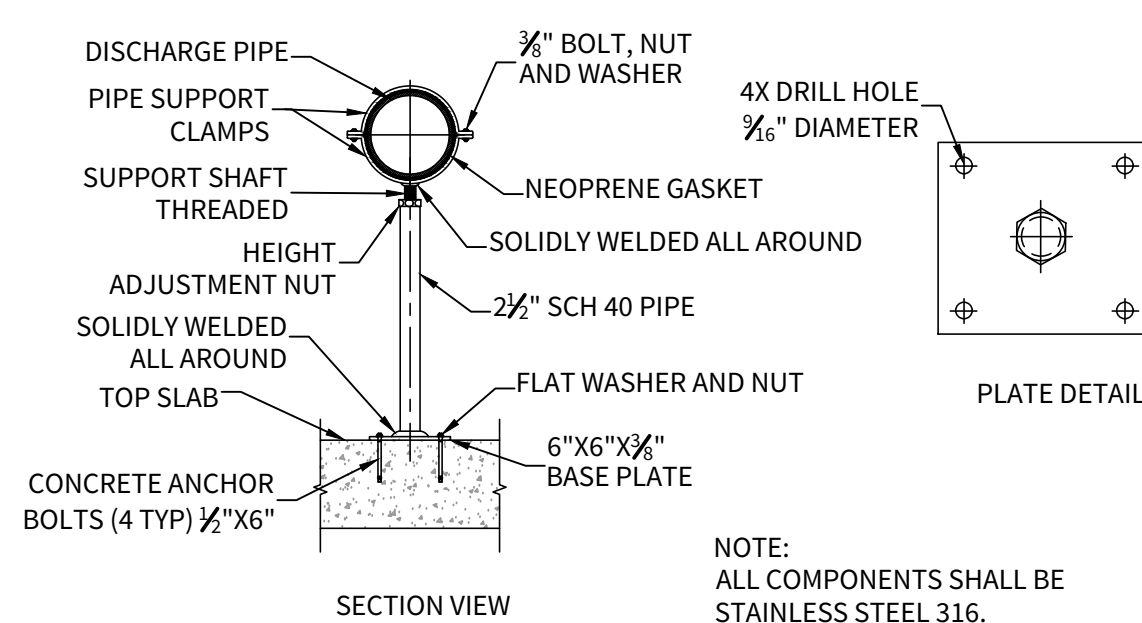
**SURGE CONTROL VALVE PLAN VIEW**  
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**SURGE CONTROL VALVE PROFILE VIEW**  
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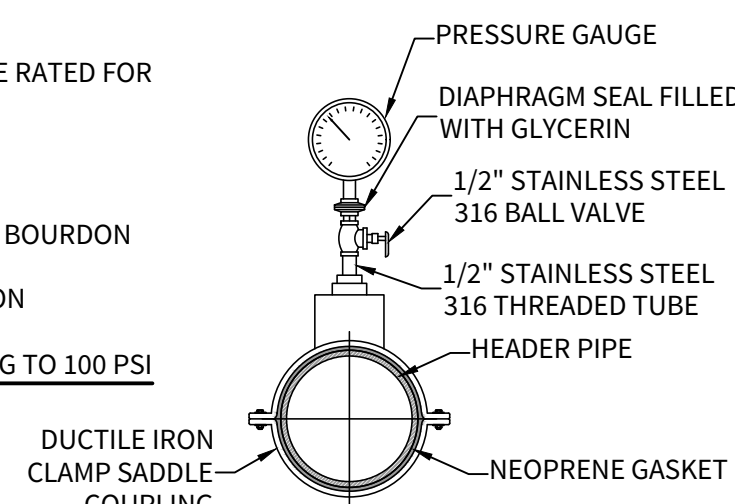


**PIPE SUPPORT DETAIL**  
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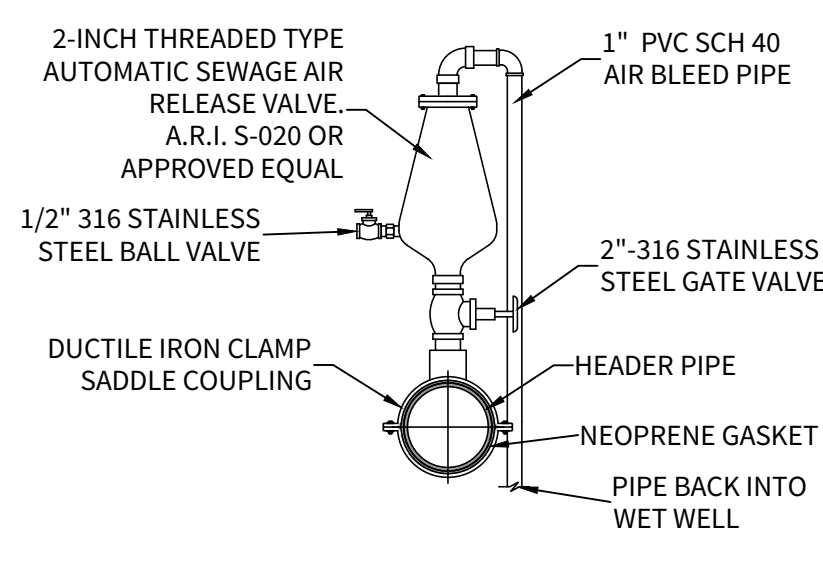
**KEY NOTES:**

- PRESSURE GAUGE SHALL BE RATED FOR CORROSIVE SERVICE
- 4" DIAL SIZE
- GRADE 1A
- LIQUID FILLED
- TYPE 316 STAINLESS STEEL BOURDON TUBE
- FULL BLOWOUT PROTECTION
- GLASS SAFETY LENS
- PRESSURE RATING: -30 inHG TO 100 PSI



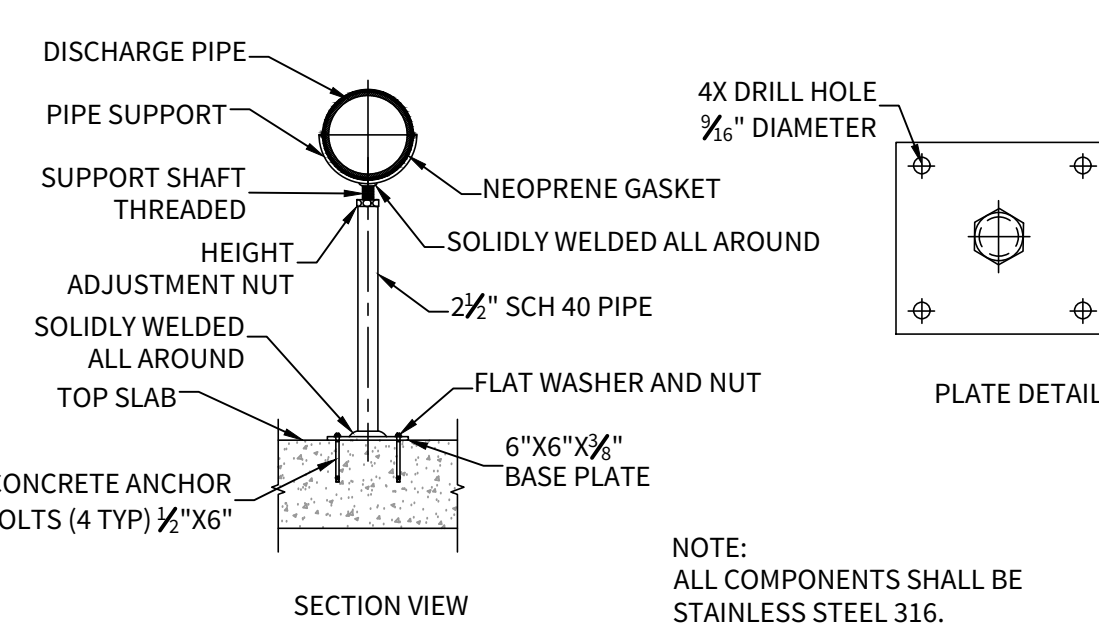
**PRESSURE GAUGE  
INSTALLATION DETAIL**  
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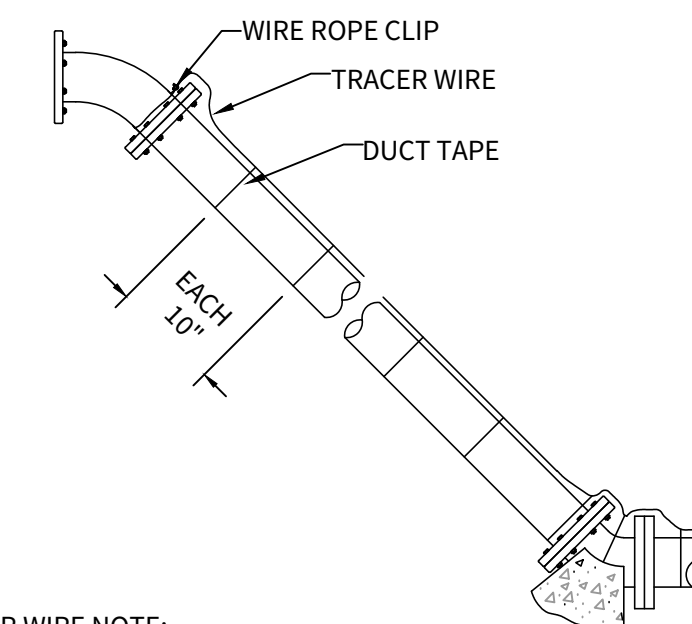
**AIR/VACCUM RELEASE VALVE  
INSTALLATION DETAIL**  
SCALE: N.T.S.

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**VALVE SUPPORT DETAIL**  
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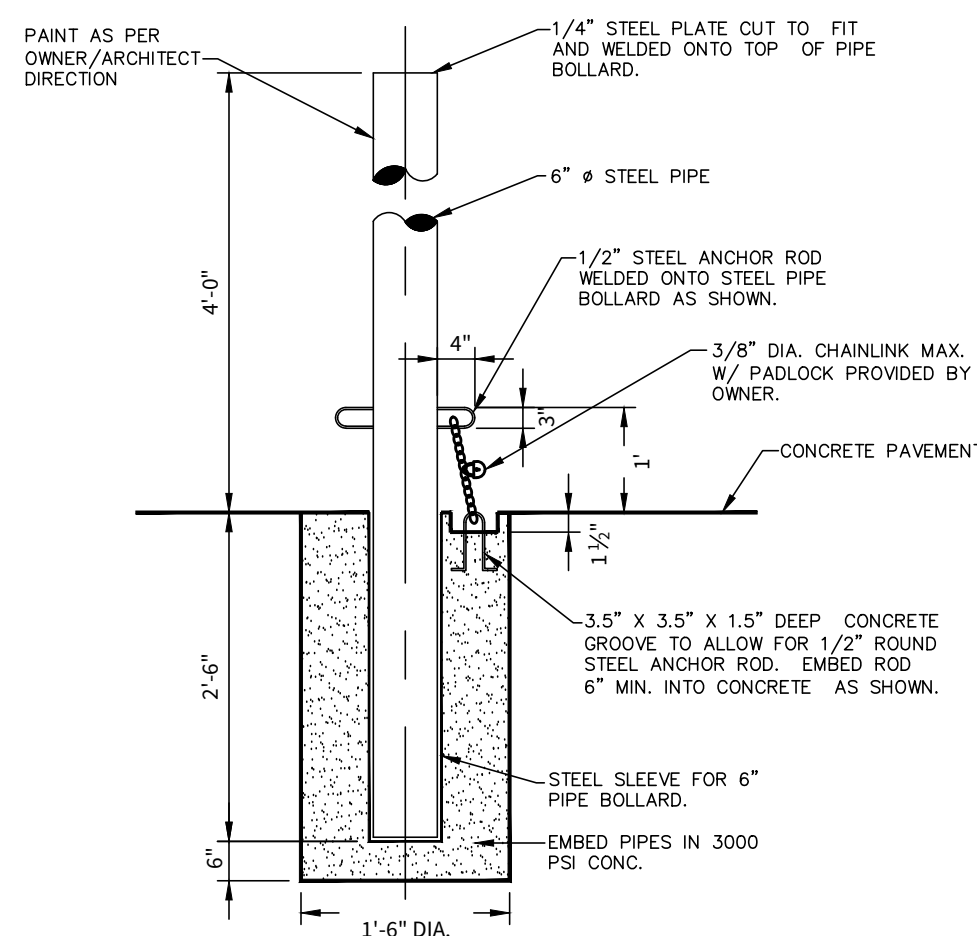
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**TRACER WIRE NOTE:**  
TRACER WIRE SHALL BE UTILIZED FOR LOCATION PURPOSES. THE MAXIMUM BURY DEPTH SHALL BE THREE FEET, MINIMUM SHALL BE ONE FOOT. TRACER WIRE SHALL BE OF SOLID CORE (14 GAUGE INSULATED) AND SHALL BE TAPED TO THE MAIN A MINIMUM OF 10" INCREMENTS. WIRE SHALL ALSO COME UP TO THE TOP OF AIR RELEASE, VACUUM VALVES, TOP OF GROUND AT LIFT STATION, AND AT THE MAIN DISCHARGE POINT.

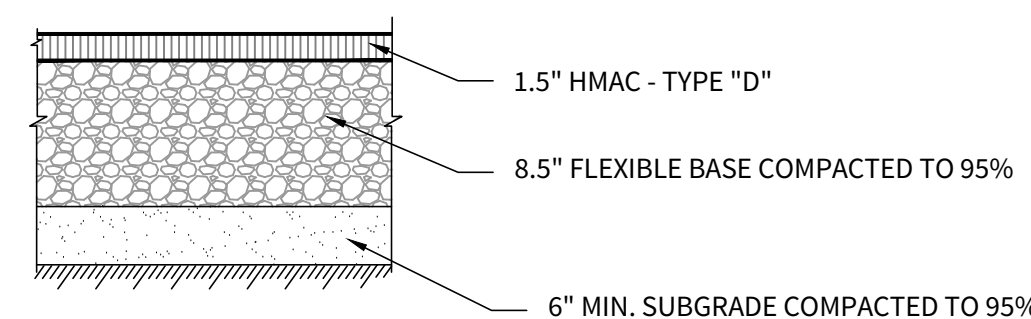
**TRACER WIRE DETAIL**  
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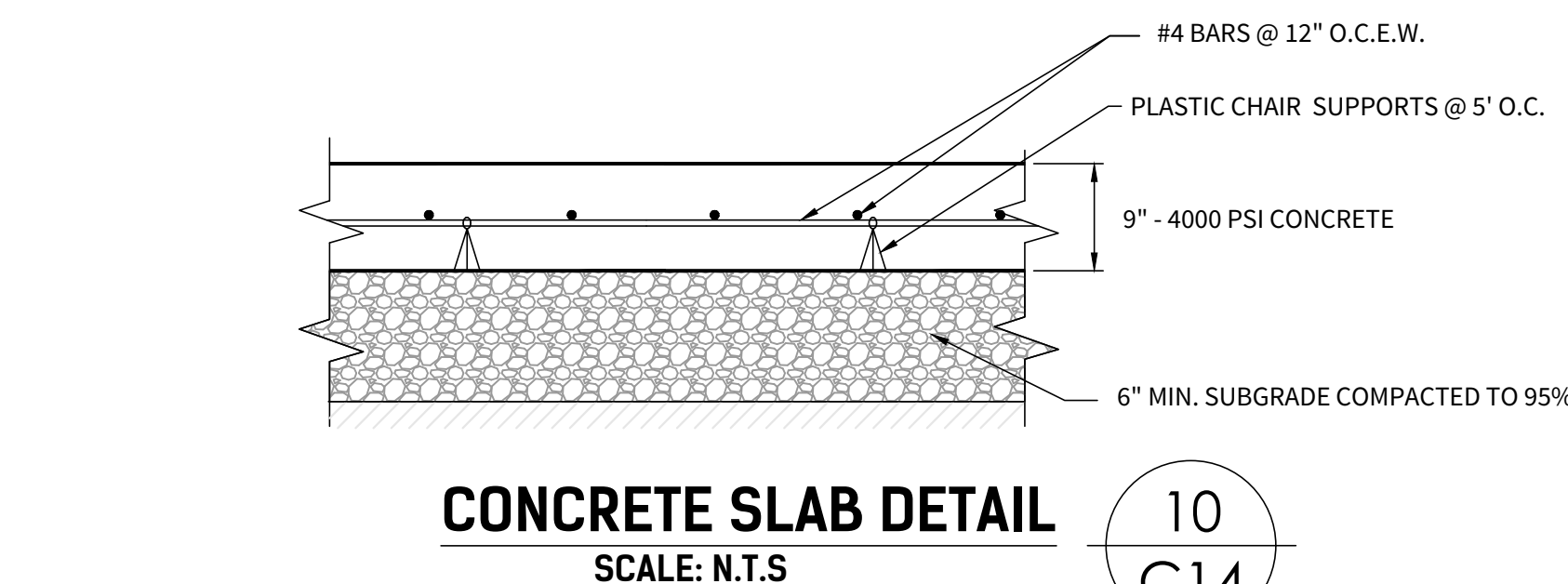
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C14



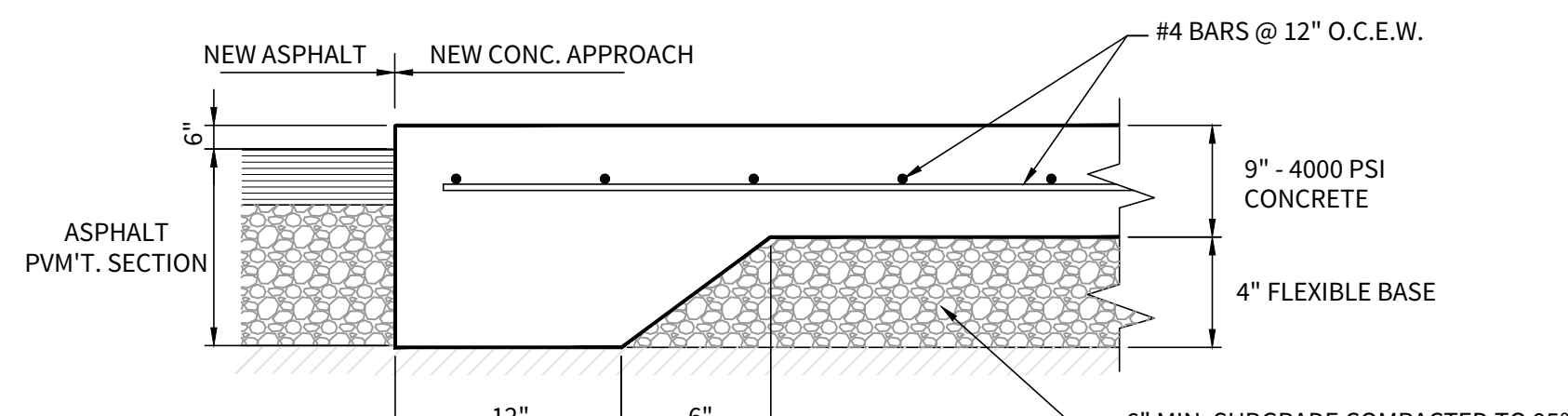
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SECTION DETAIL**  
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C14



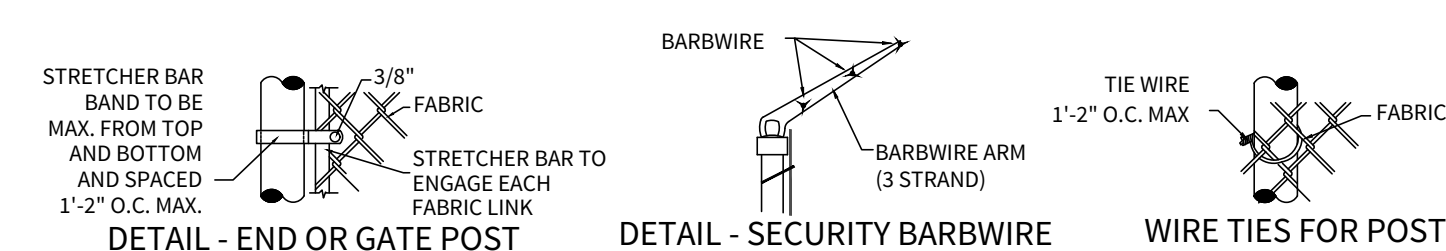
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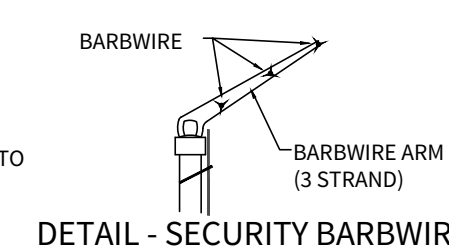


**CONCRETE PAD/ ASPHALT  
EDGE SECTION DETAIL**  
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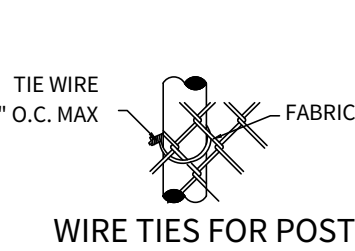
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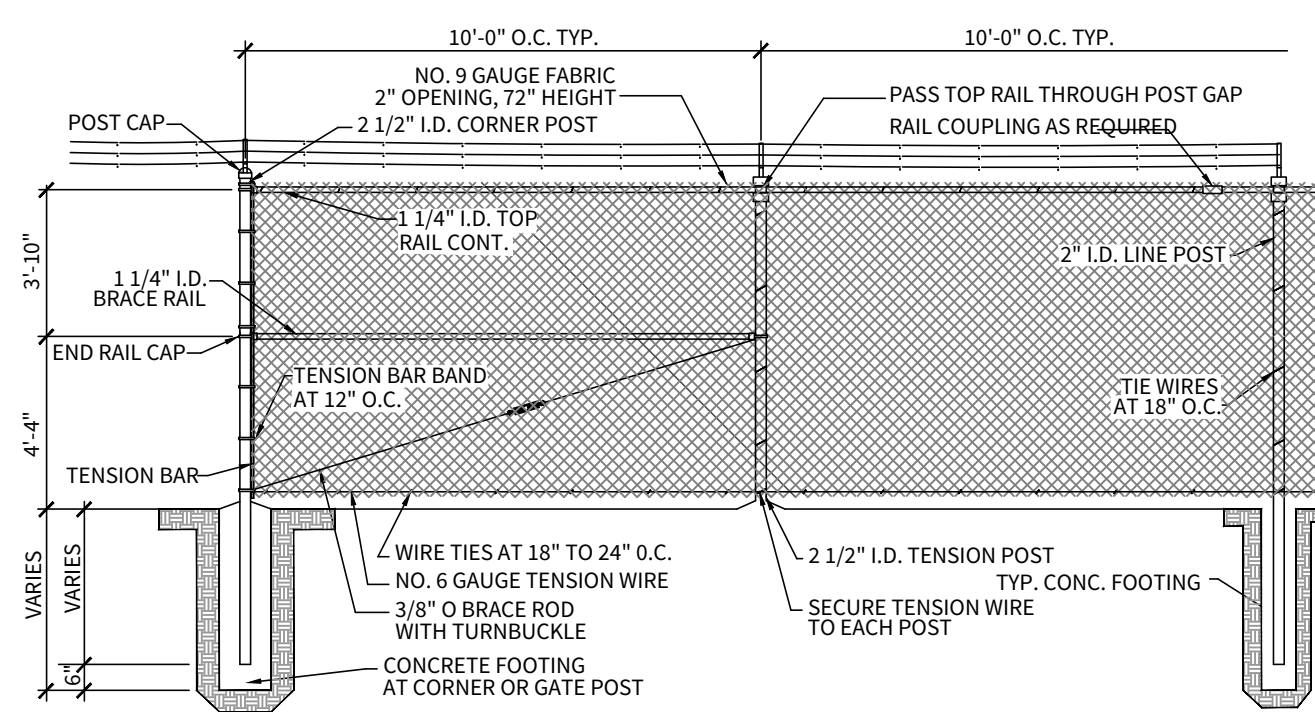
**DETAIL - END OR GATE POST**



**DETAIL - SECURITY BARBWIRE**

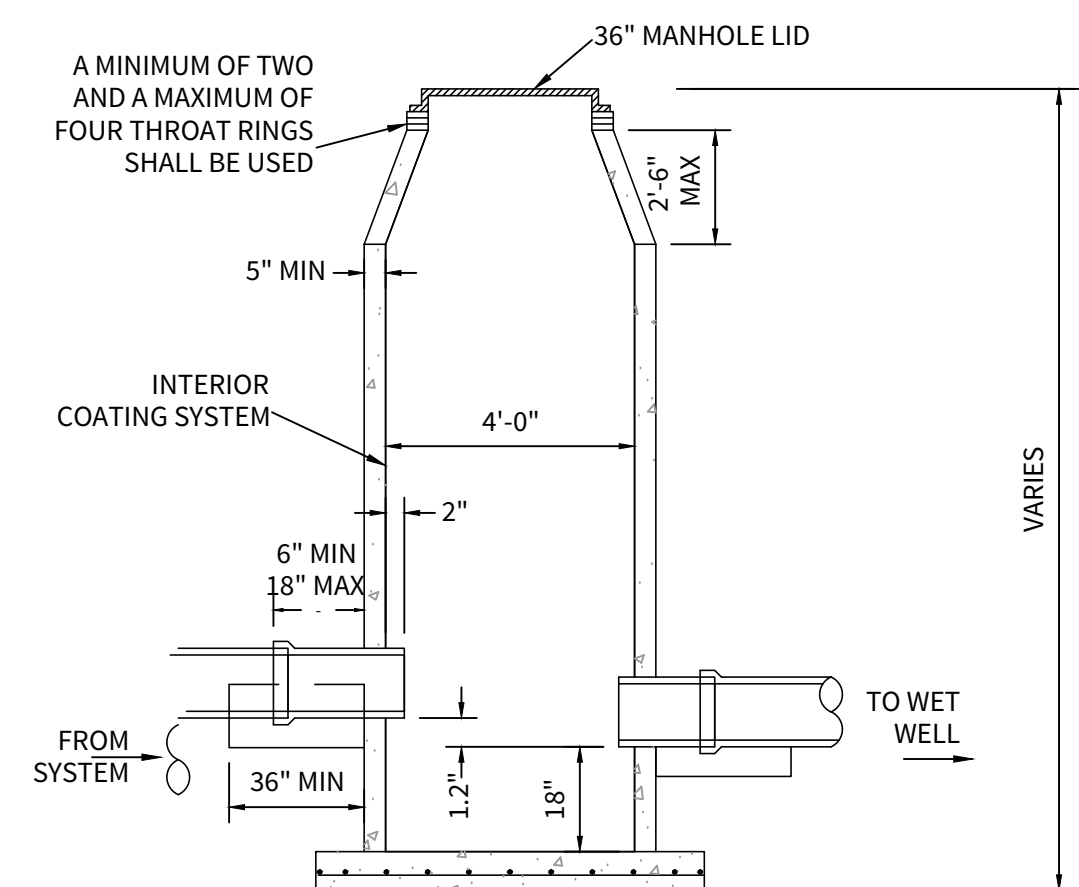


**WIRE TIES FOR POST**



**CHAINLINK FENCE DETAIL**  
SCALE: N.T.S.

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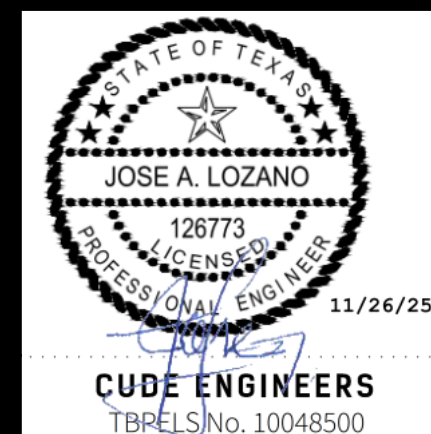


PRECAST REINFORCED CONCRETE MANHOLE SECTIONS ASTM DESIGNATION C-478.  
MANHOLE TO BE COATED PER CITY OF BOERNE SPECIFICATIONS

**LIFT STATION SITE MANHOLE  
ADJACENT TO WET WELL**  
SCALE: N.T.S.

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C14

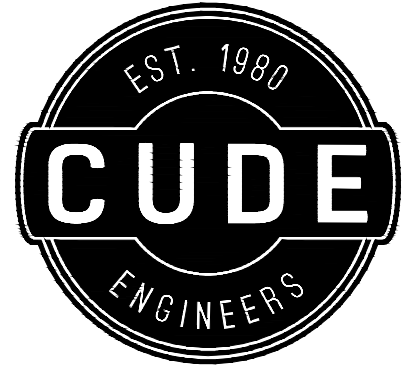
REVISIONS	1.	2.	3.	4.	5.	6.	7.	8.



PLAT NO.

**C3.D1**





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FLYING W  
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DATE

08/13/2025

PROJECT NO.

04024-003

DRAWN BY

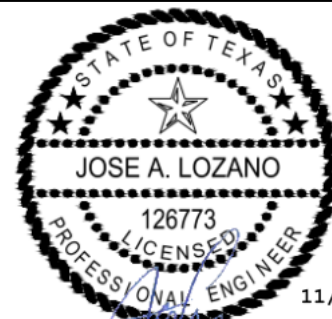
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JC/AL/AM

REVISIONS

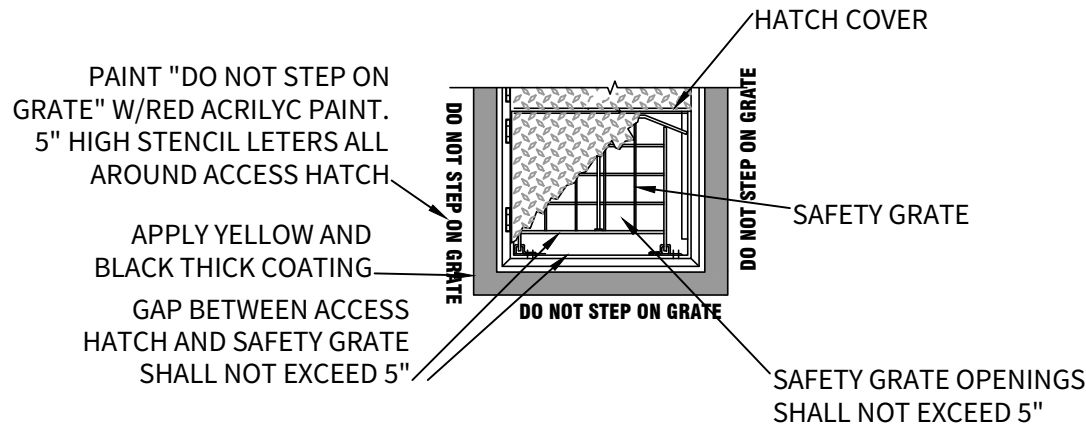
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CUDE ENGINEERS  
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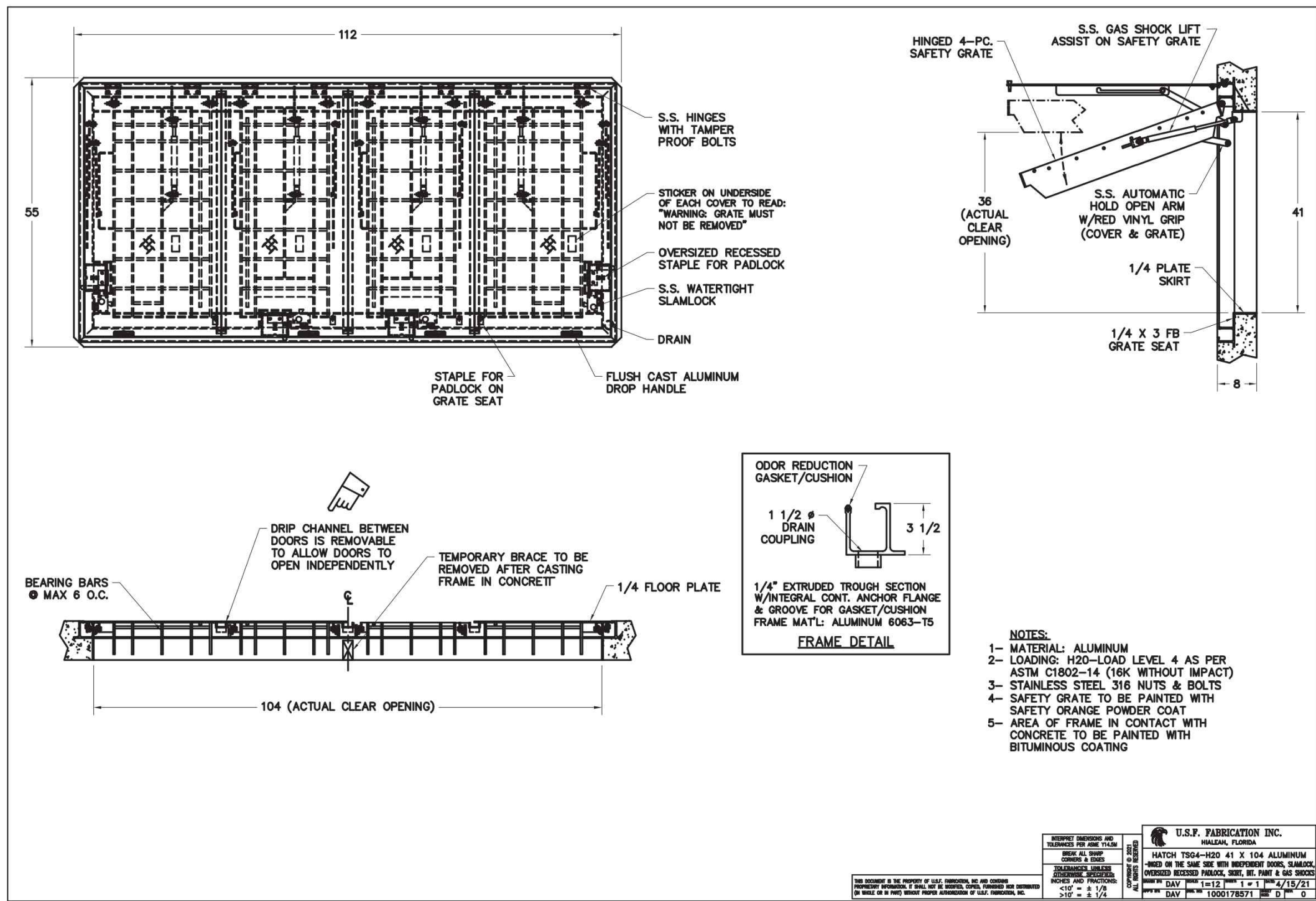
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C3.D2



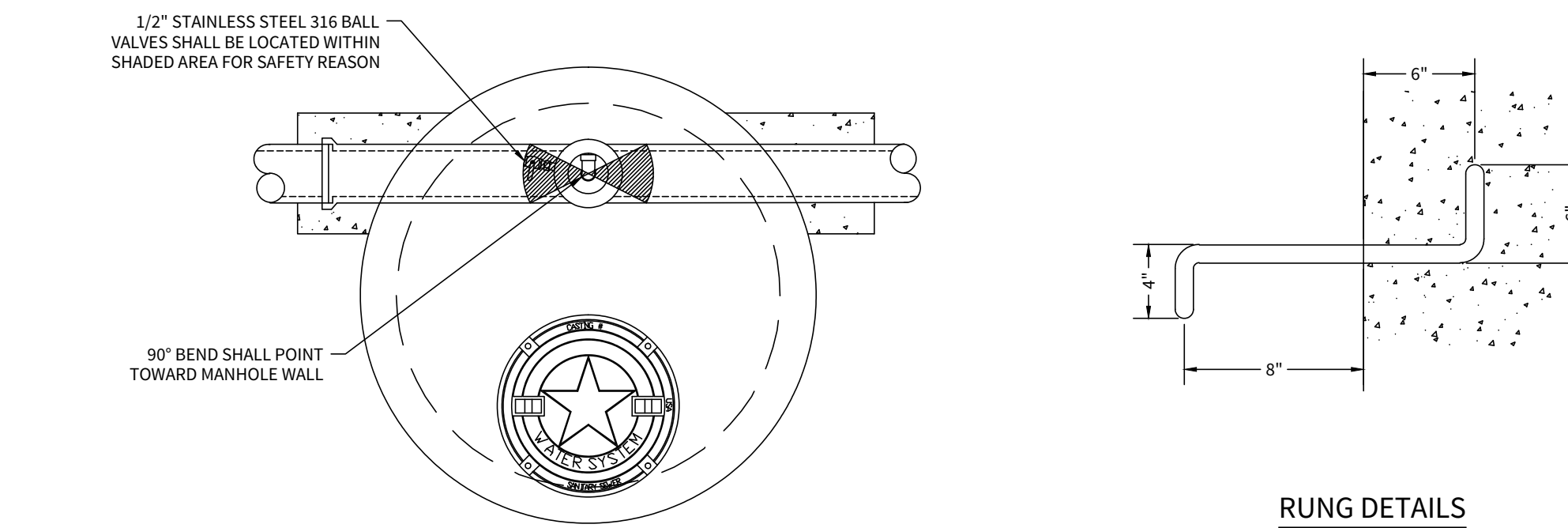
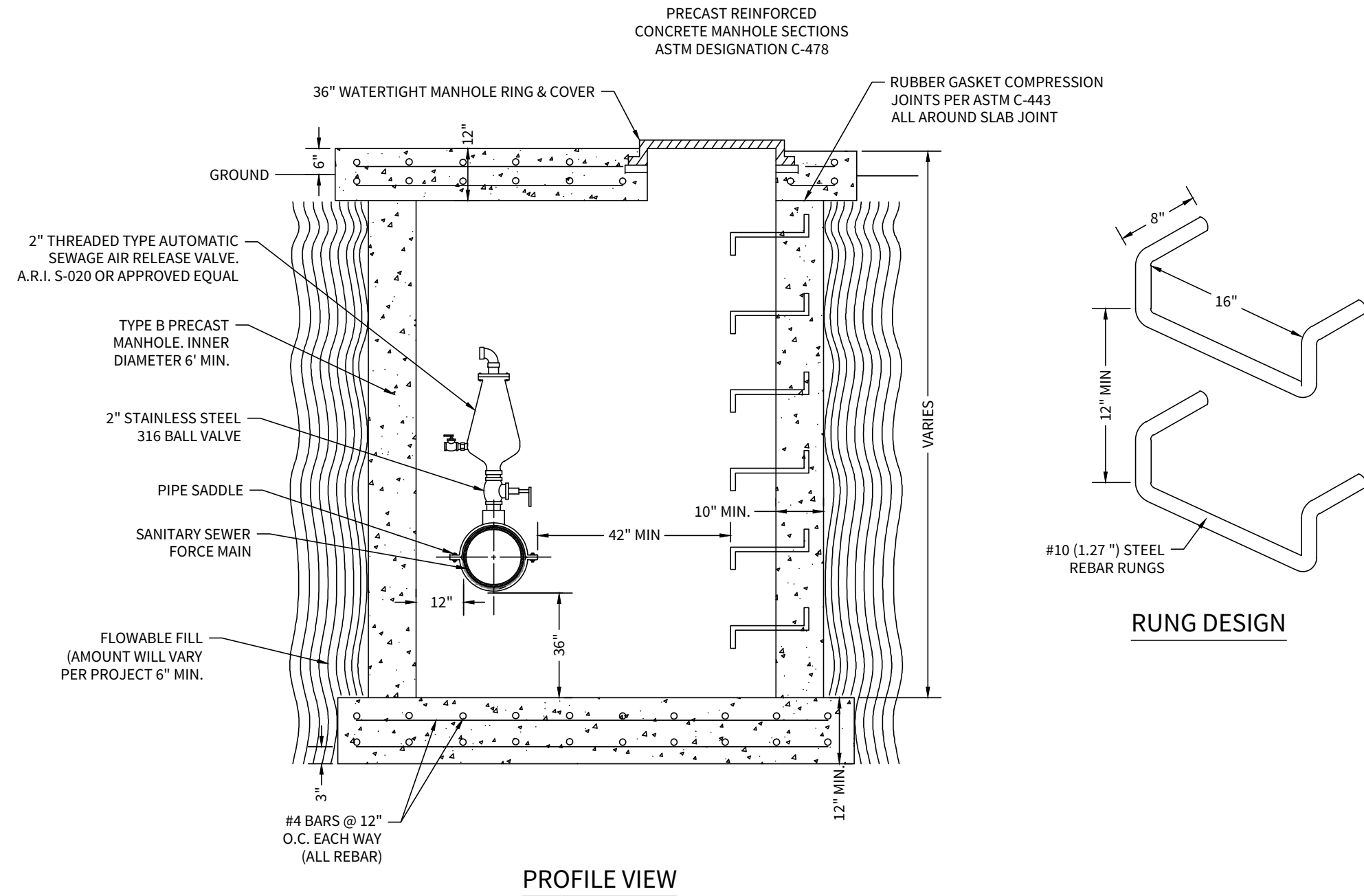
ACCESS COVER WITH SAFETY GRATE DETAIL  
SCALE: N.T.S.

1  
C15



ACCESS COVER FRAME STRUCTURE DETAIL  
SCALE: N.T.S.

2  
C15



AIR RELEASE VALVE MANHOLE VAULT DETAIL  
SCALE: N.T.S.

3  
C15



PLAN LEGEND	
	EQUIPMENT CONNECTION
	JUNCTION OR CONNECTION BOX
	STARTER OR LIGHTING CONTACTOR
	DISCONNECT SWITCH
	MANHOLE
	HANDHOLE
	KEYED NOTE. NUMBER MATCHES NOTE NUMBER
	TOGGLE SWITCH, WALL MOUNTED, SINGLE POLE SINGLE THROW. MOUNTED 54 IN. AFF. UNLESS OTHERWISE NOTED.
	TOGGLE SWITCH, WALL MOUNTED, FOUR WAY. MOUNTED 54 IN. AFF. UNLESS OTHERWISE NOTED.
	SWITCH MOTOR RATED WITH TERMINAL OVERLOADS
	OCCUPANCY SENSOR
	TERMINAL BOARD
	TELEPHONE OUTLET, PRIVATE. MOUNTED 12 IN. AFF.
	DATA OUTLET, SURFACED MOUNTED
	MOTOR LOAD, NUMBER INDICATES HORSEPOWER
	POLE
	TRANSFORMER , DRY TYPE, KVA RATING MAY BE DISPLAYED NEXT TO SYMBOL
	ANTENNA
	HOMERUN, LETTERS INDICATE PANELBOARD, NUMBERS INDICATE CIRCUIT NUMBER IN PANELBOARD
	CONDUIT CAPPED FOR FUTURE USE
	CONDUIT GOING DOWN
	CONDUIT GOING UP
	CONDUIT ABOVE GROUND
	CONDUIT RUN UNDERGROUND OR CONCEALED
	CONDUIT RUN BELOW CONCRETE
	LIQUID TIGHT FLEXIBLE CONDUIT
	SURFACE MOUNT
	120V RECEPTACLE FLUSH MOUNTED
	120V RECEPTACLE SURFACE MOUNTED
	120V QUAD RECEPTACLE FLUSH MOUNTED
	120V QUAD RECEPTACLE SURFACE MOUNTED
	208V RECEPTACLE FLUSH MOUNTED
	208V RECEPTACLE SURFACE MOUNTED
	WELDING OUTLET
	THERMOSTAT
	PANELBOARD FLUSH MOUNTED
	PANELBOARD SURFACE MOUNTED
	NORTH ARROW
	TORQUE SWITCH
	SOLENOID SWITCH
	LIMIT SWITCH
	AMMETER SWITCH
	VOLTMETER SWITCH
	PRESSURE SWITCH
	LIGHTING CONTACTOR
	PHOTOCELL

GROUNDING LEGEND	
	A=GROUNDING RECEPTACLE; B=GROUND TEST WELL
	BARE COPPER GROUNDING CONDUCTOR
	GROUNDING CONNECTION
	COPPER CLAD GROUND ROD

ONE-LINE AND CONTROL SCHEMATIC LEGEND			
	GROUND CONNECTION		WYE TRANSFORMER CONNECTION
	NORMALLY OPEN RELAY OR CONTACTOR CONTACTS		DELTA TRANSFORMER CONNECTION
	NORMALLY CLOSED RELAY OR CONTACTOR CONTACTS		CURRENT TRANSFORMER WITH RATIO SHOWN
	CONDUCTOR CONNECTION		ANALYTICAL TRANSMITTER
	CIRCUIT BREAKER, MOLDED CASE, TRIP CURRENT AND QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL		FLOW OR FLOAT SWITCH
	DISCONNECT SWITCH NON-FUSED, LOAD BREAK. CONTINUOUS CURRENT RATING, QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL		LEVEL TRANSMITTER
	DISCONNECT SWITCH NON-FUSED, LOAD BREAK. CONTINUOUS CURRENT RATING, QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL		PRESSURE TRANSMITTER
	FUSE. RATING SHOWN NEXT TO SYMBOL		SOLENOID VALVE
	MOTOR STARTER THERMAL OVERLOAD PROTECTOR		MOTOR OPERATED VALVE
	CONTACTOR OR RELAY COIL. LETTERS AND NUMBERS MATCH CONTACTS CONTROLLED		ELAPSED TIME METER
	LIMIT SWITCH NORMALLY CLOSED		TIME DELAY RELAY. TIMES OUT AFTER ENERGIZATION. ADJUSTABLE TIME DELAY TIME INDICATED NEXT TO SYMBOL.
	LIMIT SWITCH NORMALLY OPEN		TIME DELAY RELAY. TIMES OUT AFTER DE-ENERGIZATION. ADJUSTABLE TIME DELAY TIME INDICATED NEXT TO SYMBOL.
	MOTOR OPERATED VALVE GEARED LIMIT SWITCH		CONDUIT TAG
	PRESSURE SWITCH NORMALLY CLOSED OPEN ON INCREASING PRESSURE		PILOT LIGHT. R=RED, B=BLUE, G=GREEN, A=AMBER, Y=YELLOW
	PRESSURE SWITCH NORMALLY OPEN CLOSES ON INCREASING PRESSURE		CONTROL POWER TRANSFORMER. PRIMARY AND SECONDARY VOLTAGE INDICATED
	LEVEL SWITCH NORMALLY CLOSED OPEN ON INCREASING LEVEL		CPT = CONTROLS POWER/INSTRUMENT TRANSFORMER
	LEVEL SWITCH NORMALLY OPEN CLOSES ON INCREASING LEVEL		PT = POWER TRANSFORMER. VOLTAGE AND KVA RATING AS SHOWN
	FLOW SWITCH NORMALLY CLOSED OPENS WITH FLOW		TELEVISION CAMERA
	FLOW SWITCH NORMALLY OPEN CLOSES ON PRESENCE OF FLOW		TORQUE SWITCH
	SPACEHEATER		AMMETER
	PHASE FAILURE RELAY		VOLTMETER
	MAINTAINED CONTACT START/STOP PUSHBUTTON		LIGHTING ARRESTOR
	MAINTAINED CONTACT HAND-OFF-AUTO SELECTOR SWITCH		SURGE CAPACITOR
	NORMALLY CLOSED MOMENTARY CONTACT PUSHBUTTON		MOTOR STARTER FVNR = FULL VOLTAGE NON-REVERSING FVR = FULL VOLTAGE REVERSING MCP = MOTOR CIRCUIT PROTECTOR RVNR = REDUCED VOLTAGE NON-REVERSING RVSS = REDUCED VOLTAGE SOFT START SIZE = NEMA STARTER SIZE
	NORMALLY OPEN MOMENTARY CONTACT PUSHBUTTON		

LIGHTING FIXTURE LEGEND			
	LED STRIP LIGHT; LETTER IN OR BESIDE FIXTURE IDENTIFIES IN FIXTURE SCHEDULE		POLE MOUNTED LED LUMINAIRE. SEE SCHEDULE OR NOTES FOR FIXTURE TYPE. ORIENT FIXTURE FOR CUT-OFF TOWARDS AREA TO BE LIT. ORIENT HOUSE SHIELD TOWARDS BUILDING. SEE DETAILS FOR POLE BASE. PROVIDE POLE CASE GROUND ROD.
	LED STRIP LIGHT WITH BATTERY BACKUP; LETTER IN OR BESIDE FIXTURE IDENTIFIES IN FIXTURE SCHEDULE		EMERGENCY LED LIGHT FIXTURE, SELF CONTAINED, BATTERY OPERATED
	LED FIXTURE, SURFACE OR SUSPENDED, CEILING MOUNTED		PAR LAMP HOLDER. NUMBER OF TRIANGLES INDICATE NUMBER OF FIXTURES.
	LED FIXTURE, STANCHION MOUNTED		POLE MOUNTED FLOOR LIGHT. NUMBER OF TRIANGLES INDICATE NUMBER OF FIXTURES. ARROW DENOTES FLOODING AND DIRECTION POLE FOLDS DOWN.
	LED FIXTURE, WALL MOUNTED		
	LED LIGHTED EXIT SIGN; LETTER IN OR BESIDE FIXTURE IDENTIFIES IN FIXTURE SCHEDULE		
	REMOTE EMERGENCY LIGHTS		

ABBREVIATIONS			
1/C	ONE CONDUCTOR	MCC	MOTOR CONTROL CENTER
3/C	THREE CONDUCTOR	MFR	MANUFACTURER
A	AMPERES OR TRIP AMPERES	MIN.	MINIMUM
AC	ALTERNATING CURRENT	MPR	MOTOR PROTECTION RELAY
A/C	AIR CONDITIONING	MTD	MOUNTED
AFF	ABOVE FINISHED FLOOR	MTG	MOUNTING
AFG	ABOVE FINISHED GRADE	MRCT	MULTI-RATIO CURRENT TRANSFORMER
AIC	SYMMETRICAL AMPERES INTERRUPTING CAPACITY	MV	MERCURY VAPOR
		N.C.	NORMALLY CLOSED
BLDG	BUILDING	NEC	NATIONAL ELECTRICAL CODE
BKR	BREAKER	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
C	CONDUIT	NEUT.	NEUTRAL
CAP	CAPACITOR	N.O.	NORMALLY OPEN
CKT	CIRCUIT	N.T.S.	NOT TO SCALE
CONT'D	CONTINUED	OC	ON CENTER
CPT	CONTROL POWER TRANSFORMER	OH	OVERHEAD
CT	CURRENT TRANSFORMER	P	POLE
CU	COPPER	PC	PHOTOCELL
DBL	DOUBLE	PH	PHASE
DISC SW.	DISCONNECT SWITCH	PNL	PANEL
DC	DIRECT CURRENT	PRI	PRIMARY
EMER.	EMERGENCY	PVC	POLYVINYL CHLORIDE
EMT	ELECTRICAL METALLIC TUBING	REQ'D	REQUIRED
ENCL.	ENCLOSURE	SCH	SCHEDULE
EP	EXPLOSION PROOF	SEC	SECONDARY
EQUIP.	EQUIPMENT	S/N	SOLID NEUTRAL
FS	FLOAT SWITCH	SPACE	SPACE(S) ONLY - NO BREAKER OR DEVICE
G	GROUND WIRE	SPARE	SPARE BREAKER OR DEVICE
GALV.	GALVANIZED	SPECS	SPECIFICATIONS
GEN	GENERATOR	S.D. BARE	SOFT DRAWN BARE
GFI	GROUND FAULT INTERRUPTER CIRCUIT	SS HDWE	STAINLESS STEEL HARDWARE
GND	GROUND	SWBD	SWITCHBOARD
HDG	HOT DIPPED GALVANIZED	SWGR	SWITCHGEAR
HPS	HIGH PRESSURE SODIUM	TB	TERMINAL BLOCK
HT	HEIGHT	TYP.	TYPICAL
HZ	HERTZ	UL	UNDERWRITERS LABORATORIES
INST.	INSTRUMENT	V	VOLTS
KV	KILOVOLTS	VA	VOLT AMPERES
KVA	KILOVOLTS AMPERES	W	WATTS
KWH	KILOWATT HOURS	W/	WITH
LA	LIGHTNING ARRESTOR	W/O	WITHOUT
LPR	LIGHTING PROTECTION RELAY	WP	WEATHERPROOF
L-L	LINE TO LINE	XFMR	TRANSFORMER
L-N	LINE TO NEUTRAL		

LEGEND & GENERAL NOTES:

- BRANCH CIRCUIT NUMBERS MAY BE SHOWN NEXT TO SYMBOLS IN MULTI-WIRE CIRCUITS.
- SYMBOL SIZE DOES NOT IMPLY EQUIPMENT SIZE UNLESS OTHERWISE NOTED.
- LOWER CASE LETTERS NEXT TO SYMBOLS INDICATE FIXTURE(S) CONTROLLED BY THE SWITCH DISPLAYING THE SAME LETTER.
- THIS IS A STANDARD LEGEND LIST ALL SYMBOLS MAY NOT BE USED.
- INSTALLATION SHALL BE PER LATEST VERSION OF NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL CODES. ORDINANCES. NOT ALL CODE AND STANDARD REQUIREMENTS MAY BE SHOWN ON PLANS. CONTRACTOR SHALL ADHERE TO CODES AND STANDARDS REGARDLESS OF BEING SHOWN ON PLANS OR SPECIFICATIONS IN DETAILED FASHION.

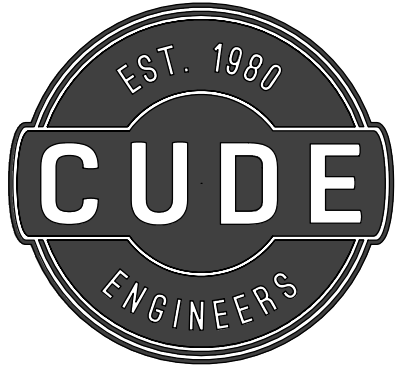


GENERAL NOTES:

1. INSTALLATION SHALL BE PER LATEST VERSION OF NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES/ORDINANCES. NOT ALL CODE AND STANDARD REQUIREMENTS MAY BE SHOWN ON PLANS. CONTRACTOR SHALL ADHERE TO CODES AND STANDARDS REGARDLESS OF BEING SHOWN ON PLANS OR SPECIFICATIONS IN DETAILED FASHION.
2. THE NOTES CONTAINED ON THIS SHEET ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR WHEN WORKING IN THE FIELD.
3. ALL EQUIPMENT, WIRING, ETC. SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL CODES, AND INDUSTRY STANDARDS (I.E. UL, NEMA, IEEE, ANSI, ETC.) THE DRAWING NOTES AND DETAILS SHALL BE COMPLIED WITH, IN ADDITION TO THE REQUIREMENTS IN THE SPECIFICATIONS.
4. ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS.
5. CONDUITS SHALL BE TERMINATED IN A NEAT AND WORKMANLIKE MANNER STRICTLY IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE NATIONAL ELECTRICAL CODE.
6. CONDUITS TERMINATED INTO ENCLOSURES SHALL BE PERPENDICULAR TO THE WALLS OF THE ENCLOSURE. THE USE OF SHORT SEAL TIGHT ELBOW FITTINGS FOR SUCH TERMINATIONS WILL NOT BE PERMITTED.
7. ALL RACEWAY INSTALLATIONS, CROSSING EXPANSION JOINTS OR TRANSITIONS FROM BELOW GRADE TO EXPOSED ABOVE GRADE, SHALL HAVE EXPANSION OR EXPANSION/DEFLECTION TYPE FITTINGS AS SPECIFIED FOR THE APPLICATION. CONTRACTOR SHALL COORDINATE WITH VENDORS AND MANUFACTURER'S AS REQUIRED.
8. NO CONDUIT SMALLER THAN 1 IN., NOR WIRE SMALLER THAN NO. 12 AWG CU, SHALL BE PERMITTED UNLESS SPECIFICALLY NOTED.
9. ALL UNDERGROUND SINGLE CONDUITS, AND DUCTBANKS WITH MULTIPLE CONDUITS, SHALL BE RIGID PVC SCHEDULE 80 CONDUIT. THE CONTRACTOR SHALL FIELD VERIFY THE ROUTING OF ALL EXISTING UNDERGROUND UTILITIES. CONTRACTOR MAY UTILIZE MEDIUM WALL REINFORCED THERMOSETTING RESIN (MW-RTRC) IN LIEU OF PVC SCH 80.
10. ALL CHANGES OF DIRECTION GREATER THAN 20 DEGREES IN UNDERGROUND SINGLE, OR DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE ACCOMPLISHED USING PVC LONG RADIUS BENDS. STANDARD RADIUS BENDS OF PVC CONDUIT GREATER THAN 20 DEGREES, OR THE USE OF FLEXIBLE CONDUIT OF ANY TYPE, WILL NOT BE PERMITTED.
11. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL BE USED FOR THE PRIMARY AND SECONDARY OF TRANSFORMERS, GENERATOR TERMINATIONS, AND OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. USE IN OTHER LOCATIONS IS NOT PERMITTED EXCEPT FOR CONNECTIONS TO INSTRUMENTATION TRANSMITTERS WHERE MULTIPLE PENETRATIONS ARE REQUIRED.
12. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL HAVE A MAXIMUM LENGTH NOT GREATER THAN THAT OF A FACTORY MANUFACTURED LONG BEND RADIUS ELBOW OF CONDUIT TRADE SIZE USED. THE MAXIMUM BENDING RADIUS SHALL NOT BE LASS THAN THAT SHOWN IN NEC CHAPTER 9, TABLE 2.

13. THE WIRING DIAGRAMS, BLOCK DIAGRAMS, QUANTITIES, SIZE OF WIRES, AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT APPROVED.
14. ALL MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE BASIC SEQUENCE AND METHOD OF CONTROL SHALL BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFIED.
15. ALL JUNCTION BOXES AND TERMINATION BOXES SHALL BE NEMA 4X STAINLESS STEEL.
16. WHERE RACEWAYS ENTER JUNCTION BOXES OR CONTROL PANELS CONTAINING ELECTRICAL OR INSTRUMENTATION EQUIPMENT, ALL ENTRANCES SHALL BE SEALED WITH LIQUID TIGHT SEALANT. TOP PENETRATIONS ARE NOT ACCEPTABLE.
17. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURE LOCATIONS, OR TERMINAL BOX LOCATIONS ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY OWNER/ENGINEER DURING CONSTRUCTION AT NO ADDITIONAL COST TO OWNER.
18. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT DIMENSIONS ARE APPROXIMATE. ALL EQUIPMENT AND ELECTRICAL ENCLOSURES SHALL BE VERIFIED WITH EQUIPMENT SUPPLIERS. ALLOW FOR LOCATION CHANGES UP TO 40 FEET FOR ALL EQUIPMENT. INCLUDE IN BID PRICE. THE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF ALL CABLES/CONDUITS SHALL BE COORDINATED WITH, AND APPROVED, BY THE OWNER/ENGINEER DURING CONSTRUCTION.
19. ULTIMATE ROUTING PATH IS ULTIMATE RESPONSIBILITY OF CONTRACTOR.
20. ALL SLOTTED CHANNEL, STRUT, WASHERS, SCREWS, NUTS, CONDUIT CLAMPS, ALL THREAD SPRING NUTS, AND MISCELLANEOUS MOUNTING HARDWARE SHALL BE 316 S.S.
21. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. THE MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO FINISHED FLOOR.
22. ALL CONDUITS AND WIRES SHOWN ON THE CONSTRUCTION DRAWINGS SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. GROUPING OF CONDUIT AND WIRE MAY BE MODIFIED IF APPROVED BY OWNER AND ENGINEER.
23. ALL CONDULETS SHALL HAVE 316 S.S. CLAMP COVERS WITH 316 S.S. CLAMPS AND SCREWS. SCREW DOWN COVERS ARE UNACCEPTABLE.
24. ALL BARE COPPER GROUNDING CONDUCTORS SHALL BE TINNED. ALL GROUND RODS SHALL BE COPPER CLAD STEEL 3/4 IN. BY 10 FT. LONG. ALL EXPOSED COPPER GROUND CABLES SHALL BE GREEN INSULATED CONDUCTORS. PROVIDE XHHW-2 INSULATION.
25. WHERE NOTES ON THE DRAWINGS INDICATED THAT THE CONTRACTOR SHALL FIELD-VERIFY, THE INTENT IS FOR THE CONTRACTOR TO INVESTIGATE TO THE EXTEND NECESSARY TO PROVIDE THE WORK AND MATERIALS PRIOR TO BIDDING AND INCLUDE ALL COSTS IN THE BID PRICE.
26. SHOULD THE CONTRACTOR NOT INVESTIGATE PER REQUIREMENTS, CONTRACT PRICE SHALL NOT BE INCREASED. ALL REQUIRED CHANGES ARE SOLE RESPONSIBILITY OF CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

27. DIAGRAMS, SCHEMATICS, AND DETAILS ARE SHOWN ONLY TO ILLUSTRATE FUNCTIONAL RELATIONSHIPS BETWEEN COMPONENTS OF THE SYSTEM. CONTRACTOR SHALL SUBMIT EQUIPMENT, PRODUCT DATA, AND SHOP DRAWINGS INDICATING ACTUAL INSTALLATION METHODS AND EQUIPMENT TO BE INSTALLED. EQUIPMENT SHALL NOT BE INSTALLED UNTIL THE ENGINEER OF RECORD HAS REVIEWED SUBMITTAL AND TAKEN NO EXCEPTION OR GIVEN A CONDITIONAL ACCEPTANCE.
28. HANDLE, STORE, AND PROTECT EQUIPMENT AND MATERIALS TO PREVENT DAMAGE BEFORE AND DURING INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. REPLACE DAMAGED OR DEFECTIVE ITEMS.
29. COORDINATE WORK WITH ALL OTHER TRADES. MAINTAIN CLEARANCES AND ADVISE OTHER TRADES OF CLEARANCE REQUIREMENTS FOR OPERATION, REPAIR, REMOVAL, AND TESTING OF EQUIPMENT.
30. DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION INSTALLATION DIMENSIONS. EACH TRADE IS RESPONSIBLE FOR FIELD VERIFICATION OF DIMENSIONS AND SHALL PERFORM FIELD MEASUREMENTS PRIOR TO FABRICATION AND/OR PURCHASE OF ANY CABLES, EQUIPMENT AND MATERIAL. REPORT ANY ROUTING DISCREPANCIES IN WRITING TO ENGINEER OF RECORD.
31. ELECTRICAL CONTRACTOR SHALL HAVE A MASTER ELECTRICIAN ON STAFF, AND LICENSED FOR THE STATE IN WHICH THIS PROJECT IS LOCATED. AN ELECTRICIAN MUST BE PRESENT AT ALL TIMES DURING THE INSTALLATION AND ENERGIZING OF THE SYSTEM.
32. ALL MATERIALS AND DEVICES SHALL BE UL LISTED.
33. PROVIDE EQUIPMENT IDENTIFICATION LABELS FOR ALL MAJOR PIECES OF EQUIPMENT INCLUDING CABINETS, ENCLOSURES, MANHOLES AND PULLBOXES, UNLESS UNITS ARE SPECIFIED WITH THEIR OWN IDENTIFICATION WITHIN PLANS. SECURE ALL NAMEPLATE TO EQUIPMENT USING 316 SS SELF-TAPPING SCREWS. PROVIDE A NAMEPLATE SCHEDULE FOR ENGINEER AND REVIEW PRIOR TO FABRICATION. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAIL.
34. ALL ABOVE GROUND CONDUIT INCLUDING ALL UNDERGROUND RISERS AND VERTICAL BENDS SHALL BE ALUMINUM.
35. CONTRACTOR IS ADVISED TO READ ALL ELECTRICAL RELATED SPECIFICATION SECTIONS PRIOR TO BIDDING AND CONSTRUCTION. SEE SPECIFICATIONS FOR LIST OF PRE-QUALIFIED ELECTRICAL CONTRACTORS AND PANEL FABRICATORS.
36. CIVIL, STRUCTURAL, ARCHITECTURAL, AND MECHANICAL PLANS MAY CONTAIN CRITICAL INFORMATION RELEVANT TO ELECTRICAL WORK AND SHOULD BE REVIEWED PRIOR TO BIDDING AND CONSTRUCTION.
37. CONDUIT RUNS INSTALLED BELOW-GRADE IN EARTH SHALL BE SCH 80 PVC. USE MANUFACTURER'S APPROVED CEMENT FOR JOINING COUPLINGS AND ADAPTERS. PNEUMATICALLY TAMP BACKFILL IN SIX INCHES (6 IN.) TO EIGHT INCHES (8 IN.) BELOW FINISHED GRADE. INSTALL CONTINUOUS RUN OF "BURIED ELECTRIC" MARKING TAPE AND COMPLETE BACKFILL TO FINISHED GRADE.

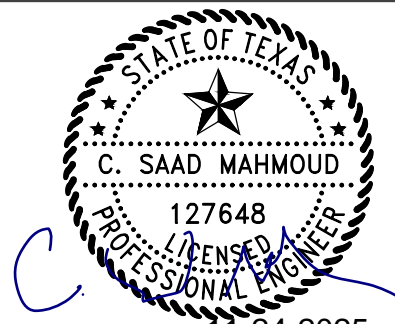


4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P: (210) 681.2951 F: (210) 523.7112

FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL  
GENERAL NOTES

DATE
11/24/2025
PROJECT NO.
04024-003
DRAWN BY
CSM
CHECKED BY
EWB

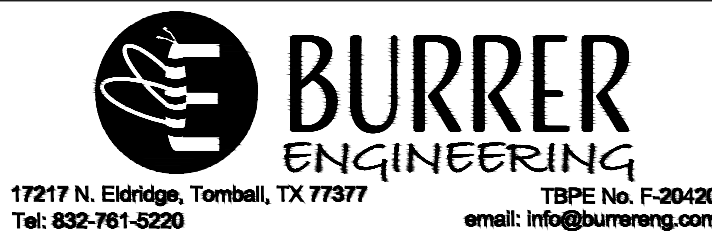
REVISIONS
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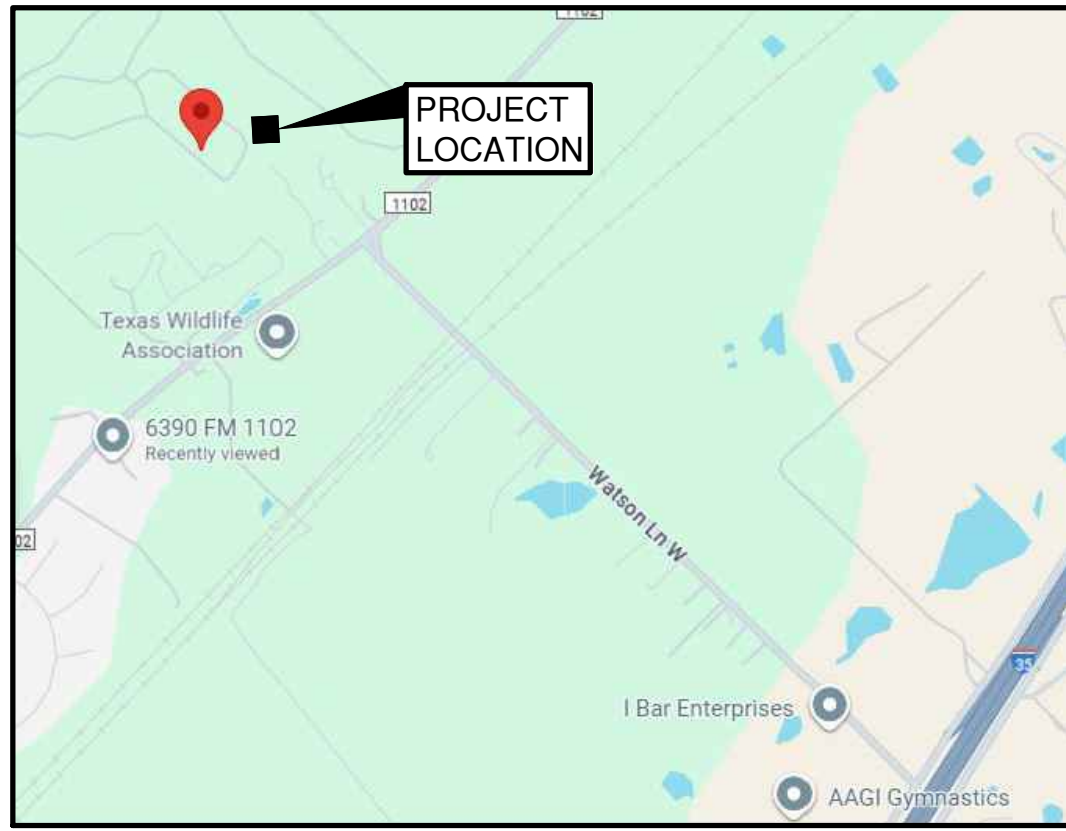
CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

E0.02

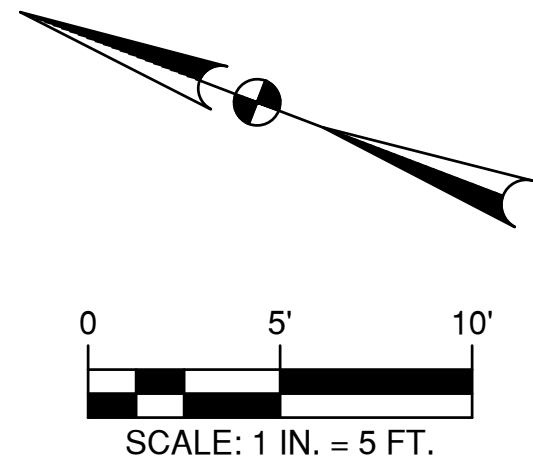






VICINITY MAP

PROJECT COORDINATES
6390 FM 1102 NEW BRAUNFELS, TX 78132

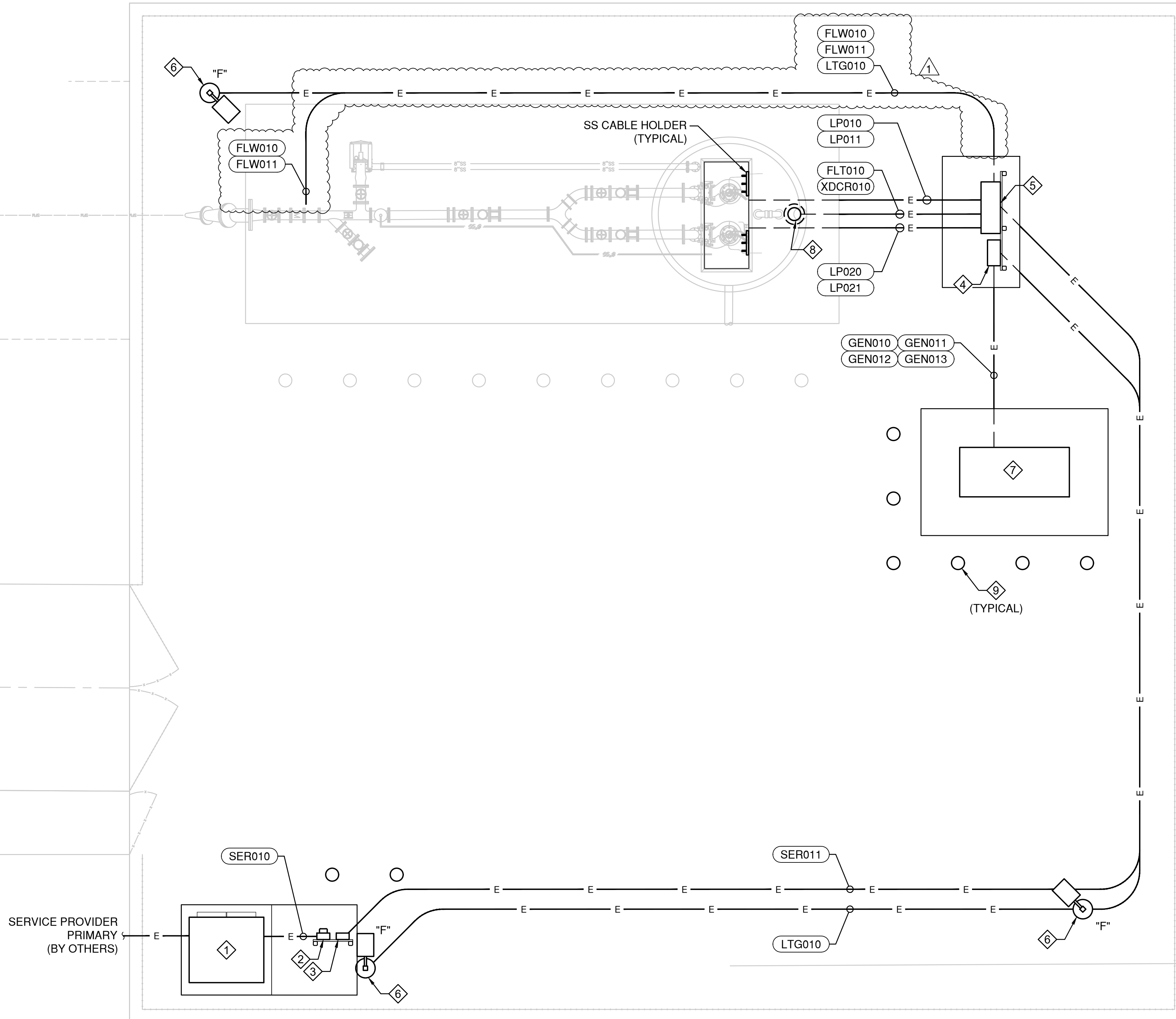


KEYED NOTES: <#>

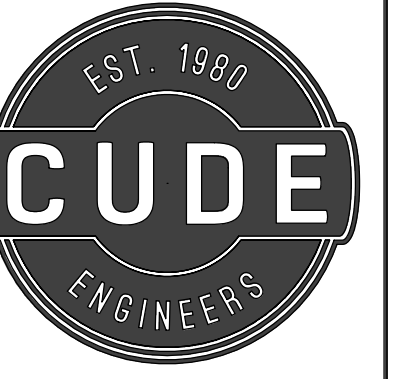
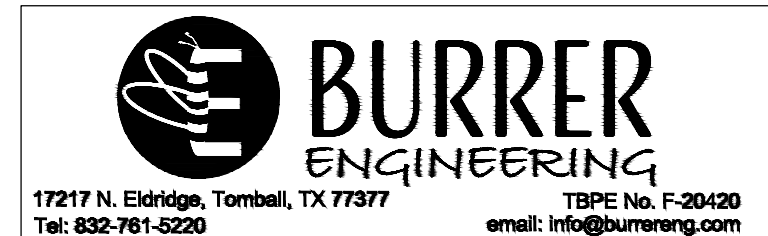
- PAD-MOUNTED SERVICE TRANSFORMER (RE: NOTE 1)
- METER (RE: NOTE 1)
- MAIN BREAKER (RE: NOTE 1)
- AUTOMATIC TRANSFER SWITCH.
- LIFT PUMP CONTROL CABINET.
- AREA LIGHT.
- STANDBY DIESEL GENERATOR
- HANDHOLE.
- BOLLARDS (TYPICAL).

GENERAL NOTES:

- COORDINATE FINAL LOCATION OF SERVICE TRANSFORMER, METER, AND SERVICE DISCONNECT WITH SERVICE PROVIDER (NEW BRAUNFELS UTILITIES (NBU). REFER TO NBU ELECTRICAL SPECIFICATION DRAWING: METERING ASSEMBLY UNDERGROUND SERVICE ON RACK 100AMP - 200 AMP FOR INSTALLATION REQUIREMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD SELECTING OPTIMUM ROUTING OF CONDUITS.
- ALL ELECTRICAL EQUIPMENT CONCRETE FOUNDATIONS ARE TO BE INSTALLED ABOVE FINISHED GRADE. ADDITIONAL ELEVATION DUE TO FLOOD PLANE REQUIREMENTS ARE NOT SHOWN.
- PROVIDE GROUND CONNECTION AT SERVICE, PANELS, METALLIC EQUIPMENT AT RACK, PIPING, AND ALL METALLIC PARTS WITHIN PROJECT SITE.
- REFER TO CONDUIT SCHEDULE FOR FULL CONDUIT AND CABLE REQUIREMENTS.
- CONDUITS SHALL NOT BE INSTALLED UNDERNEATH CONCRETE STRUCTURES, MEANS OF EGRESS, OR WALKWAYS. ROUTE AROUND EQUIPMENT AND AVOID CONFLICT WITH OTHER UNDERGROUND EQUIPMENT. ROUTE DUCTBANK 24 INCHES BELOW UTILITY LINES.
- EQUIPMENT SHALL NOT BE INSTALLED WITHIN ELECTRICAL EASEMENTS. WHERE EASEMENT CONFLICT EXISTS, CONTACT ENGINEER PRIOR TO INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ANY AND ALL EASEMENTS.
- DO NOT INSTALL CONCRETE FOR EQUIPMENT OR DUCTBANK OVER WATER OR SEWER LINES. FIELD VERIFY AND MARK ALL UNDERGROUND LINES.
- EQUIPMENT SHOWN MAY NOT BE TO SCALE. REFER TO ALL PLAN SHEETS AND ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION. REFER TO DRAWINGS FROM OTHER DISCIPLINES FOR SITE DIMENSIONS. SUBMIT DIMENSIONED LAYOUT PLANS FOR ALL WORK. DO NOT START INSTALLATION UNTIL ALL SUBMITTALS ARE REVIEWED BY ENGINEER.
- ALL EQUIPMENT WORKING SPACE SHALL BE PER NEC. PROVIDE ADEQUATE WORKING SPACE FOR ALL ELECTRICAL EQUIPMENT.
- FIELD VERIFY ALL UNDERGROUND UTILITIES, PIPING, CONDUITS, AND OBSTRUCTIONS PRIOR TO EXCAVATING. REPAIR ANY DAMAGE TO EXISTING OBSTRUCTIONS TO ORIGINAL CONDITION.
- REFER TO CIVIL AND/OR STRUCTURAL PLANS FOR ADDITIONAL MODIFICATIONS.
- COORDINATE INSTALLATION OF PUMP STATION CONDUITS WITH LOCATION OF GUIDE RAILS FOR CABLE CLEARANCE.
- PROVIDE HEAVY DUTY SS KELLUM GRIPS FOR PUMP CABLES. FLOATS. INSTALL FLOATS CLEAR OF INTAKE. PROVIDE STILLING WELL AS NEEDED.
- CABLE HOLDER SHOWN FOR CLARITY. FIELD LOCATE.
- COORDINATE INSTALLATION OF CONDUITS WITH LOCATIONS OF GUIDE RAILS FOR CABLE CLEARANCE.
- SEAL ALL CONDUITS FROM WET WELL INTO TERMINAL BOX TO PREVENT CORROSIVE GAS DAMAGE.



ELECTRICAL SITE PLAN  
SCALE: 1 IN. = 5 FT.

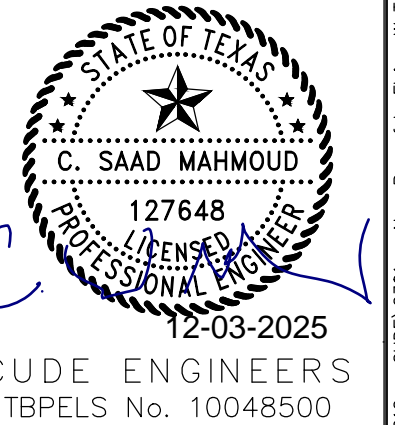


4122 Pond Hill Road, Suite 101  
San Antonio, Texas 78231  
P: (210) 681.2951 F: (210) 523.7112

FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL SITE PLAN -  
DUPLEX LIFT STATION

DATE
12/03/2025
PROJECT NO.
04024-003
DRAWN BY
CSM
CHECKED BY
EWB

12-03-25
REVISIONS
1. ADDENDUM NO.1
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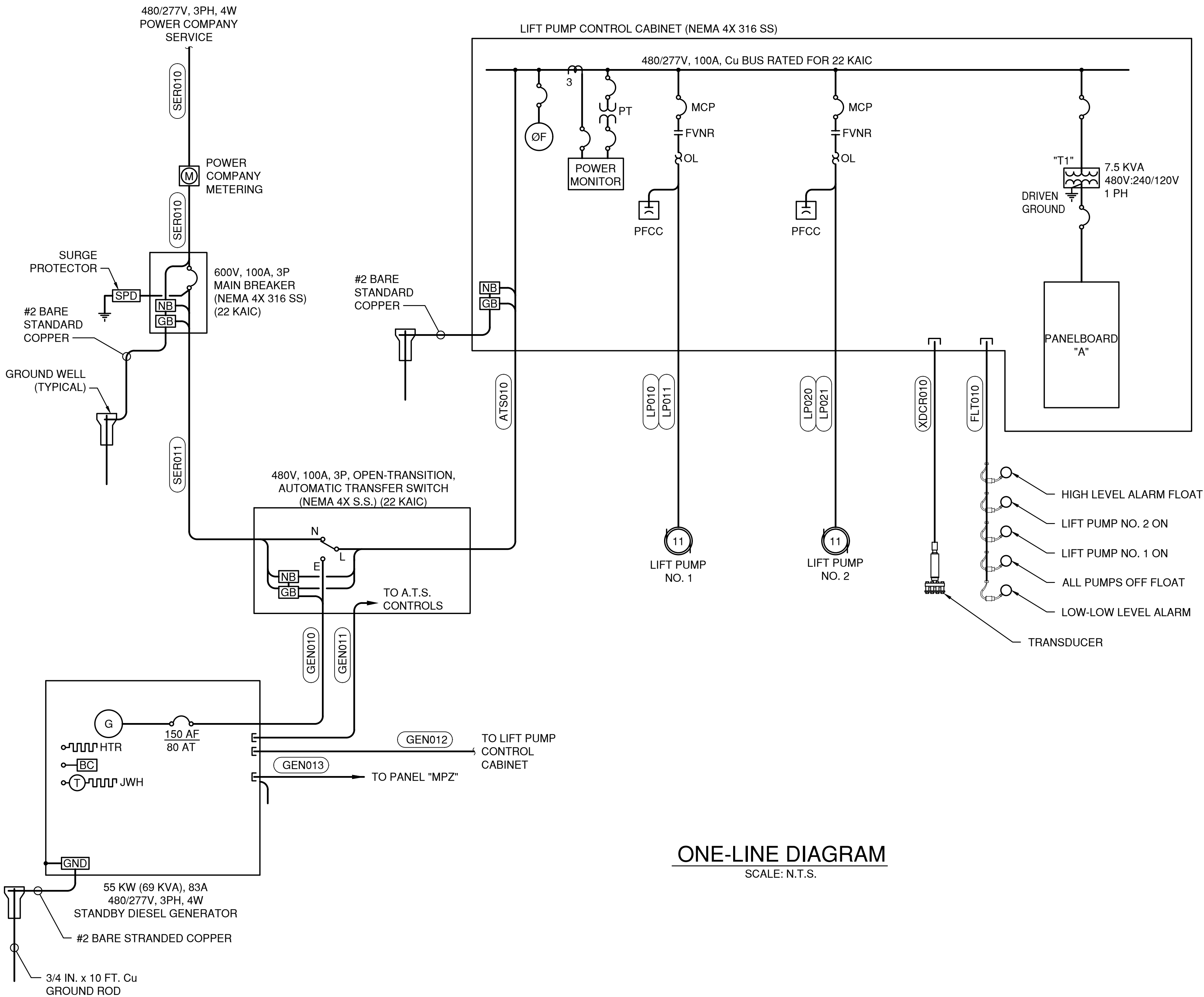


CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

E1.01



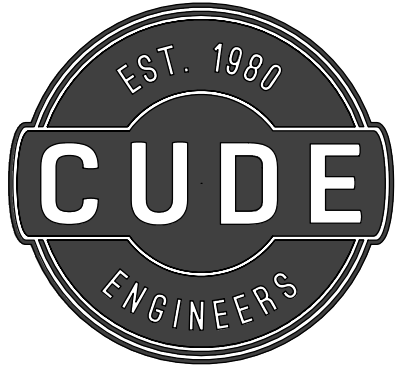


GENERAL NOTES:

1. PROVIDE ALL REQUIRED ALARM AND DEVICE POWER CONDUCTORS FOR LOCAL PANELS INSTALLED NEAR MOTORS AND EQUIPMENT. SEE ONE-LINE DIAGRAM AND EQUIPMENT SPECIFICATIONS FOR REQUIREMENTS. CONDUCTORS MAY BE ROUTED IN POWER CONDUITS WHERE INSULATION RATING IS 600 VOLTS AND WHERE CONDUIT AREA/SPACE IS PER NEC, OR SEPARATE 1 INCH CONDUIT SHALL BE PROVIDED.
2. REFER TO CONDUIT/CABLE SCHEDULE FOR ADDITIONAL DETAILS.
3. NEUTRAL BONDING PER NATIONAL ELECTRICAL CODE ARTICLE 250.
4. COORDINATE ALL CONNECTIONS TO GENERATOR WITH MANUFACTURER.
5. ALL SERVICE AND MOTOR FEEDER CONDUCTORS TO BE XHHW-2, 600V RATED.
6. PROVIDE CSBE SEALS ON ALL CONDUITS TO AND FROM WET WELL.
7. ALL ENCLOSURES SHALL BE NEMA 4X 316 SS UNLESS NOTED OTHERWISE.
8. ALL EQUIPMENT SHALL BE UL LISTED.

ELECTRICAL LOAD ANALYSIS					
LOAD		AMPS			
		PH A	PH B	PH C	
LIFT PUMP NO. 1	11 HP 10 KVA	15	15	15	
LIFT PUMP NO. 2	11 HP 10 KVA	15	15	15	
TRANSFORMER "T1"	7.5 KVA	16	-	16	
25% OF LARGEST MOTOR	2 KVA	3	3	3	
TOTAL LOAD	34 KVA	49	33	49	
SERVICE AMPACITY @ 480/277V, 3PH, 4W	75 KVA	100	100	100	
SPARE AMPACITY		51	67	51	
GENERATOR LOAD		45	45	45	
GENERATOR AMPACITY	69 KVA	83	83	83	
GENERATOR SPARE		38	38	38	

USE 22 KAIC RATED DEVICES AND BRACING

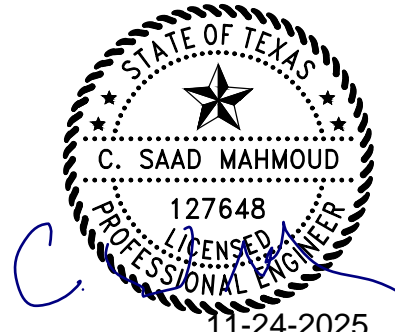


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FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL ONE-LINE DIAGRAM  
- DUPLEX LIFT STATION

DATE  
11/24/2025  
PROJECT NO.  
04024-003  
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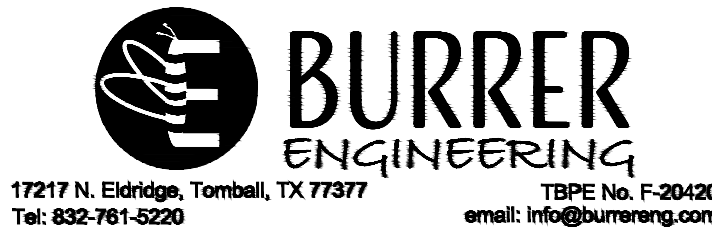
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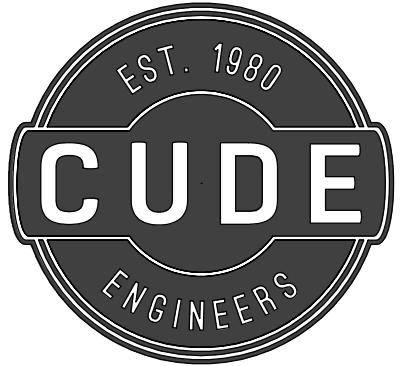
CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

E2.01





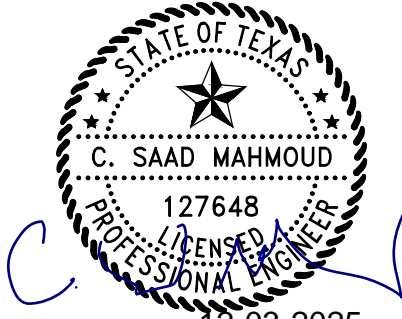


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FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL SCHEDULES –  
DUPLEX LIFT STATION

DATE  
12/03/2025  
PROJECT NO.  
04024–003  
DRAWN BY  
CSM  
CHECKED BY  
EWB

12-03-25	1	ADDENDUM NO.1	2	3	4	5	6	7	8
REVISIONS	1	ADDENDUM NO.1	2	3	4	5	6	7	8



CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22–118XXXX

E3.01

CABLE AND CONDUIT SCHEDULE						
CABLE/CONDUIT TAG	CONDUIT QUANTITY	CONDUIT SIZE	FROM	TO	CONDUCTOR (EACH CONDUIT)	DESCRIPTION
ATS010	1	2 IN.	AUTOMATIC TRANSFER SWITCH	CONTROL CABINET	3-#1 + #6 GND	DUPLEX LIFT STATION POWER
FLT010	1	1 & 1/2 IN.	CONTROL CABINET	WET WELL HANDHOLE	(5) MANUFACTURER'S CABLE	DUPLEX LIFT STATION FLOAT CONTROL
FLW010	1	1 IN.	CONTROL CABINET	MAGNETIC FLOW METER	2 - #12 + #12 GND	FLOW METER (REMOTE AMPLIFIER) POWER
FLW011	1	1 IN.	CONTROL CABINET	MAGNETIC FLOW METER	4 - #14 + 1 #12 GND 4 - #14 TWISTED SHIELDED CABLE	FLOW METER (REMOTE AMPLIFIER) SIGNAL WIRING (MODIFY PER MANUFACTURER'S WIRING DIAGRAMS)
GEN010	1	2 IN.	EMERGENCY GENERATOR	AUTOMATIC TRANSFER SWITCH	3-#1 + #6 GND	EMERGENCY POWER
GEN011	1	1 IN.	EMERGENCY GENERATOR	AUTOMATIC TRANSFER SWITCH	4-#12 + #12 GND	ATS CONTROLS
GEN012	1	1 & 1/2 IN.	EMERGENCY GENERATOR	CONTROL CABINET	4-#12 + #12 GND	GENERATOR ALARM SIGNALS
GEN013	1	1 IN.	PANELBOARD 'A'	EMERGENCY GENERATOR	12-#10 + #12 GND	GENERATOR DEVICES (HEATER, BATTERY CHARGER, LIGHTS, RECEPTACLE)
LP010	1	1 & 1/2 IN.	CONTROL CABINET	LIFT PUMP NO. 1	3-#8 + #8 GND	LIFT PUMP NO. 1 POWER
LP011	1	1 IN.	CONTROL CABINET	LIFT PUMP NO. 1	6-#12 + #12 GND	LIFT PUMP NO. 1 CONTROLS
LP020	1	1 & 1/2 IN.	CONTROL CABINET	LIFT PUMP NO. 2	3-#8 + #8 GND	LIFT PUMP NO. 2 POWER
LP021	1	1 IN.	CONTROL CABINET	LIFT PUMP NO. 2	6-#12 + #12 GND	LIFT PUMP NO. 2 CONTROLS
LTG010	1	1 IN.	PANEL LVP	AREA LIGHTS	2-#10 + #10 GND	AREA LIGHT
REC010	1	1 IN.	PANEL LVP	WET WELL CONVENIENCE RECEPTACLE	2-#12 + #12 GND	WET WELL CONVENIENCE RECEPTACLE
SER010	1	3 IN.	SERVICE UNDERGROUND	XFMR (BY SERVICE PROVIDER)	MULE TAPE	UTILITY PRIMARY (PROVIDED BY UTILITY)
SER011	1	3 IN.	XFMR (BY SERVICE PROVIDER)	MAIN BREAKER (VIA TRANSOCKET METER FURNISHED BY SERVICE PROVIDER)	3-#1 + #6 GND	UTILITY SECONDARY (COORDINATE FINAL CONNECTION WITH SERVICE PROVIDER)
SER012	1	3 IN.	MAIN BREAKER	AUTOMATIC TRANSFER SWITCH	3-#1 + #6 GND	UTILITY SERVICE LATERAL
XDCR010	1	1 IN.	CONTROL CABINET	LEVEL TRANSDUCER	(1) MANUFACTURER'S CABLE	ANALOG LEVEL TRANSDUCER

LUMINAIRE FIXTURE SCHEDULE								
SYMBOL	DESCRIPTION	VOLTAGE	LUMENS	WATTAGE	MOUNTING	MANUFACTURER	LUMINAIRE CATALOG NUMBER	POLE DATA
AL1	ALARM LIGHT	-	-	-	PANEL	EDWARDS	125LEDFR120A-125GRD	PER DETAIL OR APPROVED EQUAL
B	STRIP LIGHT - NEMA 4X	MVOLT	4000	42	CEILING	LITHONIA	CSVT-L48-5000LM-MVOLT-40K-80CRI	CIRCUIT CONTROLLED BY EXTERNAL PHOTOCELL
F	AREA LIGHT	MVOLT	7200	51	POLE	LITHONIA	DSX1 LED-P1-40K-70CRI-T3M-MVOLT-SPA-HS-EGSR-DDBXD	PROVIDE POLE: SSS-12-4C-DM19AS-FBCSTL2PC-DDBXD CIRCUIT CONTROLLED BY EXTERNAL PHOTOCELL

PANEL PANELBOARD "A"

SERVICE VOLTAGE 120/240V

MAIN BREAKER SIZE 40A

PHASE BUS RATING 60A

NEUTRAL BUS RATING 60A

SHORT CIRCUIT RATING 22 KAIC

LOCATION SERVICE RACK

WIRE SIZE #8

NEU WIRE SIZE #8

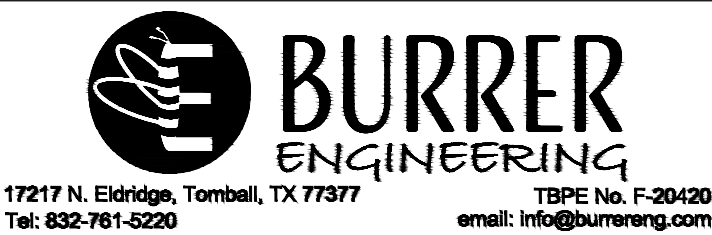
PHASE 1

MOUNTING RACK

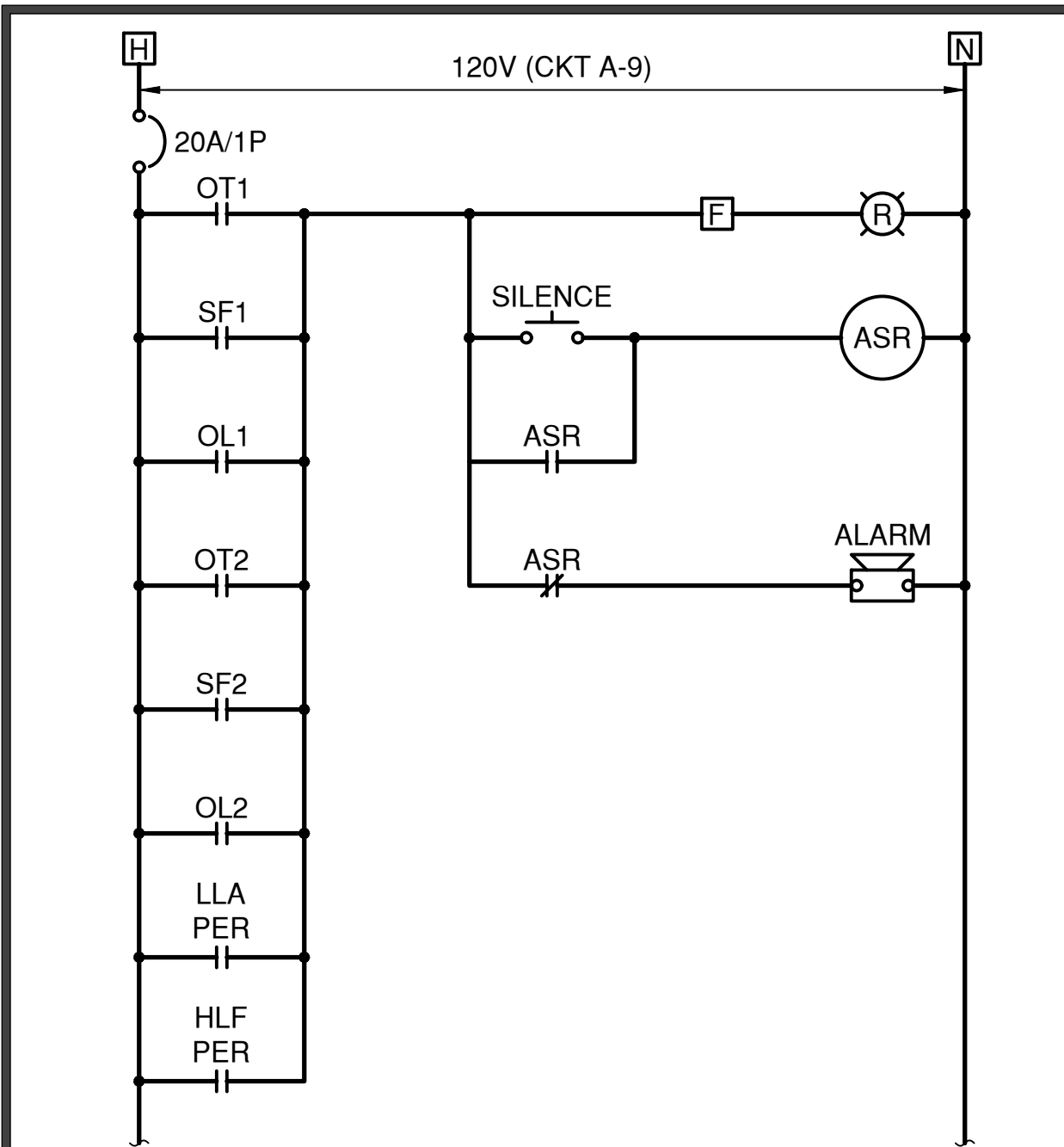
WITH:  
☒ SOLID NEUTRAL & GROUND  
☐ ISOLATED GROUND BUS  
☐ 200% NEUTRAL

NOTE: ADJ. CKTS. TO BAL. PNL.

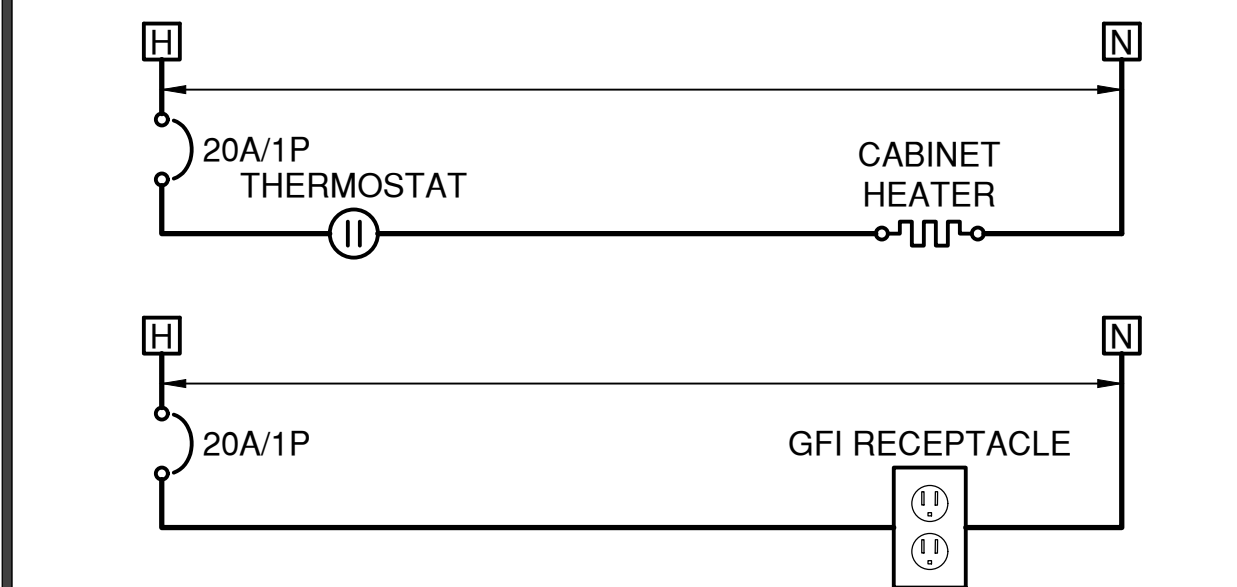
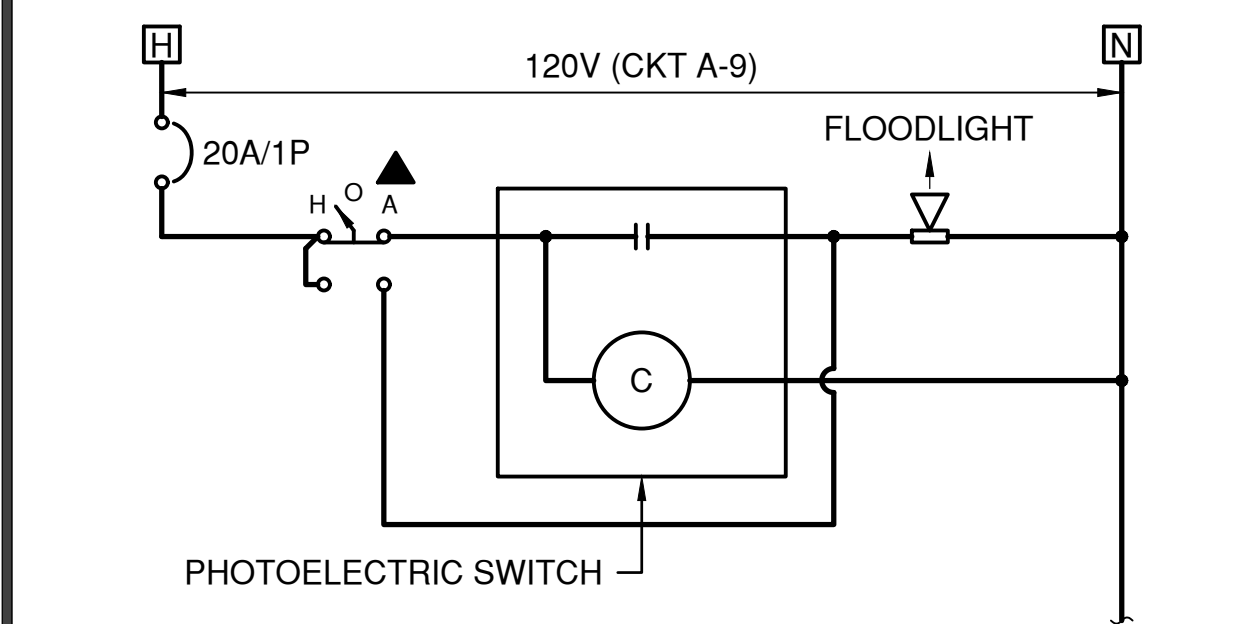
CKT. DESCRIPTION	WIRE	BREAKER		VA/WATTS		CKT NO.	CKT NO.	VA/WATTS		BREAKER		WIRE	CKT. DESCRIPTION
		POLE	AMP	A	B			A	B	POLE	AMP		
JACKET WATER HEATER	10	1	20	1500		1	2	180		1	20	12	CONV. RECEPT.
OIL PAN HEATER	10	1	20		250	3	4		42	1	20	12	CANOPY LIGHT
GENERATOR LIGHTS	12	1	20	180		5	6	153		1	20	12	AREA LIGHTS
GENERATOR CONTROLLER	12	1	20		500	7	8		300	1	20		LEVEL TRANSMITTER
GENERATOR CONV. RECEPT.	12	1	20	180		9	10	500		1	20		DUPLEX PUMP STATION CONTROLS
GENERATOR BATTERY CHARGER	12	1	20		1200	11	12		300	1	20		AUTODIALER
SPARE	12	1	20	-		13	14	-		1	20		SPARE
SPARE	12	1	20		-	15	16		-	1	20		SPARE
SPARE	12	1	20	-		17	18	-		1	20		SPARE
TOTAL PHASE A: 2693 VOLT-AMPS TOTAL PHASE B: 2592 VOLT-AMPS				TOTAL PHASE A CURRENT: 22 AMPS TOTAL PHASE B CURRENT: 22 AMPS				TOTAL CONNECTED LOAD: 5285 VA					



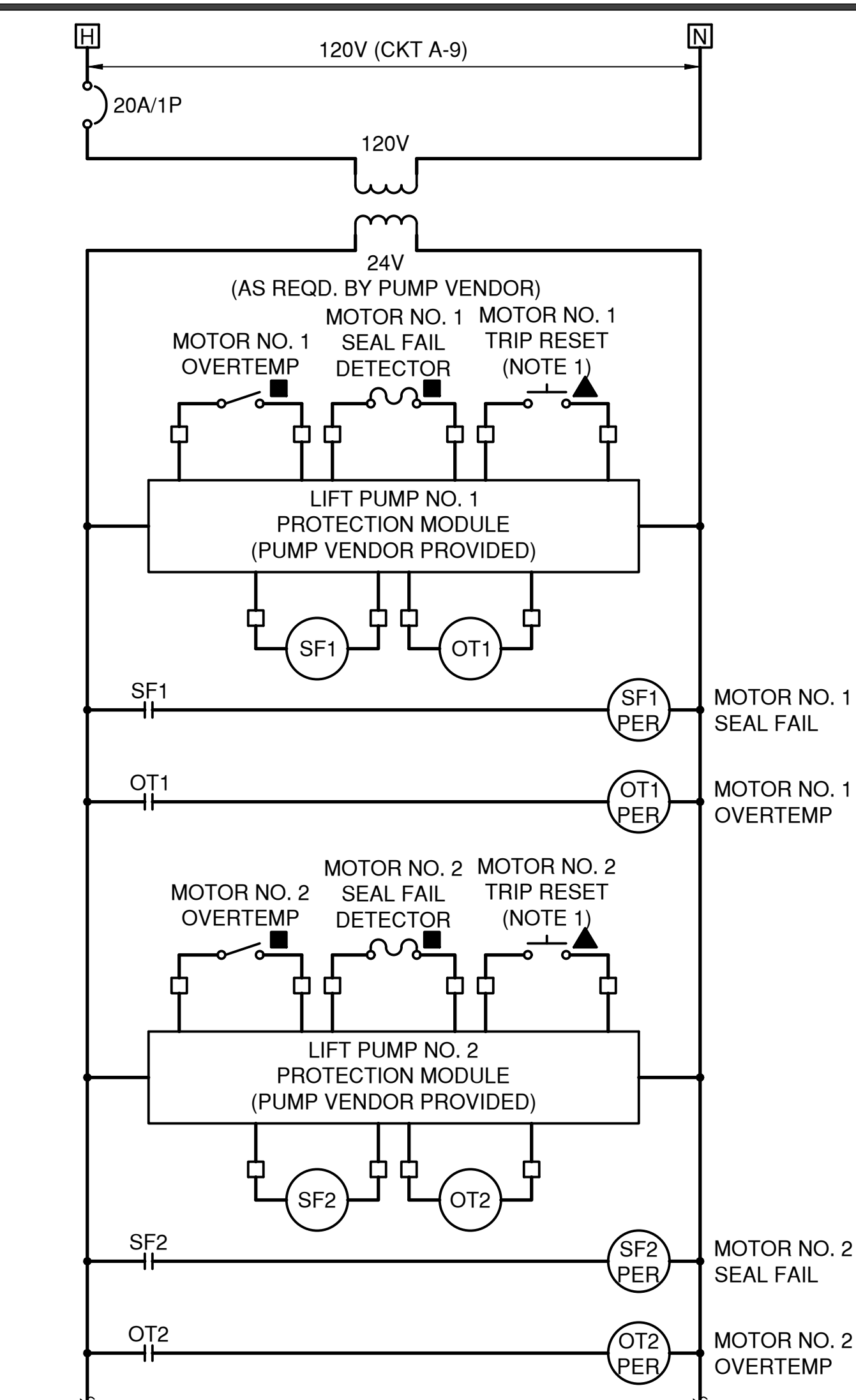




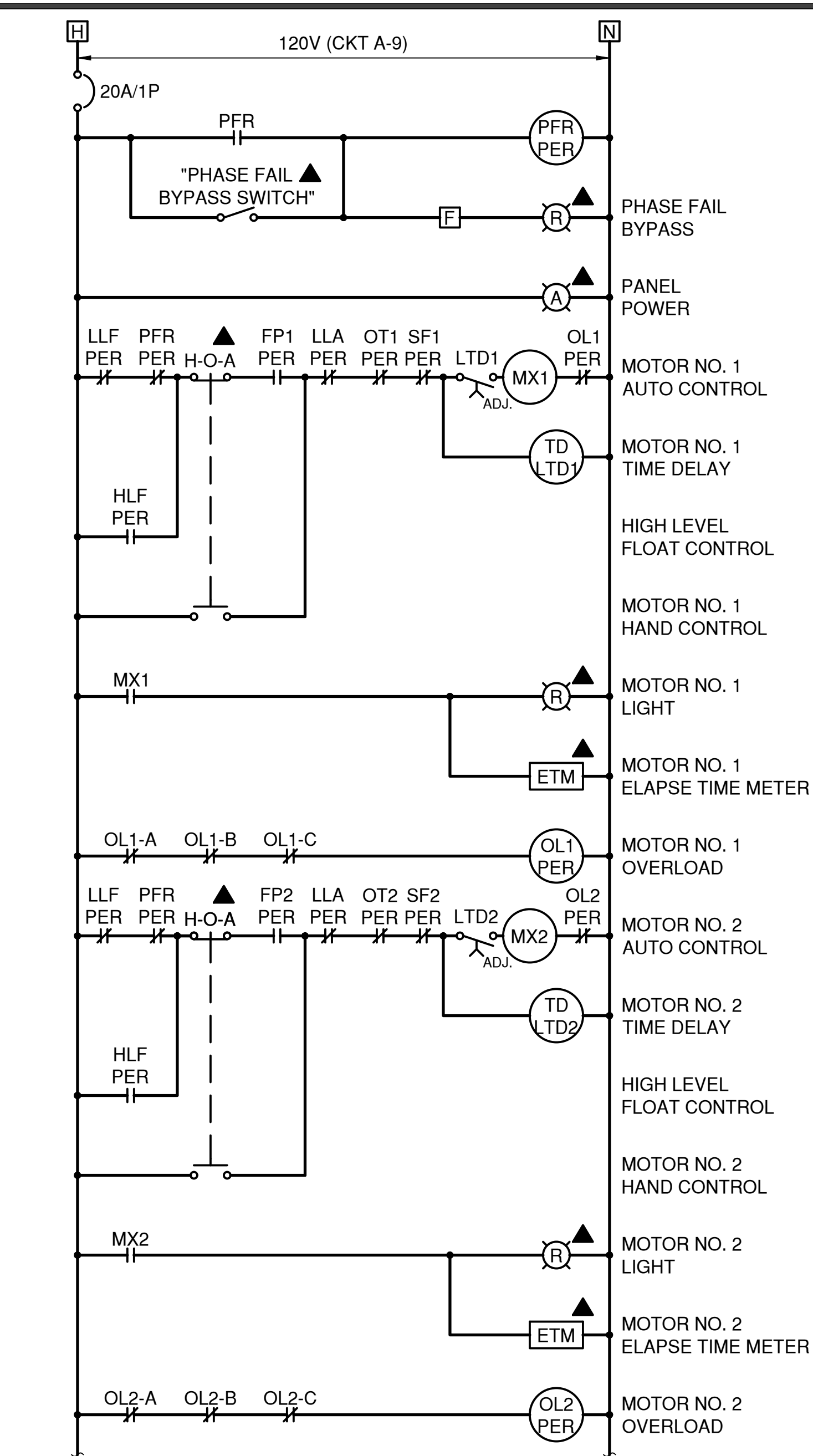
LIFT STATION PUMP ALARM CONTROL DIAGRAM



CONTROL PANEL CONTROL DIAGRAM

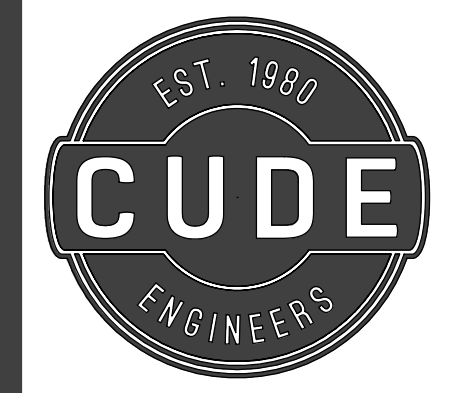


LIFT STATION PUMP PROTECTION MODULE DIAGRAM



LIFT STATION PUMP FLOAT CONTROL DIAGRAM

- GENERAL NOTES:
1. PROVIDE SINGLE ALARM RESET SWITCH FOR ALL DEVICES INCLUDING PUMP PROTECTION MODULES, OVERLOADS, AND ALARMS. MOUNT TO INNER DOOR OF CONTROL PANEL.
  2. REFER TO ABBREVIATION PAGE FOR SYMBOL LEGEND.
  3. CONTRACTOR TO INSTALL ALL SAFETY AND ACCESSORIES REQUIRED BY PUMP VENDOR.
  4. COORDINATE TIME DELAY RELAY SETTINGS SO THAT ONLY ONE PUMP WILL BE IN START MODE AT ONE TIME - START AT 30 SECOND INTERVALS.
  5. ALL INDICATING LIGHTS TO BE LED PUSH TO TEST OIL TIGHT TYPE.
  6. ALL SWITCHES, INDICATING LIGHTS, AND PUSH BUTTONS TO BE MOUNTED ON INNER SWING PANEL.
  7. ALL CONTROLS FOR EQUIPMENT INSIDE WET WELL ARE TO BE INTRINSICALLY SAFE.
  8. PROVIDE SUBMITTAL WITH ALARM WIRING DIAGRAM FOR ENGINEERS REVIEW.
  9. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504 BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON-INTRINSICALLY SAFE MOTOR FEEDER WIRING.
  10. ONLY QUALIFIED PANEL MANUFACTURERS WITH OVER 5 YEARS OF EXPERIENCE BUILDING PANELS SHALL BE ALLOWED TO BUILD PANEL.
  11. COORDINATE WITH PUMP MANUFACTURER FOR PUMP PROTECTION MODULE PROVIDE AND INSTALL MODULE SEAL FAIL AND OVERTEMP.
  12. WHERE ADDITIONAL CONTACTS ARE REQUIRED, PROVIDE ADDITIONAL CONTACT BLOCK OR ADDITIONAL RELAYS WITH COILS WIRED IN PARALLEL.
  13. PROVIDE CIRCUIT FUSES RECOMMENDED BY MANUFACTURER.
  14. COORDINATE ALL NORMALLY CLOSED AND NORMALLY OPEN CONTACTS.

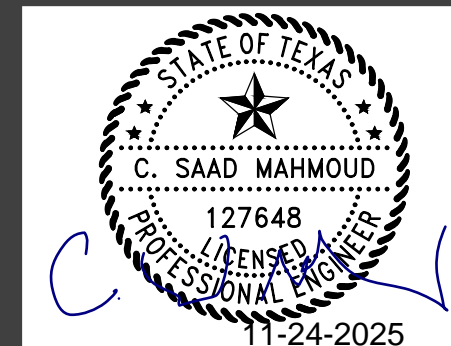


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FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL CONTROL DIAGRAMS  
SHEET NO. 1 – DUPLEX LIFT STATION

DATE  
11/24/2025  
PROJECT NO.  
04024-003  
DRAWN BY  
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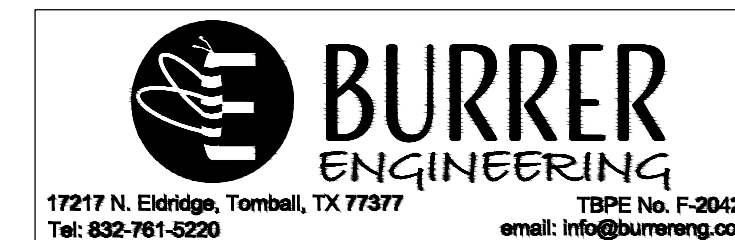
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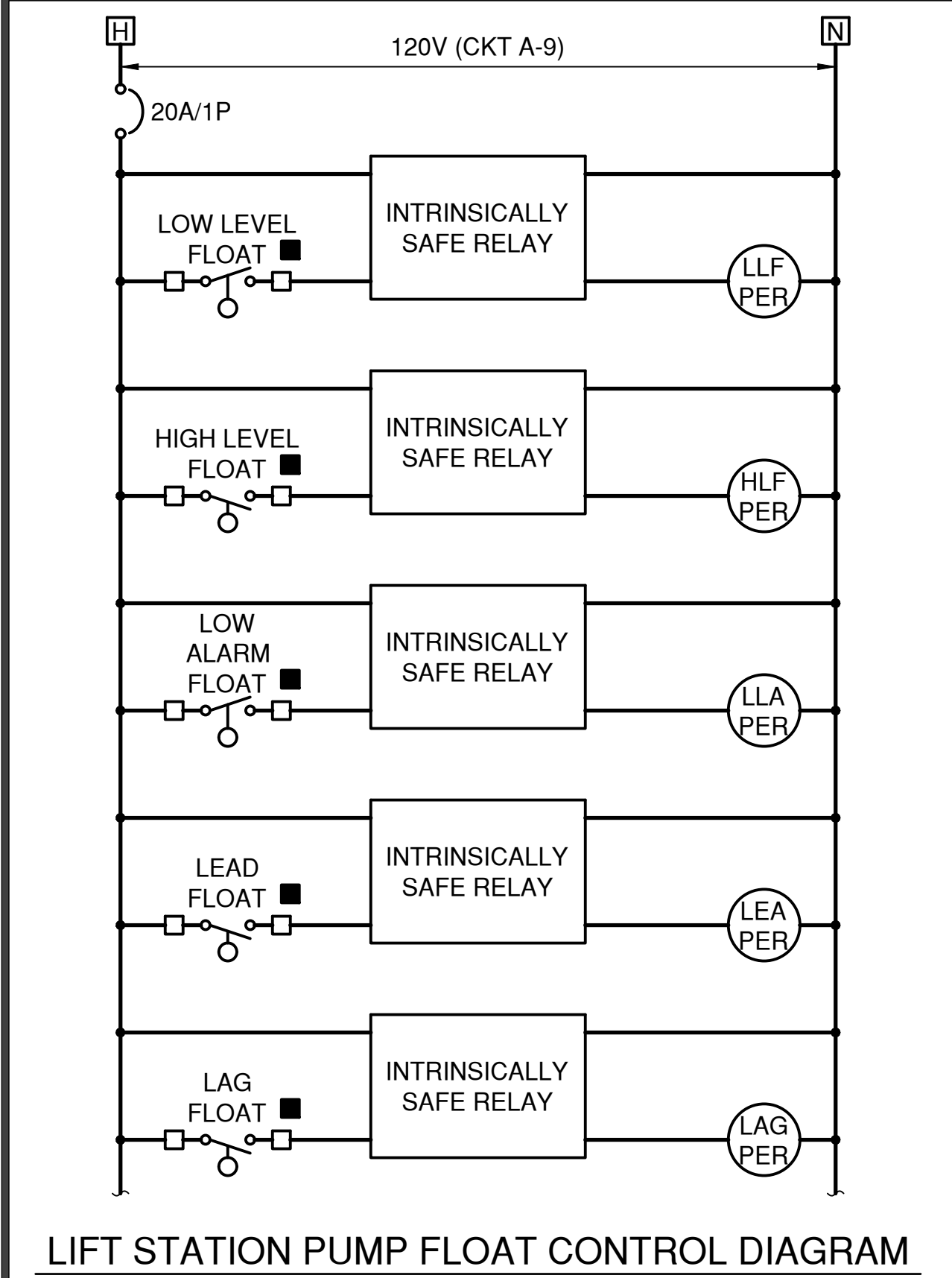
CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

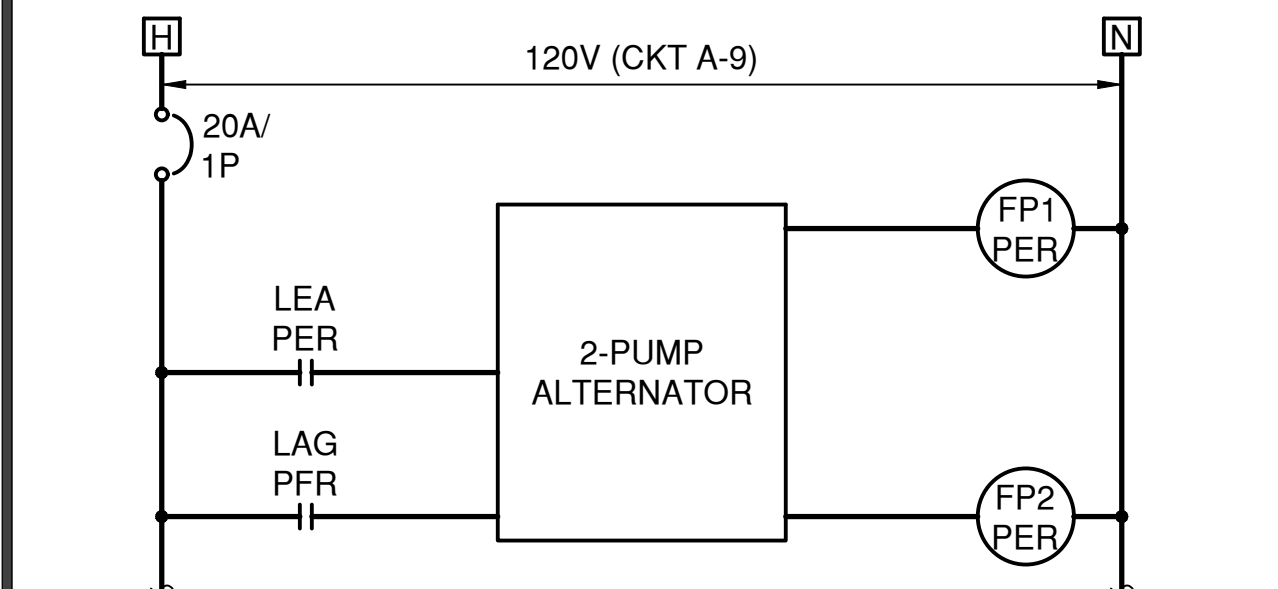
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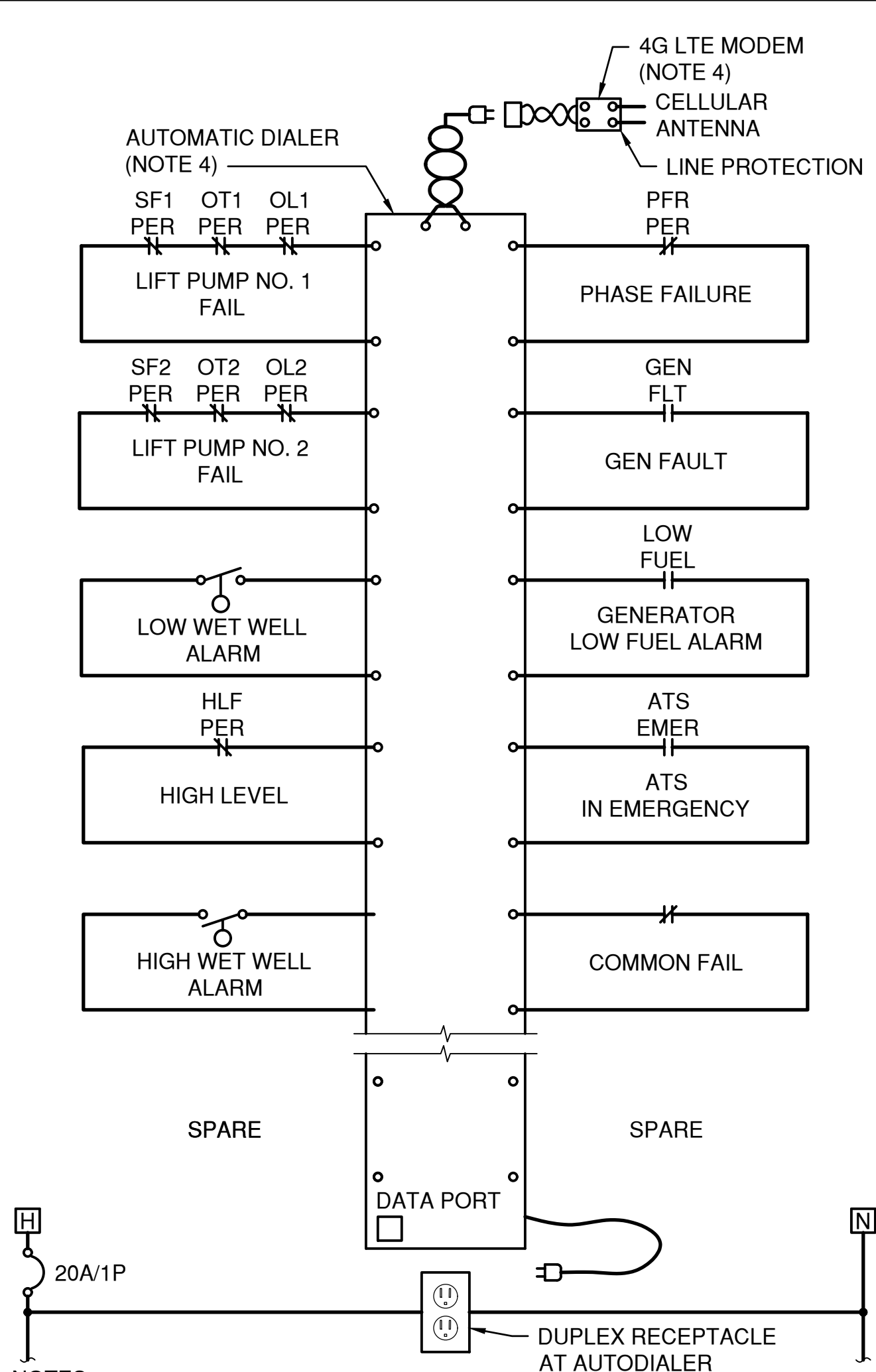




LIFT STATION PUMP FLOAT CONTROL DIAGRAM



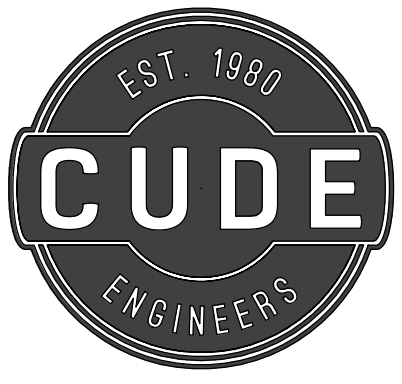
TWO (2) PUMP ALTERNATOR CONTROL DIAGRAM



- NOTES:
1. PROVIDE RELAY AND CONTACTS TO AUTODIALER. SEE GENERAL NOTES FOR ADDITIONAL DATA.
  2. COORDINATE ALL NORMALLY CLOSED (N.C.) AND NORMALLY OPEN (N.O.) CONTACT POSITIONS.
  3. WET WELLS: PROVIDE HIGH AND LOW LEVEL ALARMS VIA DIRECT CONTACTS FROM FLOAT SWITCHES.
  4. PROVIDE AUTODIALER WITH CELLULAR MODEM, CELLULAR ANTENNA, AND THREE YEAR DATA SUBSCRIPTION. MANUFACTURER SHALL BE RACO OR EQUAL AS APPROVED BY ENGINEER AND OWNER.

AUTODIALER WIRING DIAGRAM  
(TYPICAL)

- GENERAL NOTES:
1. PROVIDE SINGLE ALARM RESET SWITCH FOR ALL DEVICES INCLUDING PUMP PROTECTION MODULES, OVERLOADS, AND ALARMS. MOUNT TO INNER DOOR OF CONTROL PANEL.
  2. REFER TO ABBREVIATION PAGE FOR SYMBOL LEGEND.
  3. CONTRACTOR TO INSTALL ALL SAFETY AND ACCESSORIES REQUIRED BY PUMP VENDOR.
  4. COORDINATE TIME DELAY RELAY SETTINGS SO THAT ONLY ONE PUMP WILL BE IN START MODE AT ONE TIME - START AT 30 SECOND INTERVALS.
  5. ALL INDICATING LIGHTS TO BE LED PUSH TO TEST OIL TIGHT TYPE.
  6. ALL SWITCHES, INDICATING LIGHTS, AND PUSH BUTTONS TO BE MOUNTED ON INNER SWING PANEL.
  7. ALL CONTROLS FOR EQUIPMENT INSIDE WET WELL ARE TO BE INTRINSICALLY SAFE.
  8. PROVIDE SUBMITTAL WITH ALARM WIRING DIAGRAM FOR ENGINEERS REVIEW.
  9. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504 BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON-INTRINSICALLY SAFE MOTOR FEEDER WIRING.
  10. ONLY QUALIFIED PANEL MANUFACTURERS WITH OVER 5 YEARS OF EXPERIENCE BUILDING PANELS SHALL BE ALLOWED TO BUILD PANEL.
  11. COORDINATE WITH PUMP MANUFACTURER FOR PUMP PROTECTION MODULE PROVIDE AND INSTALL MODULE SEAL FAIL AND OVERTEMP.
  12. WHERE ADDITIONAL CONTACTS ARE REQUIRED, PROVIDE ADDITIONAL CONTACT BLOCK OR ADDITIONAL RELAYS WITH COILS WIRED IN PARALLEL.
  13. PROVIDE CIRCUIT FUSES RECOMMENDED BY MANUFACTURER.
  14. COORDINATE ALL NORMALLY CLOSED AND NORMALLY OPEN CONTACTS.

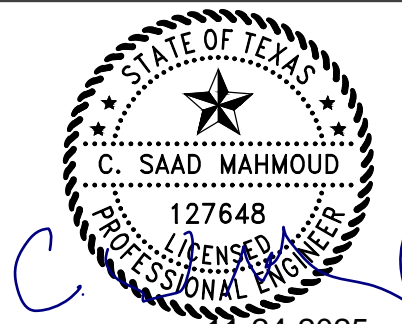


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FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL CONTROL DIAGRAMS  
SHEET NO. 2 – DUPLEX LIFT STATION

DATE
11/24/2025
PROJECT NO.
04024-003
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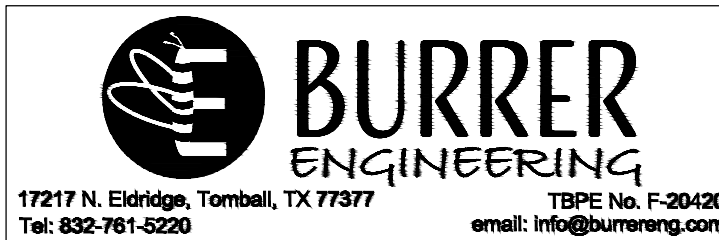
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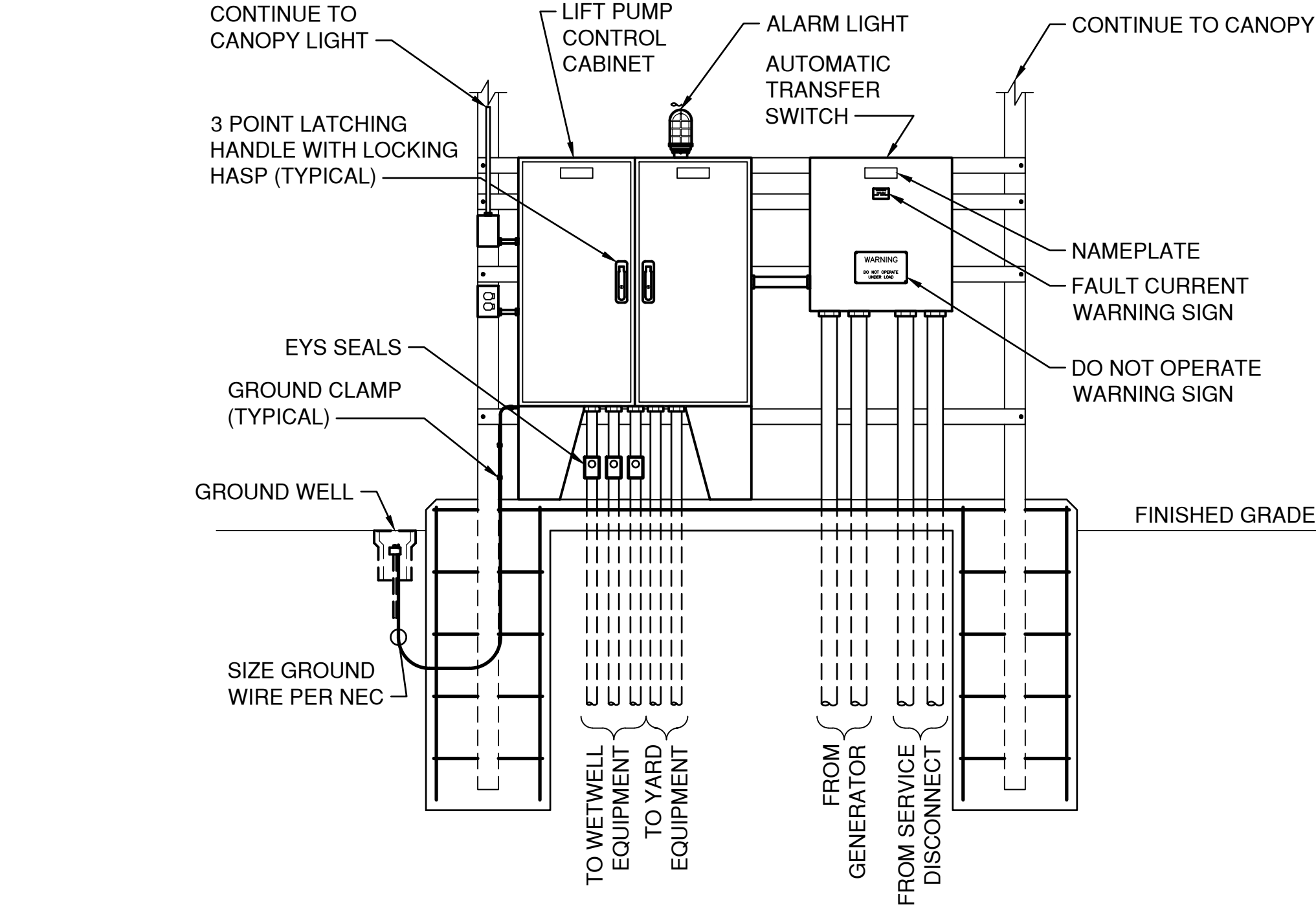
CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

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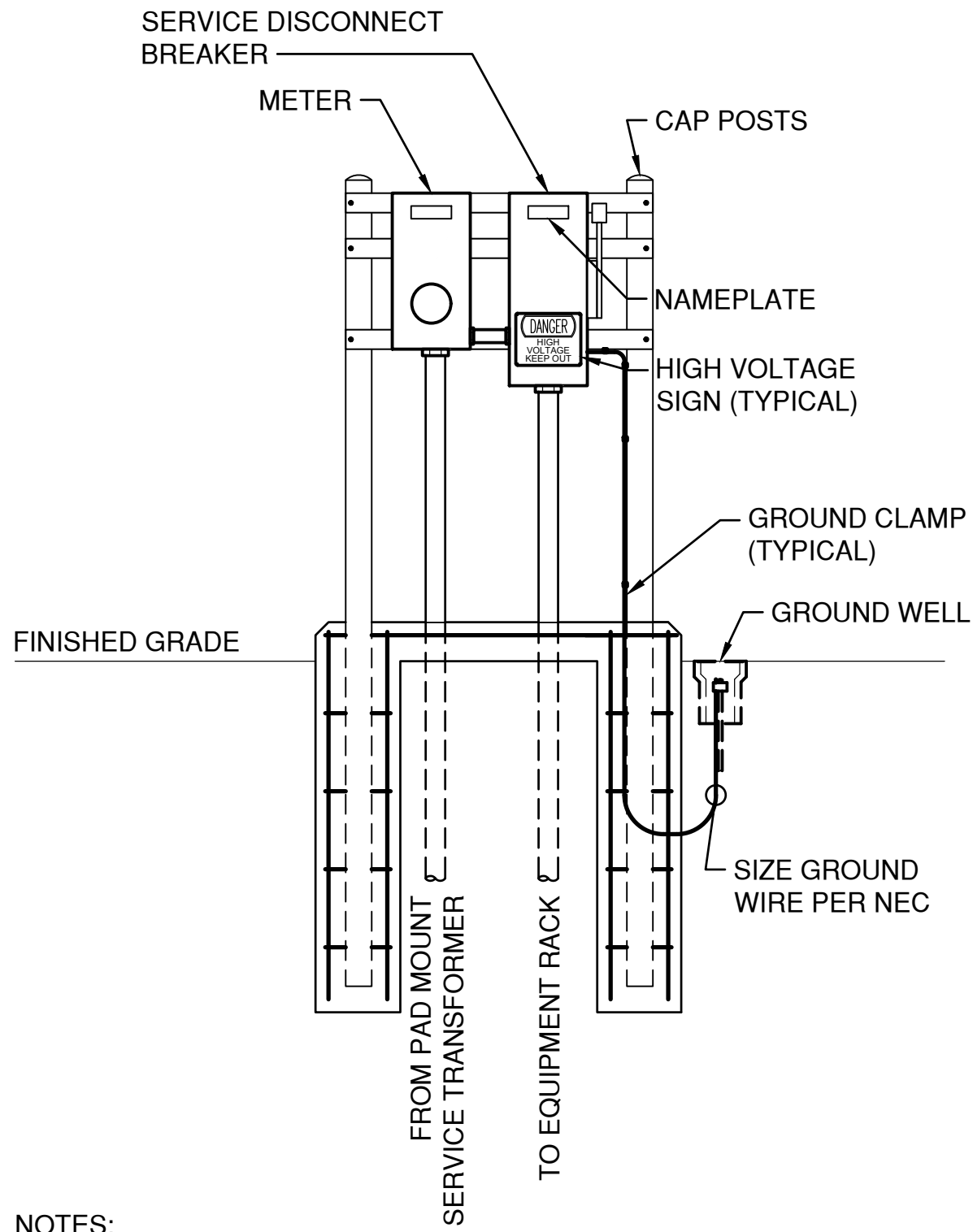




- NOTES:**
1. CONDUITS IN DETAIL ARE REPRESENTATIVE ONLY, REFER TO CONDUIT AND WIRE SCHEDULE FOR QUANTITIES AND SIZES.
  2. ALL CONDUITS SERVING DEVICES IN WET WELL SHALL BE PROVIDED WITH EYS SEALS.
  3. PROVIDE CANOPY PER DETAILS.
  4. MOUNT ALARM LIGHT AS DIRECTED BY OWNER'S REPRESENTATIVE. ALARM LIGHT TO BE VISIBLE FROM STREET.

#### ELECTRICAL EQUIPMENT RACK INSTALLATION DETAIL

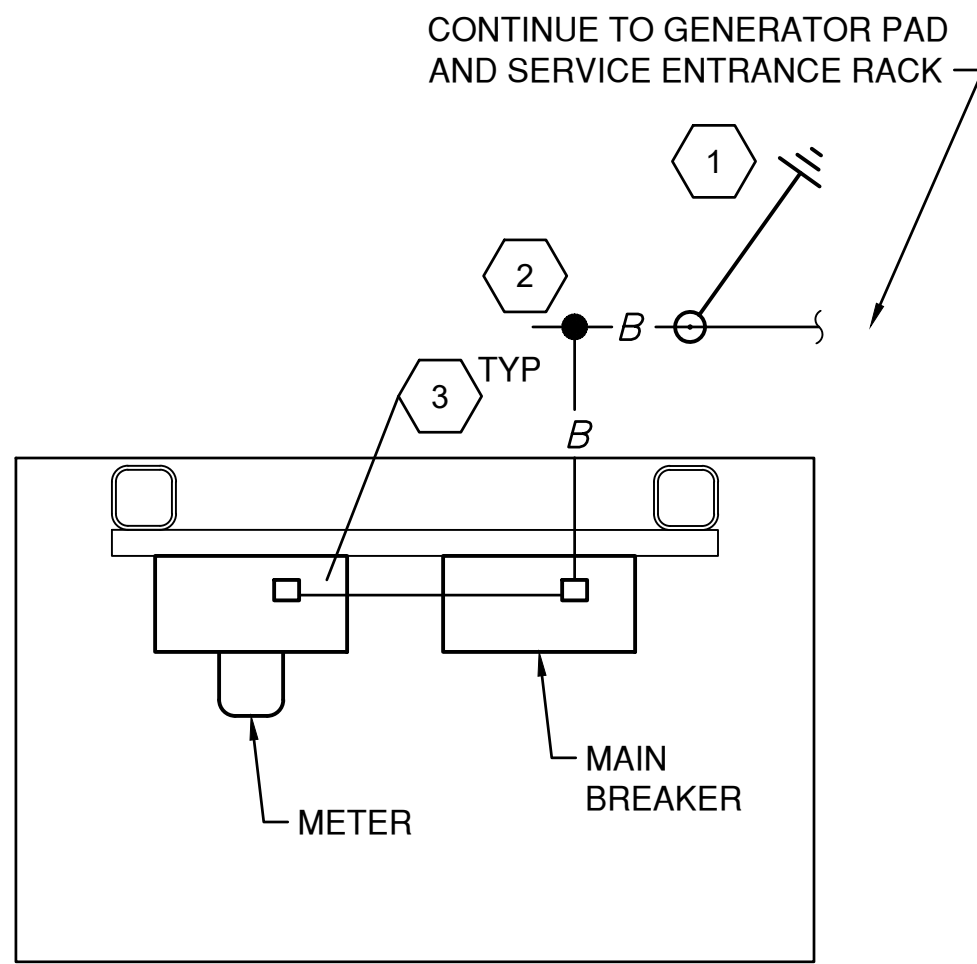
N.T.S.



- NOTES:**
1. CONDUITS IN DETAIL ARE REPRESENTATIVE ONLY, REFER TO CONDUIT AND WIRE SCHEDULE FOR QUANTITIES AND SIZES.
  2. REFER TO SERVICE PROVIDER INSTALLATION DETAILS FOR ADDITIONAL RACK AND FOUNDATION INFORMATION.

#### SERVICE ENTRANCE RACK INSTALLATION DETAIL

N.T.S.



- NOTES:**
1. THE GROUNDING SYSTEM SHALL BE TESTED BY AN APPROVED TESTING FIRM THE ENSURE THE RESISTANCE TO GROUND IS NO GREATER THAN 5 OHMS. CONTRACTOR TO SUBMIT GROUND TESTING REPORT TO OWNER'S REPRESENTATIVE.

#### KEYED NOTES:

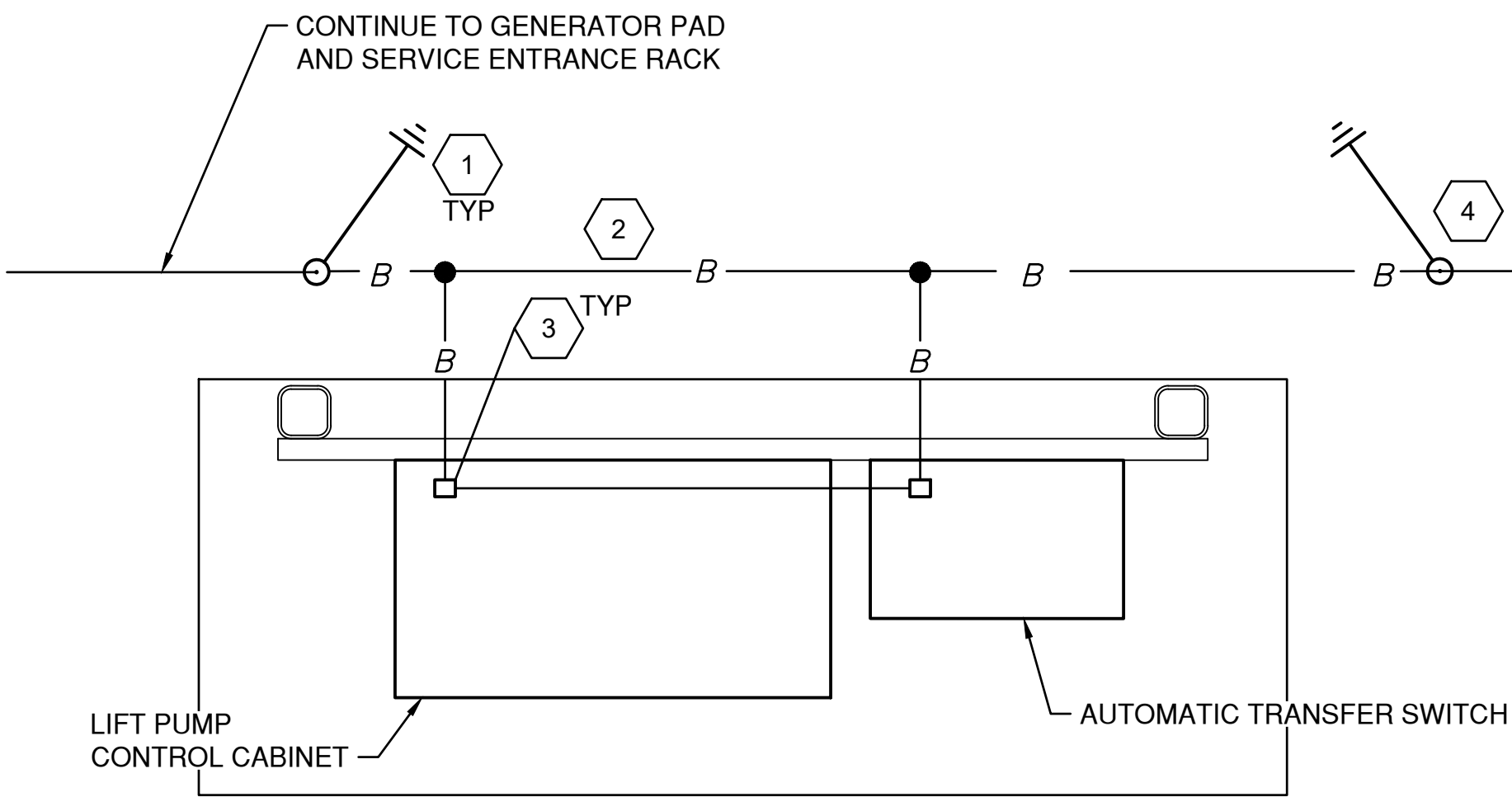
- 1 3/4" Ø X 10' COPPER CLAD GROUNDROD. REFER TO GROUNDING SYSTEM TEST WELL INSTALLATION DETAIL.
- 2 #2 SOFT DRAWN BARE COPPER CABLE BURIED MIN 18" BELOW GRADE (TYP ALL BELOW GRADE CABLE). EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS.
- 3 EXTEND UP SERVICE DISCONNECT AND GROUND TO GROUND BUS.

#### SERVICE ENTRANCE RACK GROUNDING DETAIL

N.T.S.

#### GENERAL NOTES:

1. ALUMINUM RME
2. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS, WASHERS, ETC. SHALL BE TYPE 316 STAINLESS STEEL.



#### NOTES:

1. THE GROUNDING SYSTEM SHALL BE TESTED BY AN APPROVED TESTING FIRM THE ENSURE THE RESISTANCE TO GROUND IS NO GREATER THAN 5 OHMS. CONTRACTOR TO SUBMIT GROUND TESTING REPORT TO OWNER'S REPRESENTATIVE.

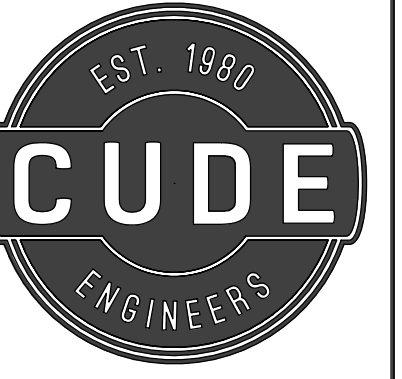
#### KEYED NOTES:

- 1 3/4"ØX10' COPPER CLAD GROUNDROD. EXOTHERMICALLY WELD TO GROUND CABLE BURIED MIN 18" BELOW GRADE
- 2 #4/0 SOFT DRAWN BARE COPPER CABLE BURIED MIN 18" BELOW GRADE (TYP ALL BELOW GRADE CABLE). EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS
- 3 EXTEND INTO EACH PANEL AND GROUND TO GROUND BUS.
- 4 REFER TO GROUNDING SYSTEM TEST WELL INSTALLATION DETAIL.

#### LIFT STATION ELECTRICAL RACK GROUNDING DETAIL

N.T.S.

3. UNLESS OTHERWISE INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
4. ALL ENCLOSURES, HARDWARE, STRAPS, AND ANCHORS TO BE 316 SS.
5. HARDWARE, ANCHORS, AND HINGED PIN SHALL BE 316 SS. PROVIDE WP SWITCH AND WP GFI RECEPTACLE OUTLET WITH "IN-USE" COVER.

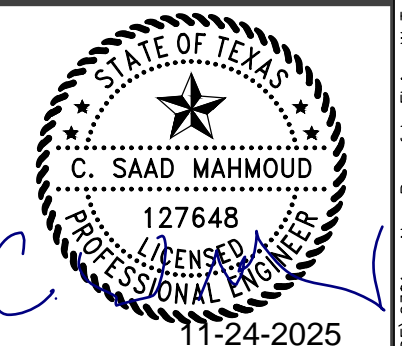


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San Antonio, Texas 78231  
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## FLYING W SANITARY SEWER IMPROVEMENTS ELECTRICAL DETAILS SHEET NO. 1

DATE	11/24/2025
PROJECT NO.	04024-003
DRAWN BY	CSM
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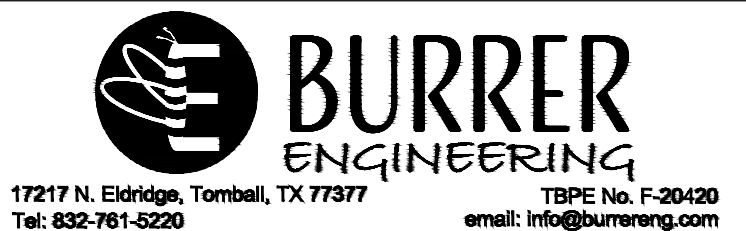
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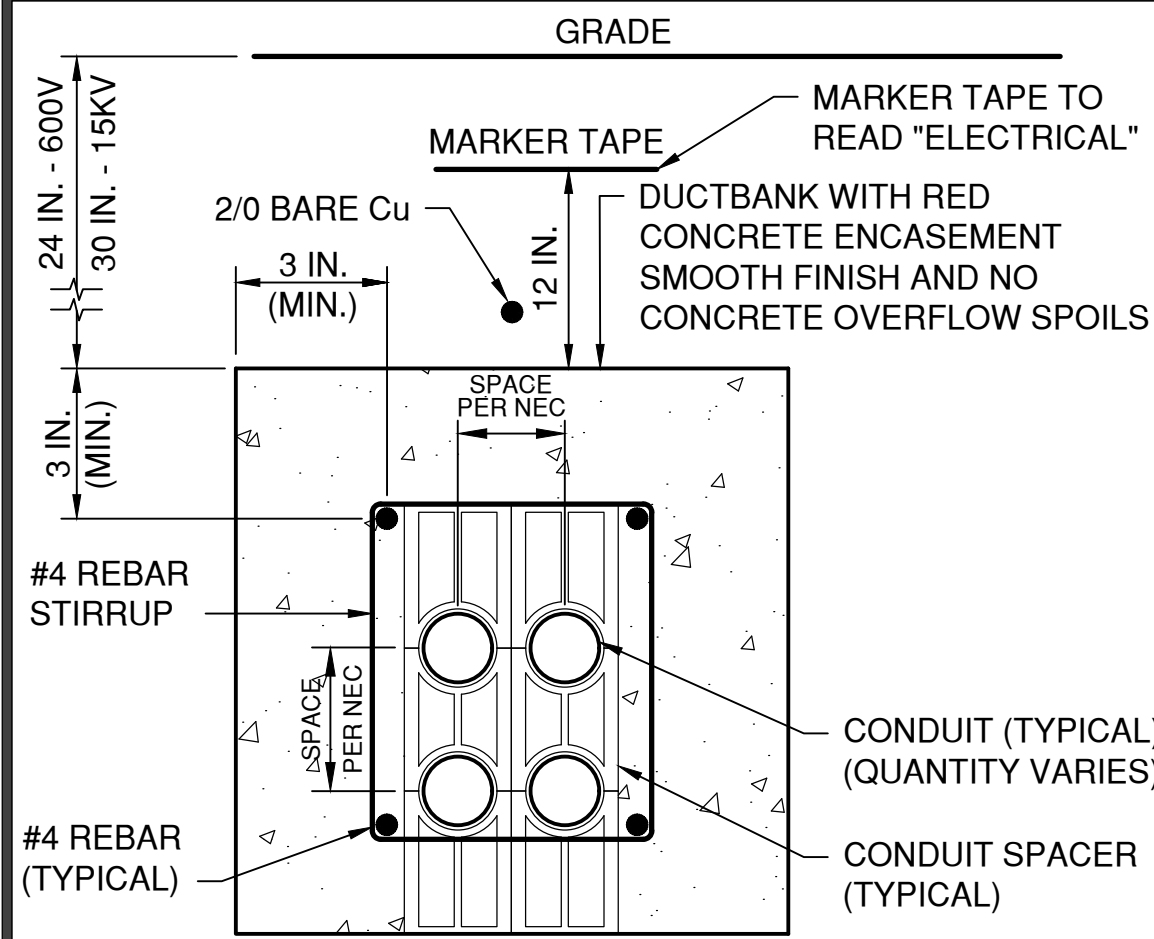
CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

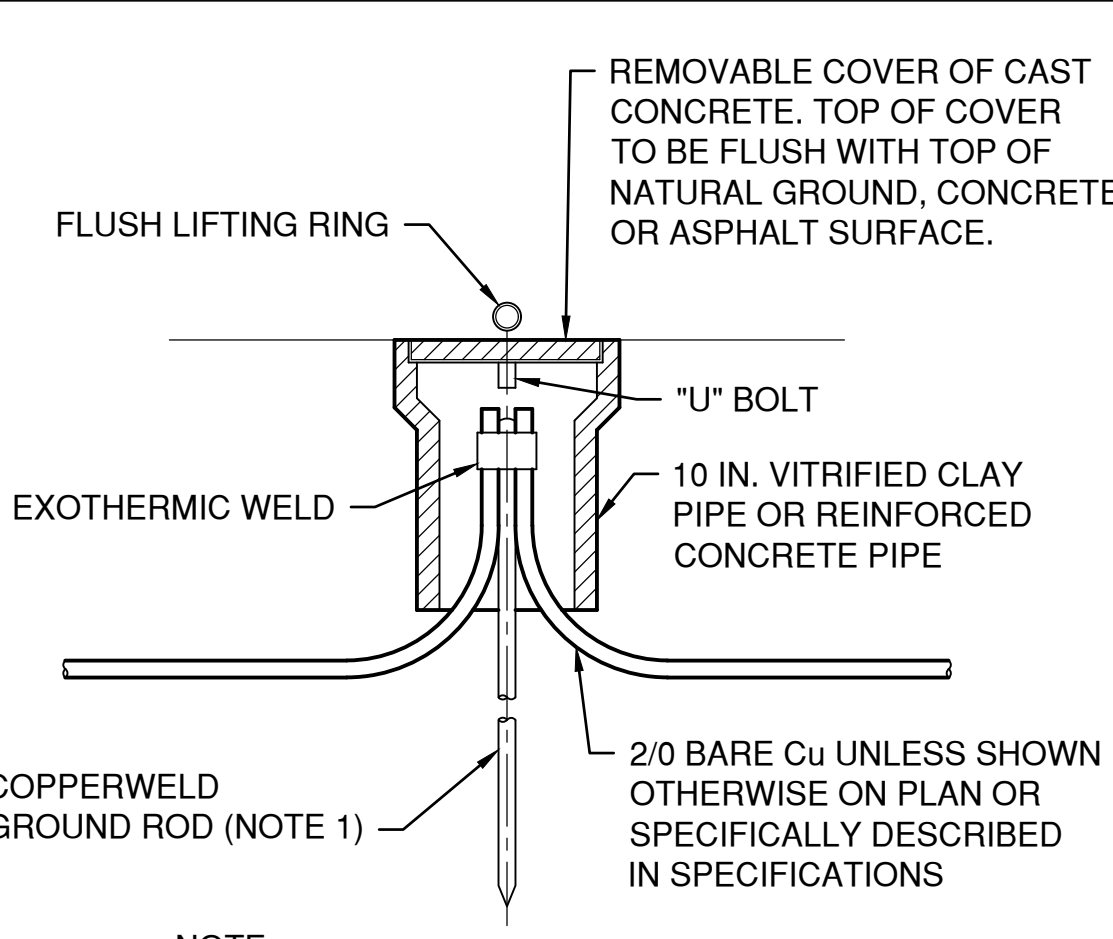
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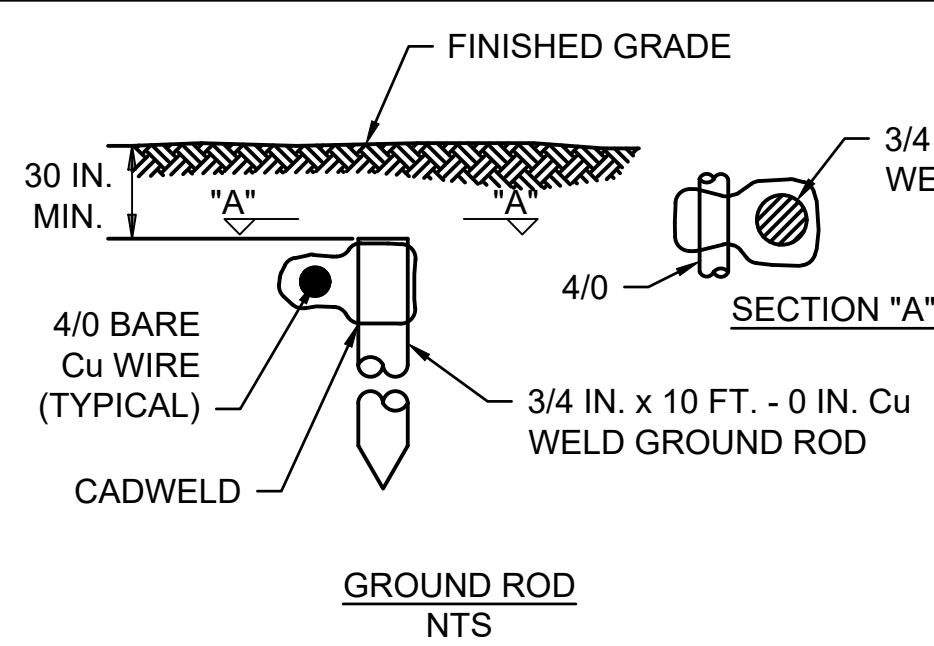


DUCTBANK CONSTRUCTION DETAIL  
N.T.S.



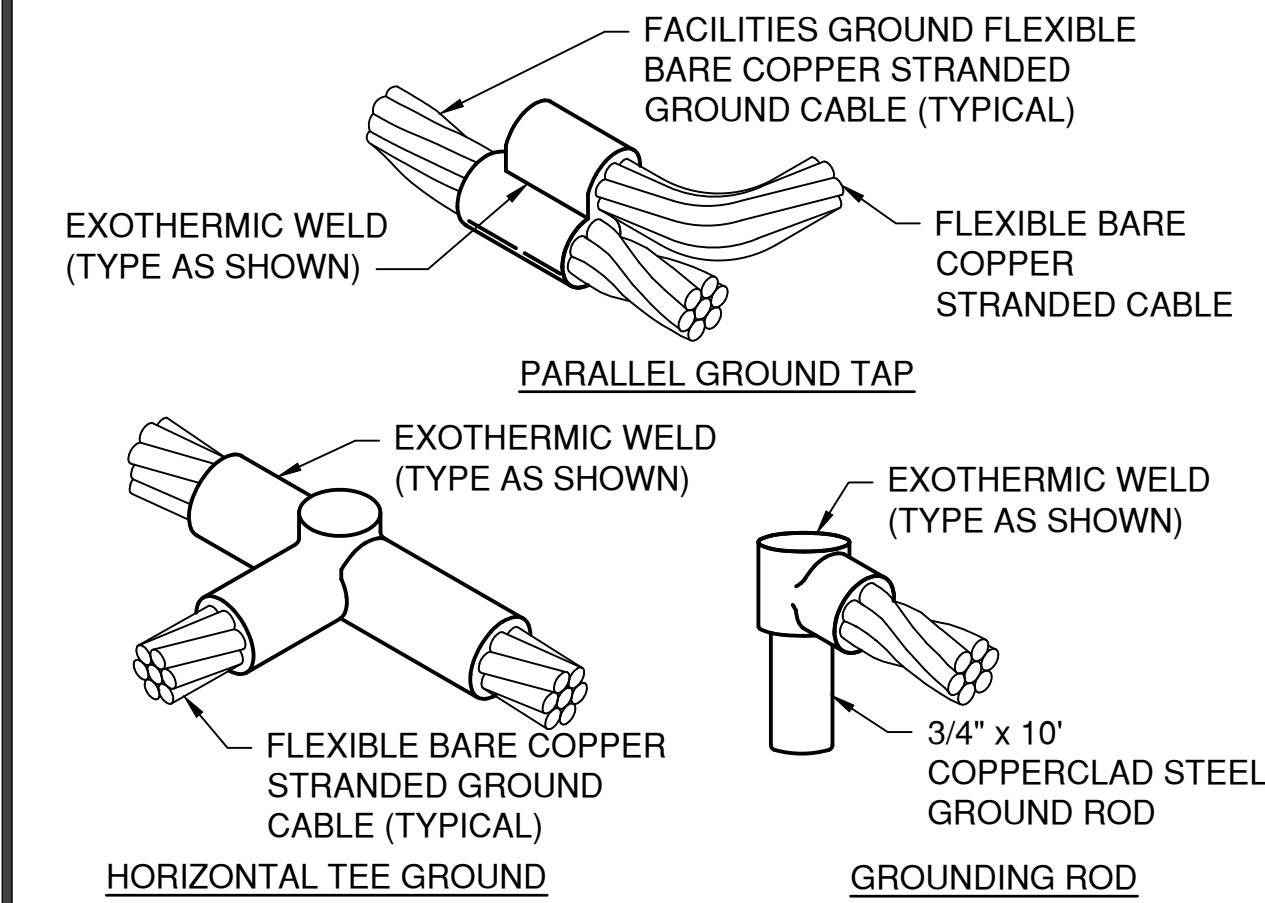
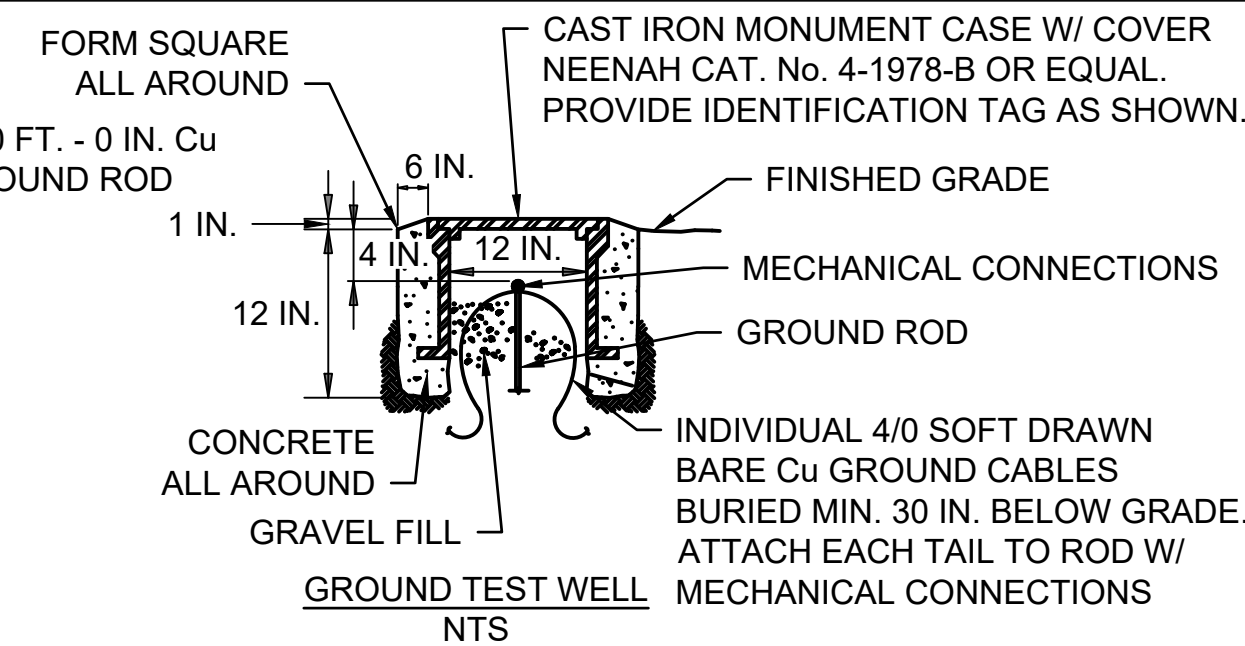
NOTE:  
1. GROUND ROD SHALL BE 3/4 IN. x 10 FT.

GROUND WELL DETAIL  
N.T.S.



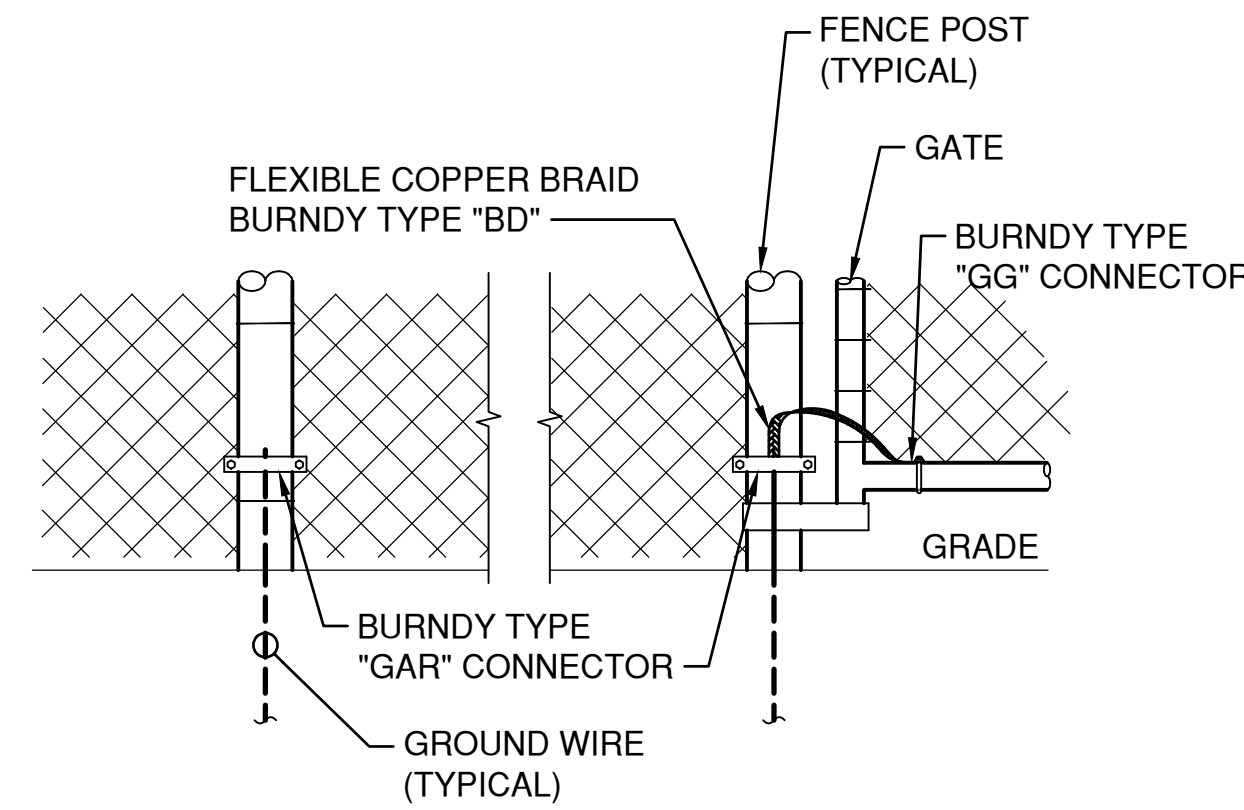
- 4 IN. SQUARE ENGRAVED BRASS IDENTIFICATION TAG. DRILL AND TAP COVER AND FASTEN W/SS SCREWS.
- NOTES:
- ANY EXPOSED OR ABOVE GRADE CONNECTIONS SHALL BE MECHANICAL TYPE WITH CRIMP LUGS. USE CADWELD FOR BURIED LOCATIONS.
  - EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS.
  - EXTEND #6 SOFT DRAWN BARE COPPER CABLE UP INTO ATS/EQUIPMENT PANELS AND GROUND TO GROUND BUS.

GROUND SYSTEM TEST WELL DETAIL  
N.T.S.

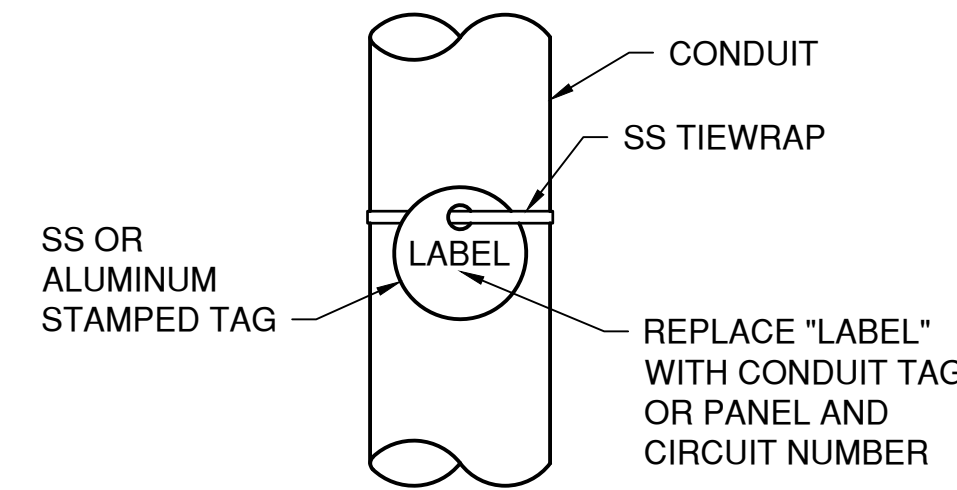


- NOTE:
- SPRAY ALL EXPOSED GROUNDING CONNECTORS AND CABLE WITH SCOTCHKOTE CORROSION PROTECTION - APPLY SEPARATE COATS: TWO MINIMUM ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

GROUNDING CONNECTION DETAIL  
N.T.S.

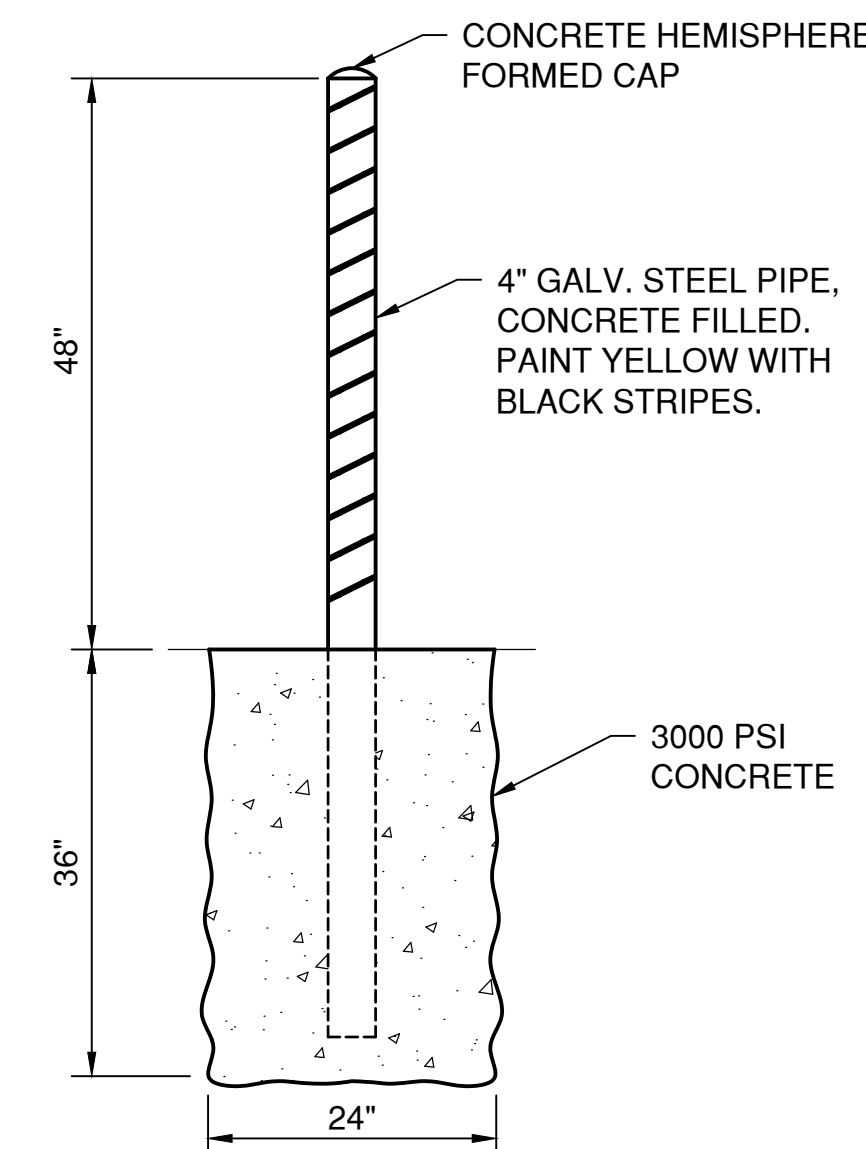


FENCE POST AND  
GATE GROUNDING DETAIL  
N.T.S.

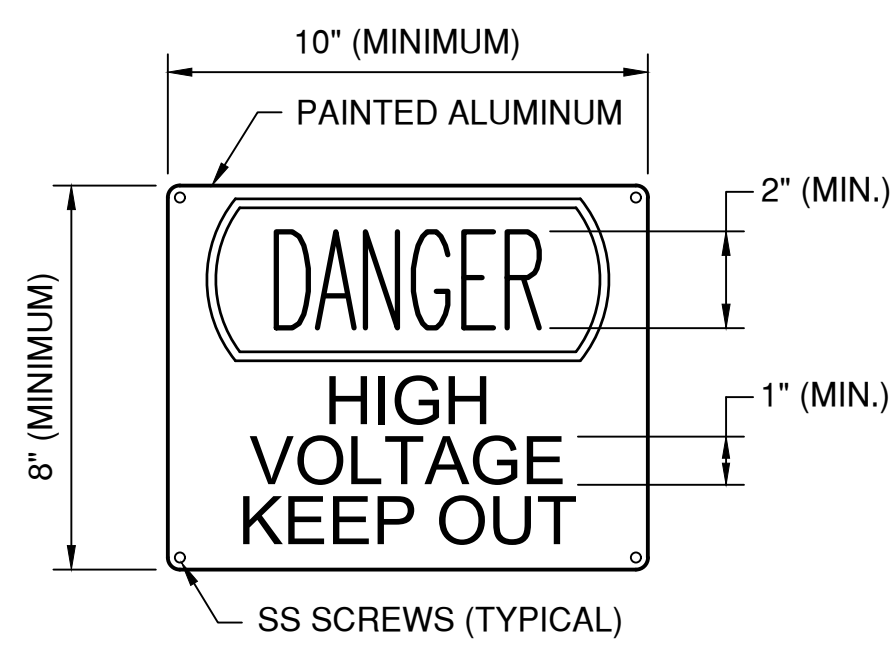


- NOTE:
- AS-BUILT DRAWINGS SHOULD CONTAIN RECORD OF ACTUAL INSTALLED CONDUITS AND CONDUCTORS THAT COORDINATE WITH FIELD LABELS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

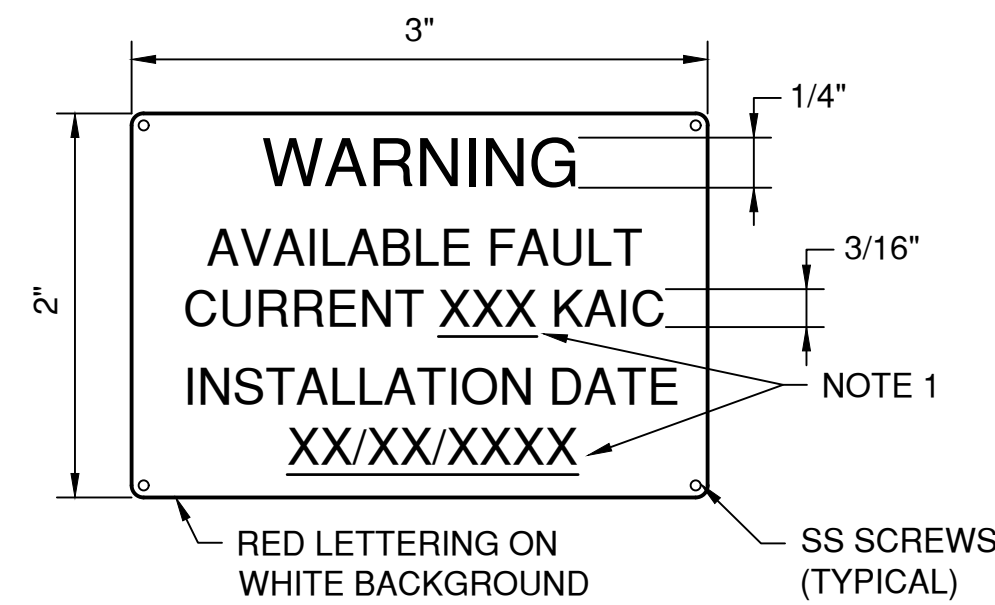
CONDUIT LABEL DETAIL  
N.T.S.



BOLLARD DETAIL  
N.T.S.

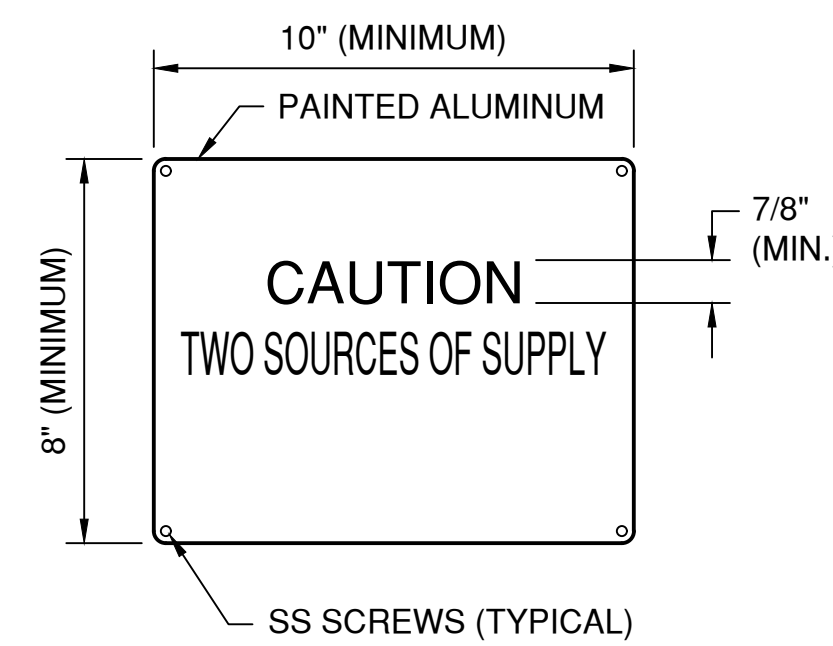


HIGH VOLTAGE SIGN DETAIL  
N.T.S.

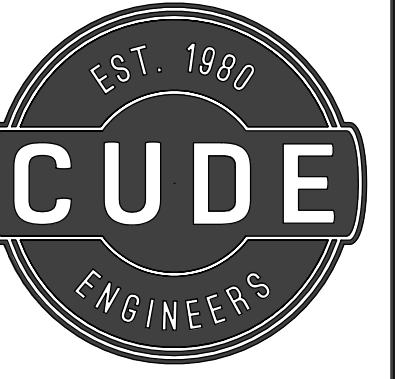


- NOTE:
- CONTRACTOR TO FILL AVAILABLE FAULT CURRENT KAIC BASED ON DATA OUTLET STATEMENT FROM ELECTRICAL PROVIDER.

FAULT CURRENT WARNING SIGN DETAIL  
N.T.S.



DUAL SOURCE SIGN DETAIL  
N.T.S.

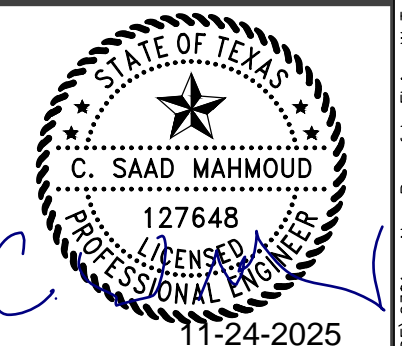


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San Antonio, Texas 78231  
P: (210) 681.2951 F: (210) 523.7112

FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL DETAILS  
SHEET NO. 2

DATE	11/24/2025
PROJECT NO.	04024-003
DRAWN BY	CSM
CHECKED BY	EWB

REVISIONS	1.	2.	3.	4.	5.	6.	7.	8.

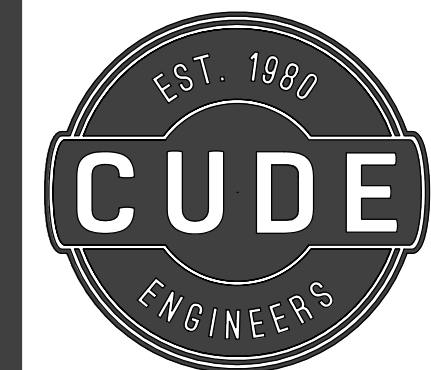


CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

E9.02



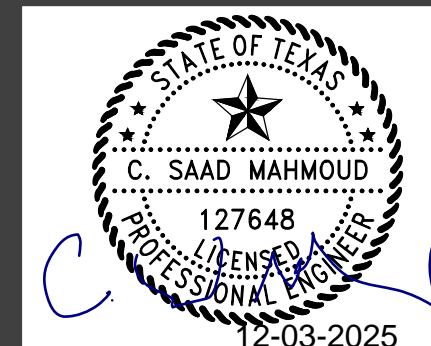


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San Antonio, Texas 78231  
P: (210) 681.2951 F: (210) 523.7112

FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
ELECTRICAL DETAILS  
SHEET NO. 3

DATE  
12/03/2025  
PROJECT NO.  
04024-003  
DRAWN BY  
CSM  
CHECKED BY  
EWB

REVISIONS	DATE	DESCRIPTION
1. ADDENDUM NO.1	12-03-25	
2		
3		
4		
5		
6		
7		
8		



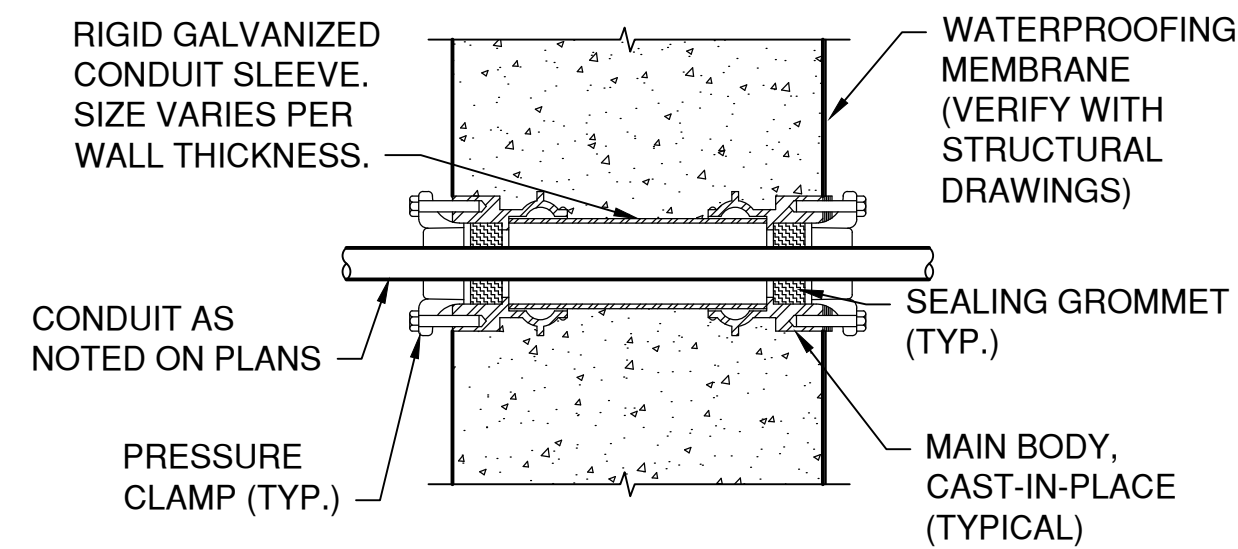
CUDE ENGINEERS  
TBPES No. 10048500

PLAT NO.  
22-118XXXX

E9.03

GENERAL NOTES:

1. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON-INTRINSICALLY SAFE MOTOR FEEDER WIRING.
2. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS WASHERS, ETC SHALL BE STAINLESS STEEL.

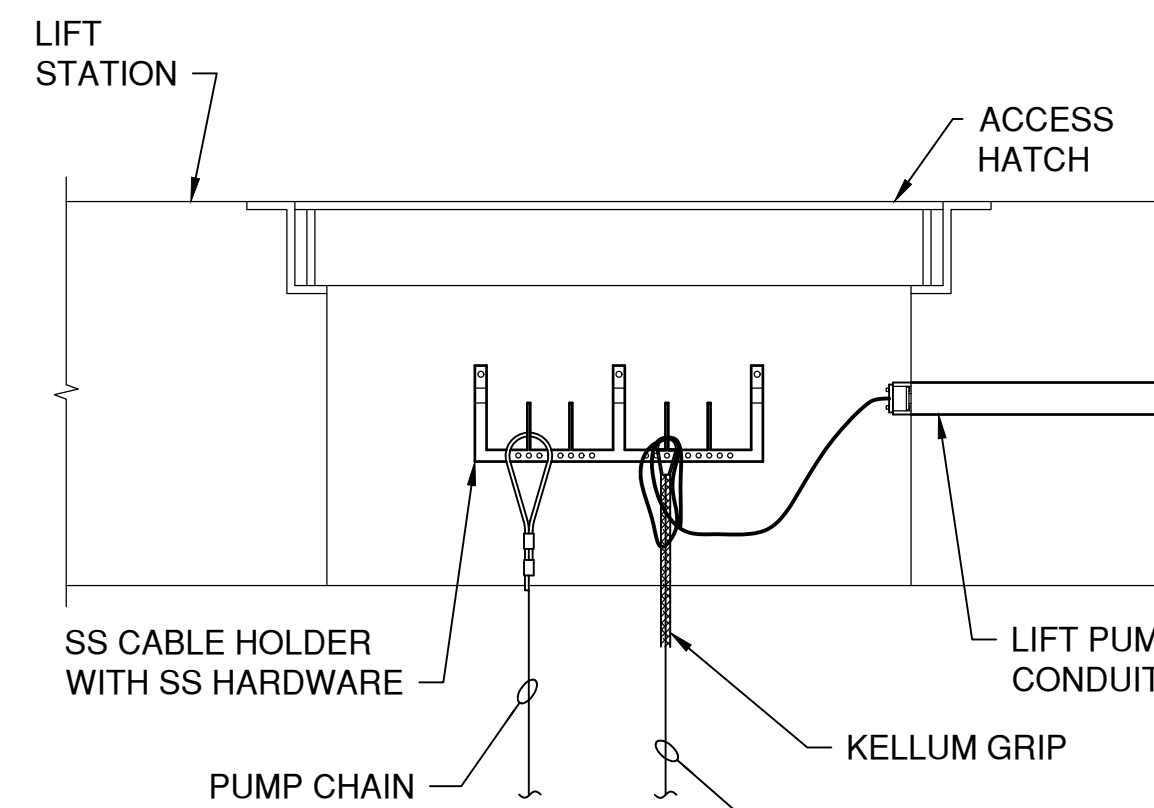


INSIDE OF STRUCTURE

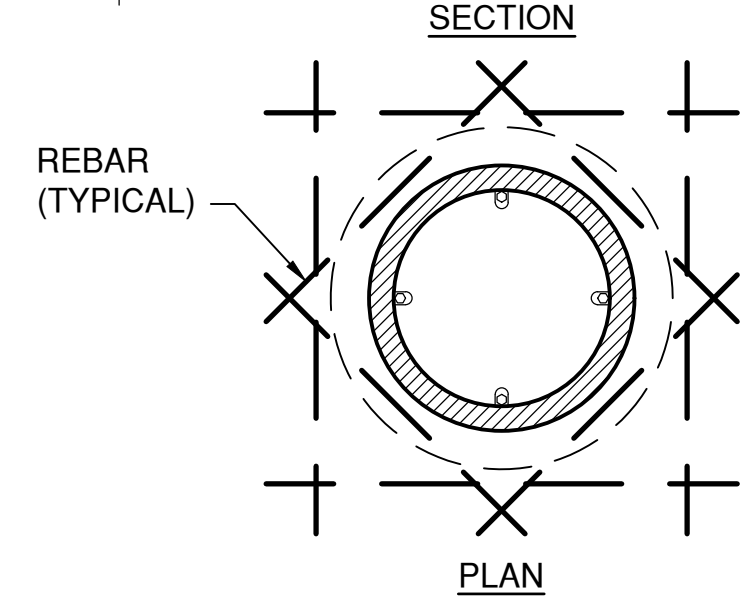
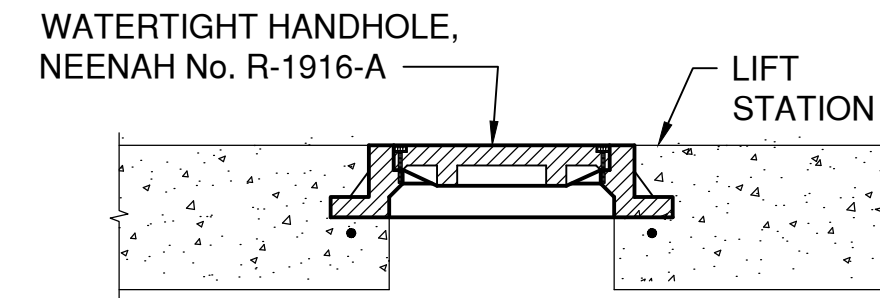
DOUBLE ENDED TYPE WITH MEMBRANE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS NOT ENCASED IN CONCRETE

CONDUIT SEALS DETAIL  
N.T.S. (TYPICAL)



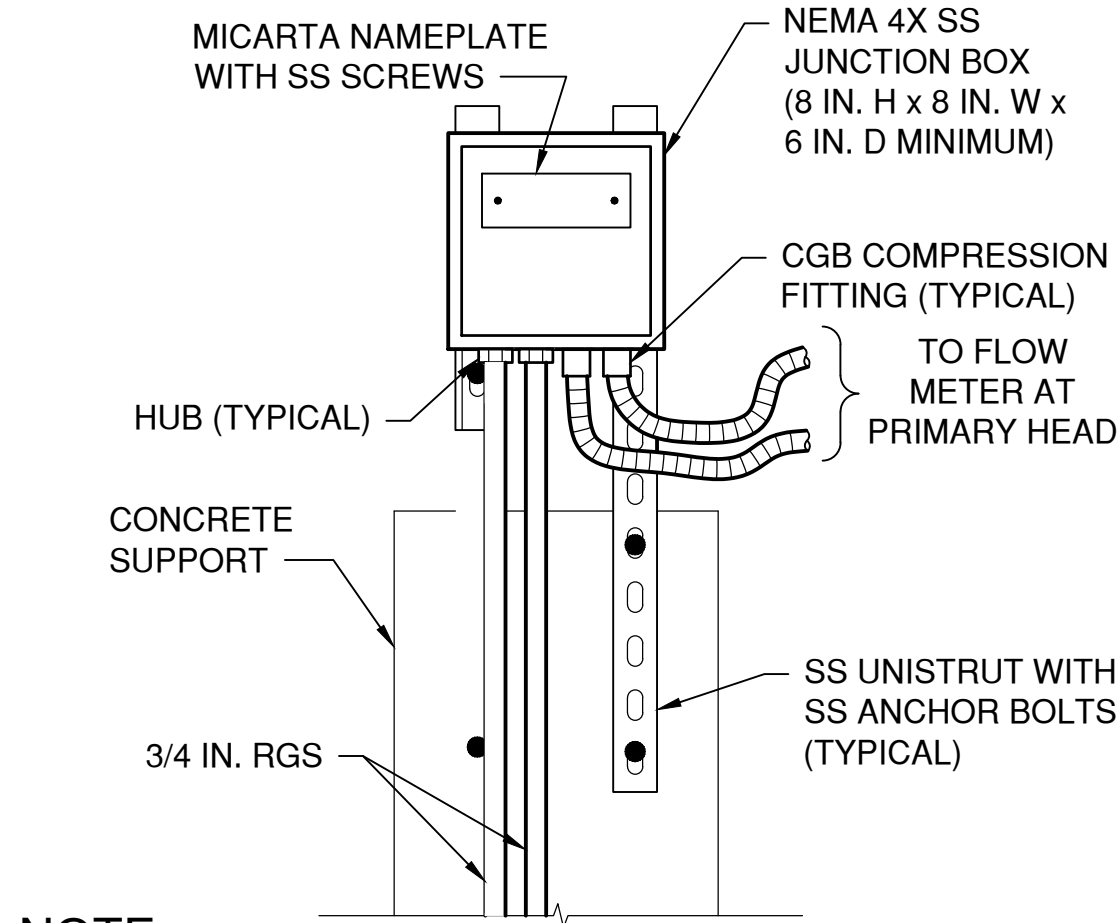
PUMP CABLE INSTALLATION DETAIL  
N.T.S.



NOTE:  
1. REBAR SIZING BY STRUCTURAL ENGINEER.

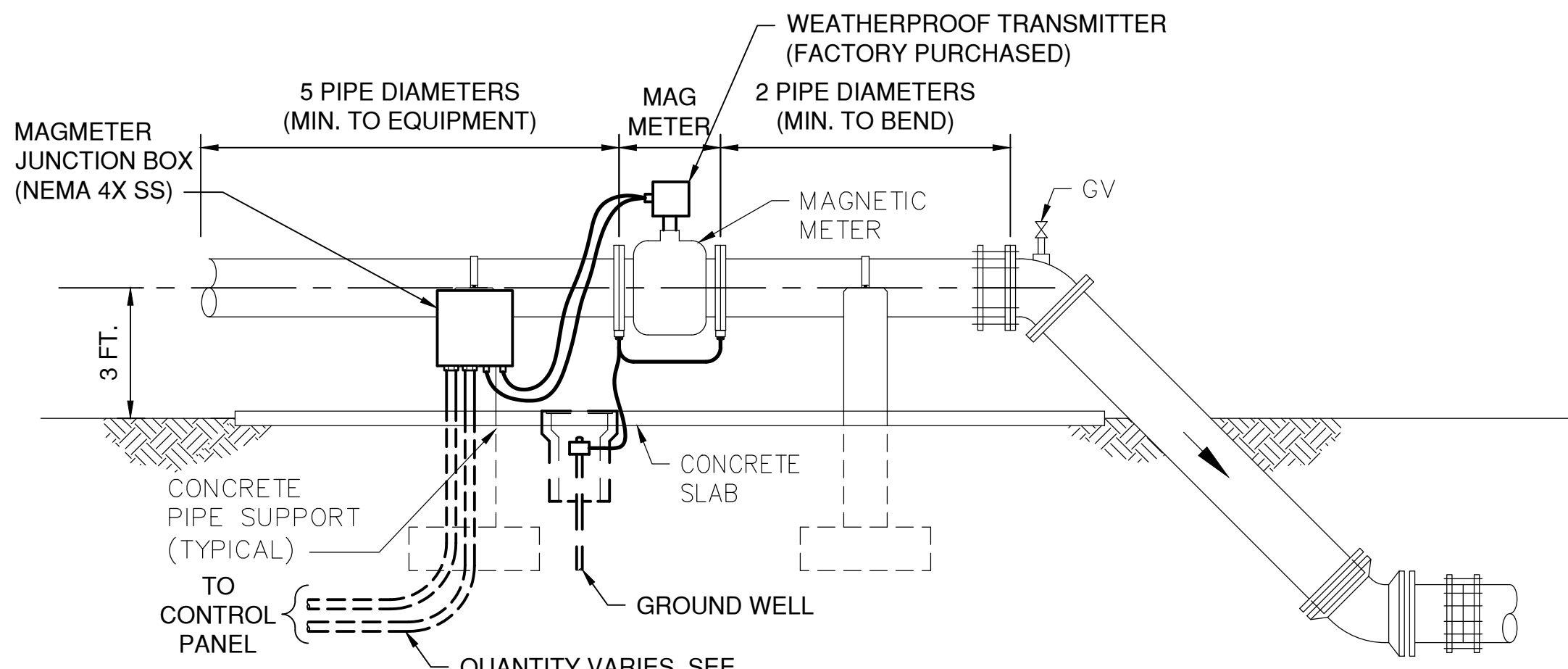
HANDHOLE DETAIL  
N.T.S.

1

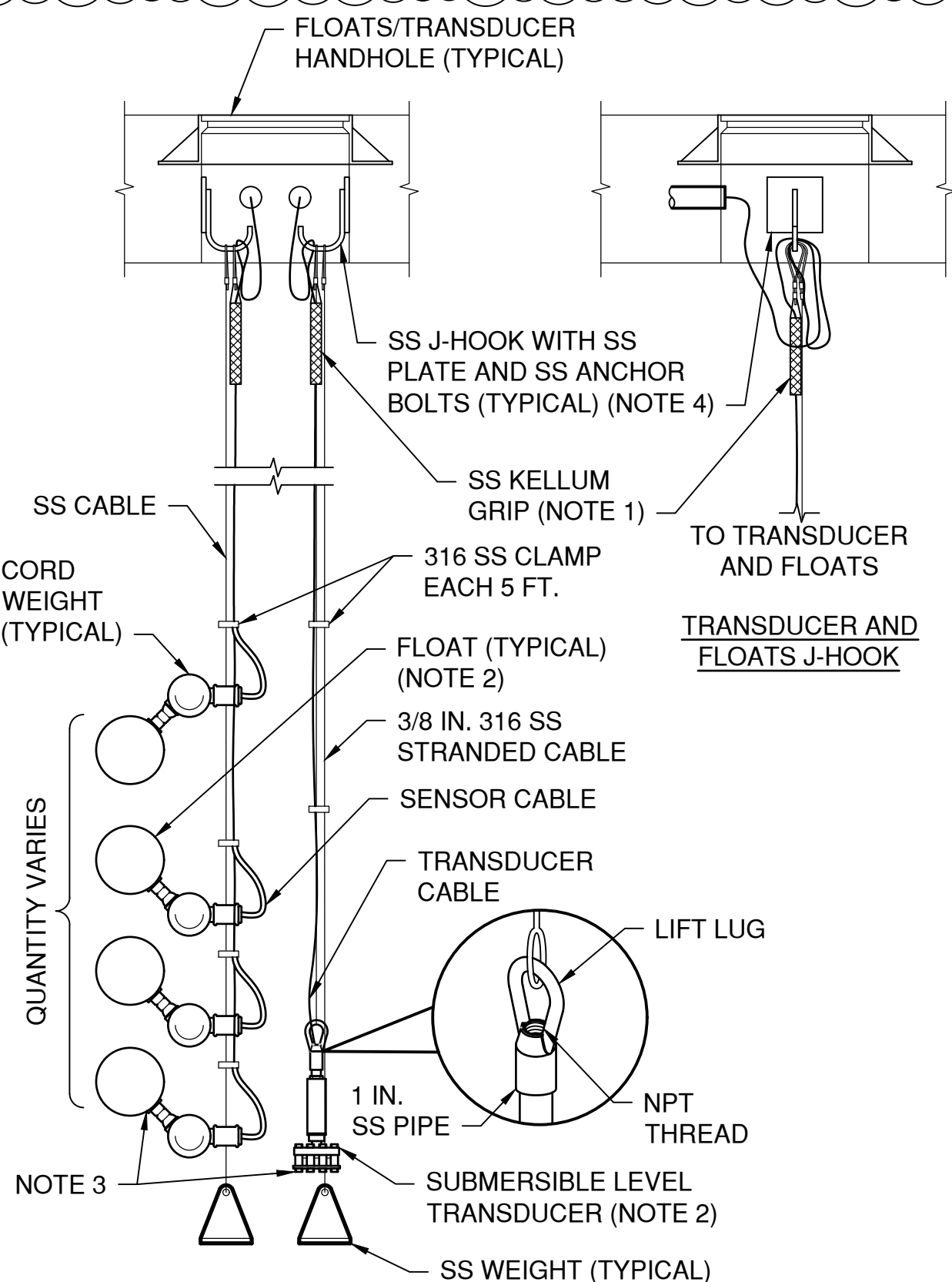


NOTE:  
1. LEAVE MINIMUM 24 INCHES SLACK CABLES IN JUNCTION BOX.

MAGMETER JUNCTION BOX DETAIL  
N.T.S.

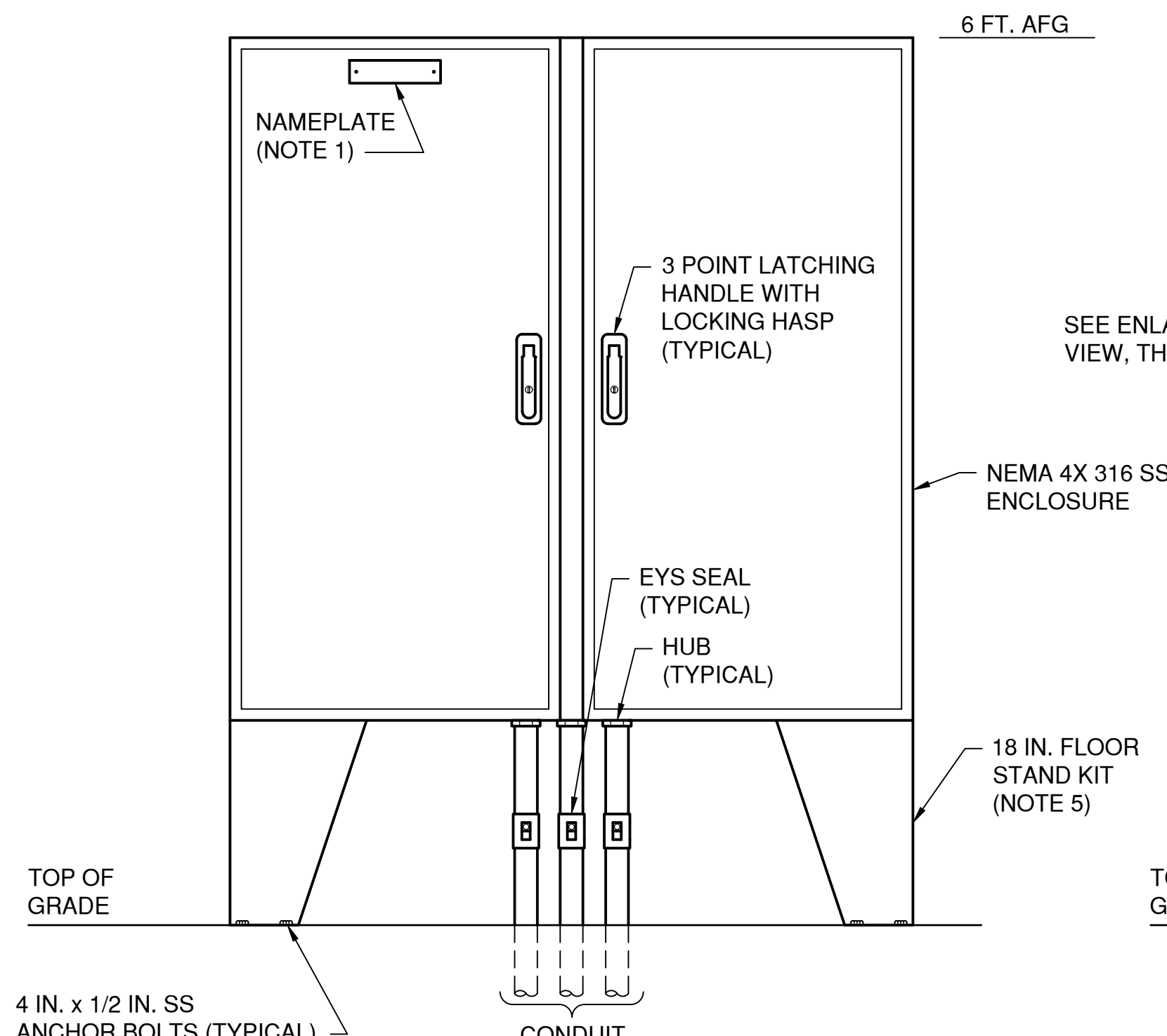


FLOW METER DETAIL  
N.T.S.



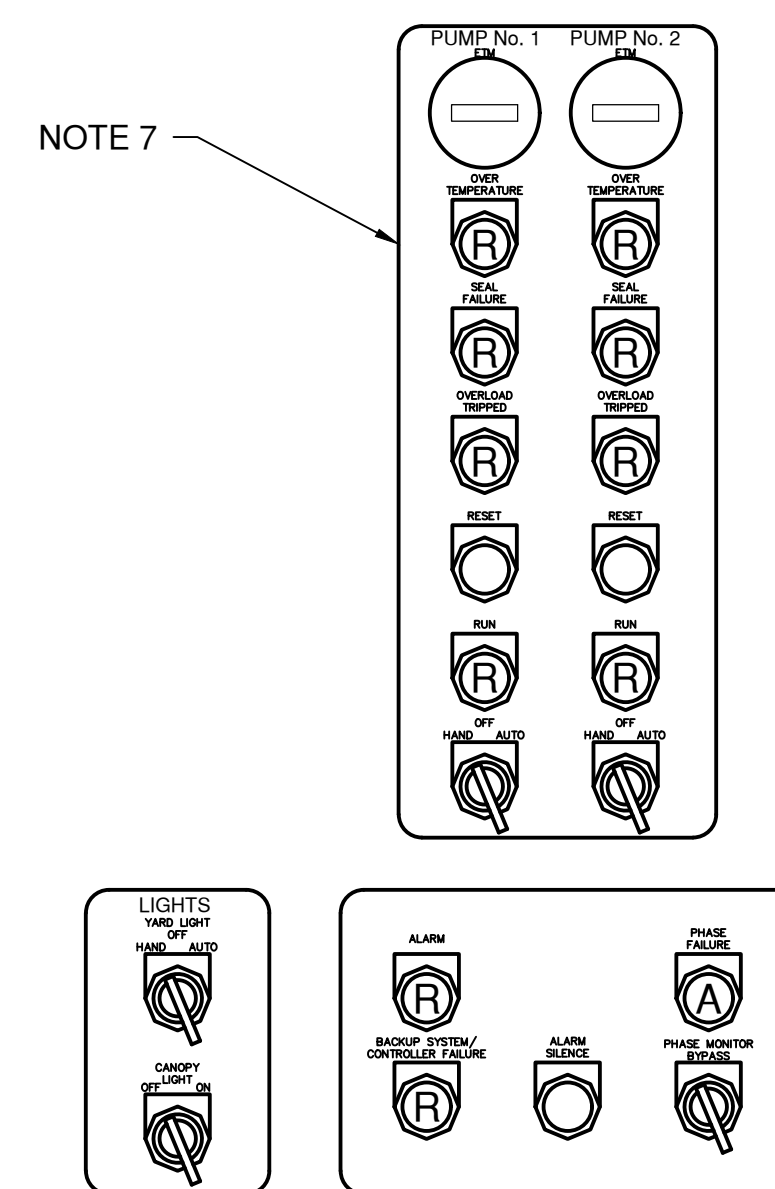
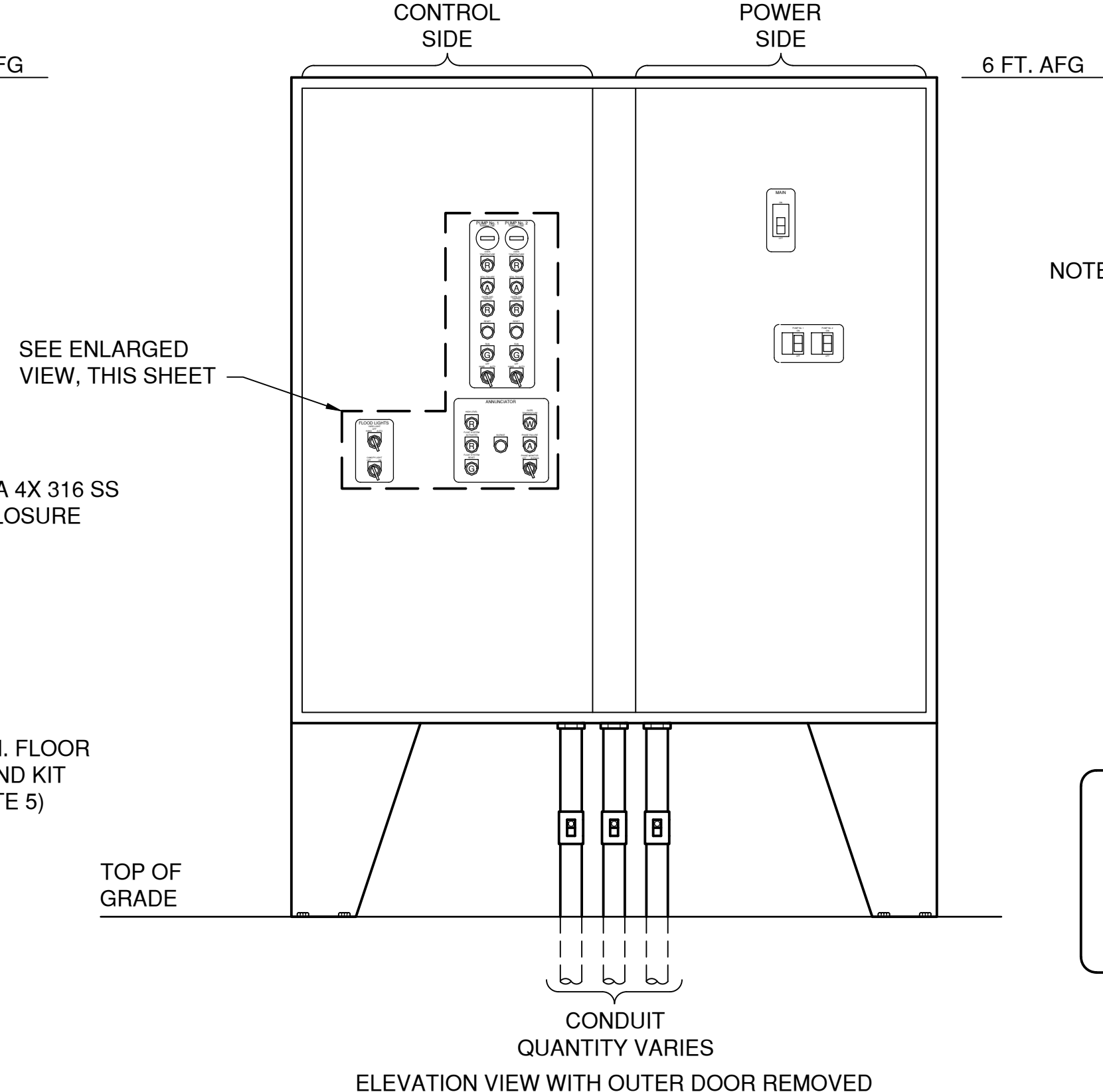
- NOTES:
1. KELLUM GRIPS ARE REQUIRED ON ALL CABLES.
  2. INSTALL FLOATS AND TRANSDUCER CLEAR OF PUMP INTAKE.
  3. MEASURE AND RECORD LEVEL OF TRANSDUCER "SENSOR ELEMENT" AND FLOAT SWITCH "TIPPING" LEVELS ABOVE FINISHED FLOOR OF WET WELL. COPY TO ENGINEER AND INCLUDE DATA IN AS-BUILT DRAWINGS AND O&M MANUALS.
  4. LOCATION SHOWN FOR CLARITY.
  5. SET LEVEL PER ENGINEER.

FLOATS/TRANSDUCER INSTALLATION DETAIL  
N.T.S. (TYPICAL)

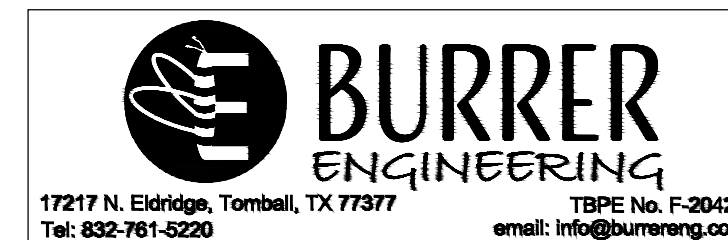


- NOTES:
1. NAMEPLATES SHALL BE MOUNTED TO CONTROL PANEL USING STAINLESS STEEL HARDWARE.
  2. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS WASHERS, ETC SHALL BE TYPE 316 STAINLESS STEEL.
  3. SEAL ALL CONDUITS ENTERING CONTROL PANEL FROM WETWELL WITH CSBE SEALS. ALL OTHER CONTROL PENETRATIONS SHALL USE LIQUID TIGHT RE-ENTERABLE SEALING COMPOUND.
  4. BASE OF ENCLOSURE TO BE 18 IN. ABOVE FINISHED GRADE AND NOT LESS THAN 12 IN. ABOVE FLOOD PLAIN ELEVATION.

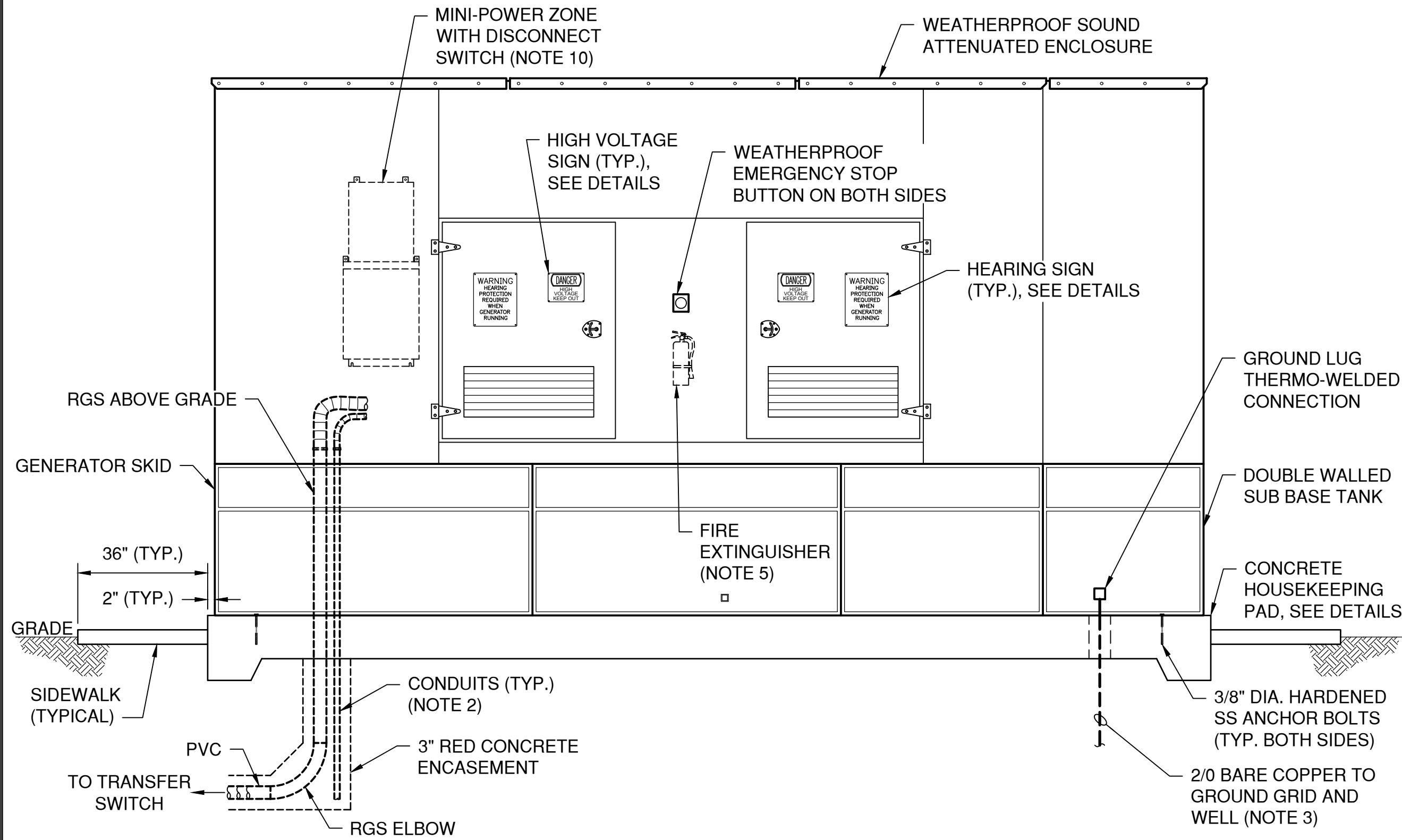
CONTROL CABINET DETAIL  
N.T.S.



ENLARGED CONTROLS



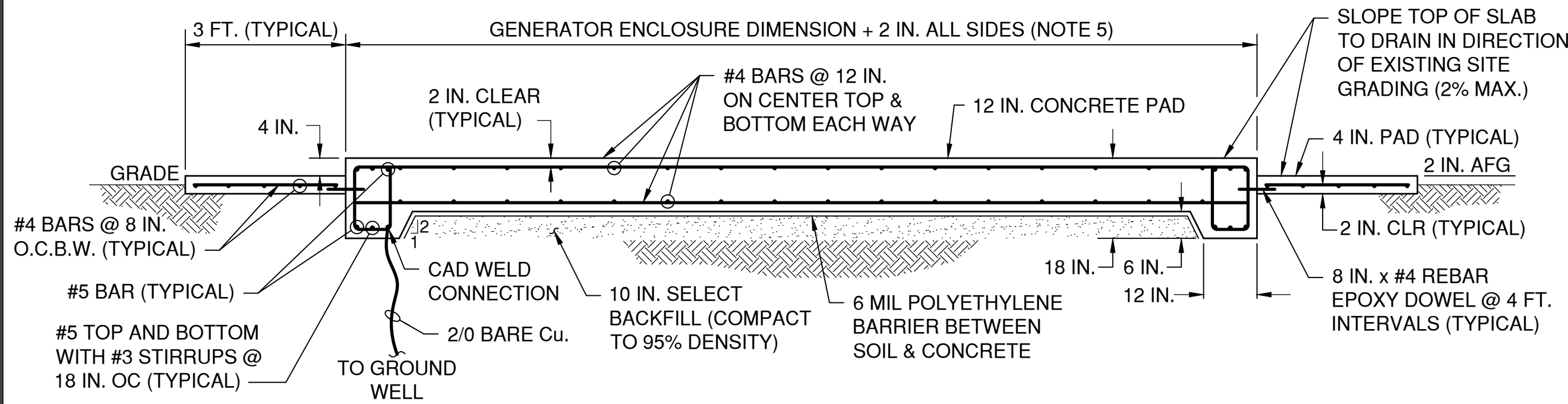




NOTE:

- COORDINATE FUEL LINES AND CONDUIT STUB-UP LOCATIONS WITH GENERATOR MANUFACTURER DRAWINGS PROVIDED BY PROCURING CONTRACTOR.
- DO NOT ROUTE GROUND CONDUCTORS ACROSS TOP OF SLAB INSIDE OR OUTSIDE ENCLOSURE. INSTALL IN SCHEDULE 80 PVC SLEEVE IN SLAB.
- PROVIDE BOX OF OSHA APPROVED EARPLUGS FOR NOISE REDUCTION WHEN SERVICING GENERATOR. MOUNT BOX INSIDE WELL PUMP CONTROL PANEL.
- PROVIDE UL RATED CLASS B FIRE EXTINGUISHER (PROPLUS MODEL PROPLUS5MP) FOR FUEL TYPE, PER GENERATOR MANUFACTURER'S RECOMMENDATIONS AND FIELD LOCATE.
- SUB-BASE TANK SHALL NOT EXCEED 36" IN HEIGHT, INCREASE LENGTH FOR REQUIRED FUEL CAPACITY.
- ALLOW FOR NEC CLEARANCE IN FRONT OF LOW VOLTAGE PANEL.

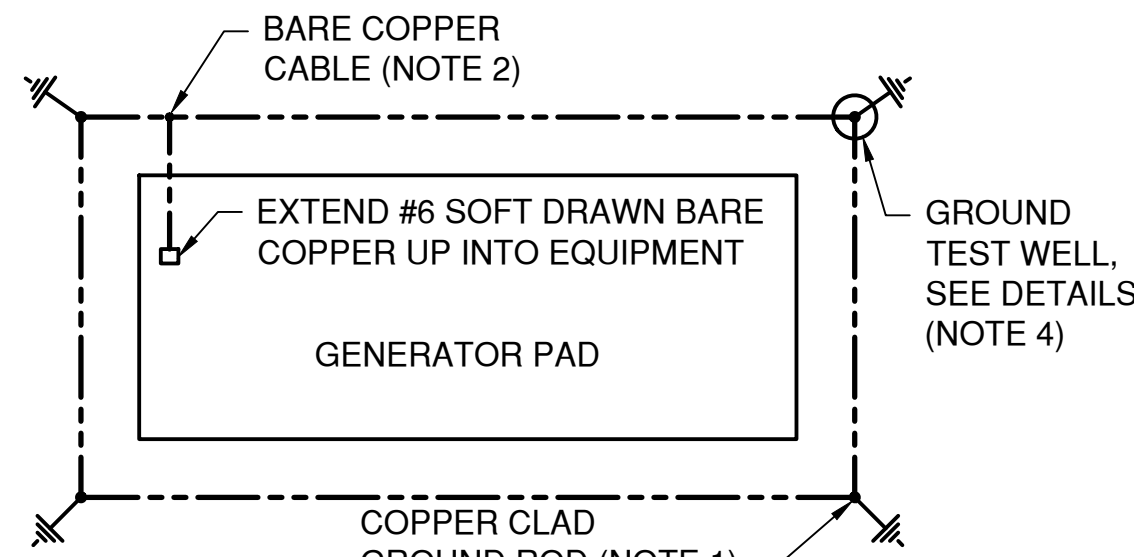
**SOUND ATTENUATED GENERATOR ENCLOSURE DETAIL**  
N.T.S.



NOTES:

- COMPACT EARTH FILL TO MINIMUM DRY DENSITY OF 95% OF MAXIMUM IN ACCORDANCE WITH ASTM D698-78 TO ENSURE THAT LOCALIZED WEAK AND COMPRESSIBLE ZONES ARE NOT PRESENT.
- ALL CONCRETE SHALL HAVE 4000 PSI @ 28 DAYS. REINFORCED STEEL SHALL BE GRADE 60.
- PLACE ALL REINFORCING STEEL 2 IN. CLEAR FROM FACE OF CONCRETE.
- GROUND ALL REBAR PER NEC 250-50.
- COORDINATE GENERATOR ENCLOSURE DIMENSIONS AND ADJUST SLAB SIZE ACCORDINGLY PRIOR TO CONSTRUCTION.

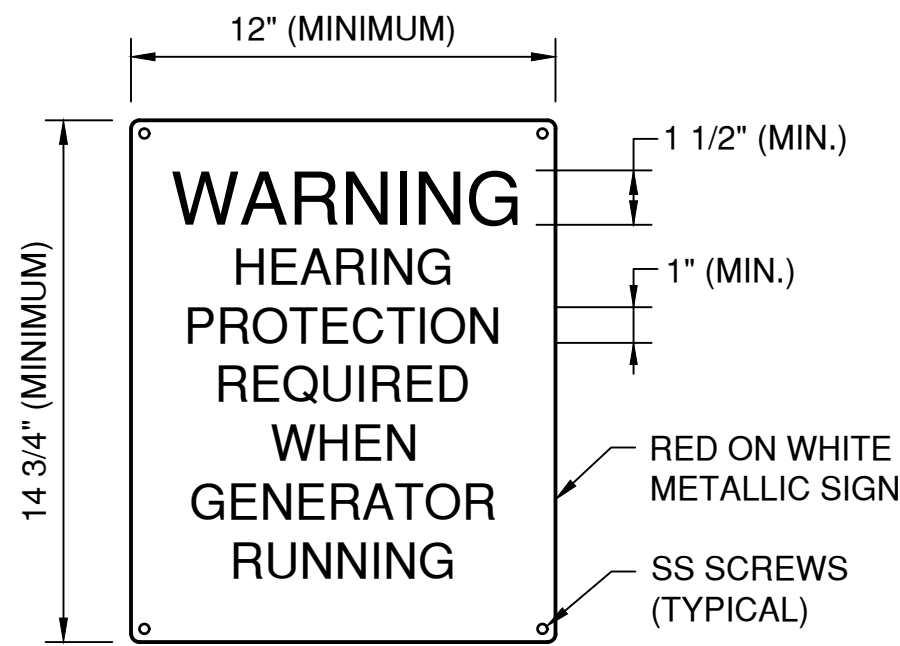
**GENERATOR PAD DETAIL**  
N.T.S.



NOTES:

- 3/4" x 10' COPPER CLAD GROUND ROD. EXOTHERMICALLY WELD TO GROUND CABLE BURIED MIN. 18" BELOW GRADE. REFER TO GROUND ROD INSTALLATION DETAIL.
- #4/0 SOFT DRAWN BARE COPPER CABLE BURIED MIN. 18" BELOW GRADE (TYP. ALL BELOW GRADE CABLE). EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS.
- PROVIDE GROUND TEST WELL AT CORNER OF THE GENERATOR NEAREST GENERATOR CONTROL PANEL. REFER TO GROUND TEST WELL INSTALLATION DETAIL.

**TYPICAL GENERATOR ELECTRICAL GROUNDING DETAIL**  
N.T.S.



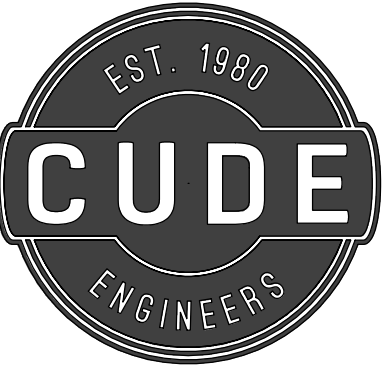
**HEARING WARNING SIGN DETAIL**  
N.T.S.

GENERATOR & TANK DATA - DUPLEX	
ITEMS	DATA
GENERATOR*	55 KW (MIN.), 69 KVA, 83A FUEL CONSUMPTION RATE 1/2 LOAD - 2.4 GPH FULL LOAD - 5.0 GPH WT = 3,100 LBS.
ENCLOSURE*	LEVEL 2 SOUND ATTENUATING DIM. 102 IN. L X 46 IN. W X 64 IN. H
TANK*	250 GALLON SUB-BASE TANK
NFPA 110	CLASS 24, TYPE 10, LEVEL 2
AVAILABLE RUN TIME (AT FULL)	= 250 GAL / 5.0 GAL/HR = 50 HRS

\* VERIFY EQUIPMENT PARAMETERS WITH THE SPECIFIC MANUFACTURER

GENERAL NOTES:

- CONDUCTING GENERATOR TESTS, SET MOTOR STARTER TIME DELAY RELAYS IN THE ORDER OF MOTOR SIZE SMALLEST TO LARGEST, WITH FIRST SETTING AT 10 SECONDS AND EACH CONSECUTIVE TIME DELAY AT 10 SECOND GREATER INCREMENTS. I.E. P1 TD = 10 SEC; P2 TD = 20 SEC, P3 TD = 30 SEC., ETC. THESE SETTINGS SHOULD NEVER BE CHANGED TO ASSURE PROPER LOAD SEQUENCING ON GENERATOR. RECORD SETTINGS AND INCLUDE IN RECORD-BUILT.
- PROVIDE DGC2020 DIGITAL CONTROLLER, OR APPROVED EQUAL, WITH RJ-45 COMMUNICATION TO ETHERNET SWITCH.
- SUB-BASE TANK SHALL NOT EXCEED 36" HEIGHT.
- VERIFY EQUIPMENT PARAMETERS WITH THE SPECIFIC MANUFACTURER PRIOR TO SUBMITTAL.
- CONTRACTOR SHALL CALCULATE DISTANCE TO NEAREST RESIDENT PROPERTY. PROVIDE MANUFACTURER TEST REPORT INDICATING GENERATOR MEETS REQUIREMENTS WITH SUBMITTAL.
- TESTING FIRM THE ENSURE THE RESISTANCE TO GROUND IS NO GREATER THAN 5 OHMS. CONTRACTOR TO SUBMIT GROUND TESTING REPORT TO OWNER'S REPRESENTATIVE.
- THE GENERATOR SHALL BE RUN FOR ROUTINE TESTING AND MAINTENANCE ONLY BETWEEN 8:00 AM AND 10:00 PM. THE GENERATOR SHALL RUN ONLY BETWEEN 10:01 PM AND 7:59 AM DURING AN EMERGENCY.

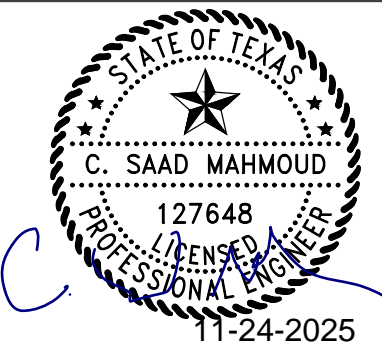


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San Antonio, Texas 78231  
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FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
GENERATOR DETAILS  
SHEET NO. 1

DATE  
11/24/2025  
PROJECT NO.  
04024-003  
DRAWN BY  
CSM  
CHECKED BY  
EWB

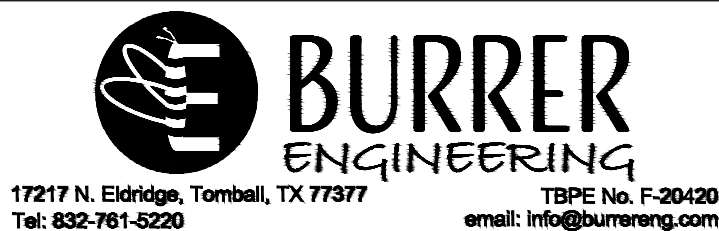
REVISIONS	1	2	3	4	5	6	7	8



CUDE ENGINEERS  
TPELS No. 10048500

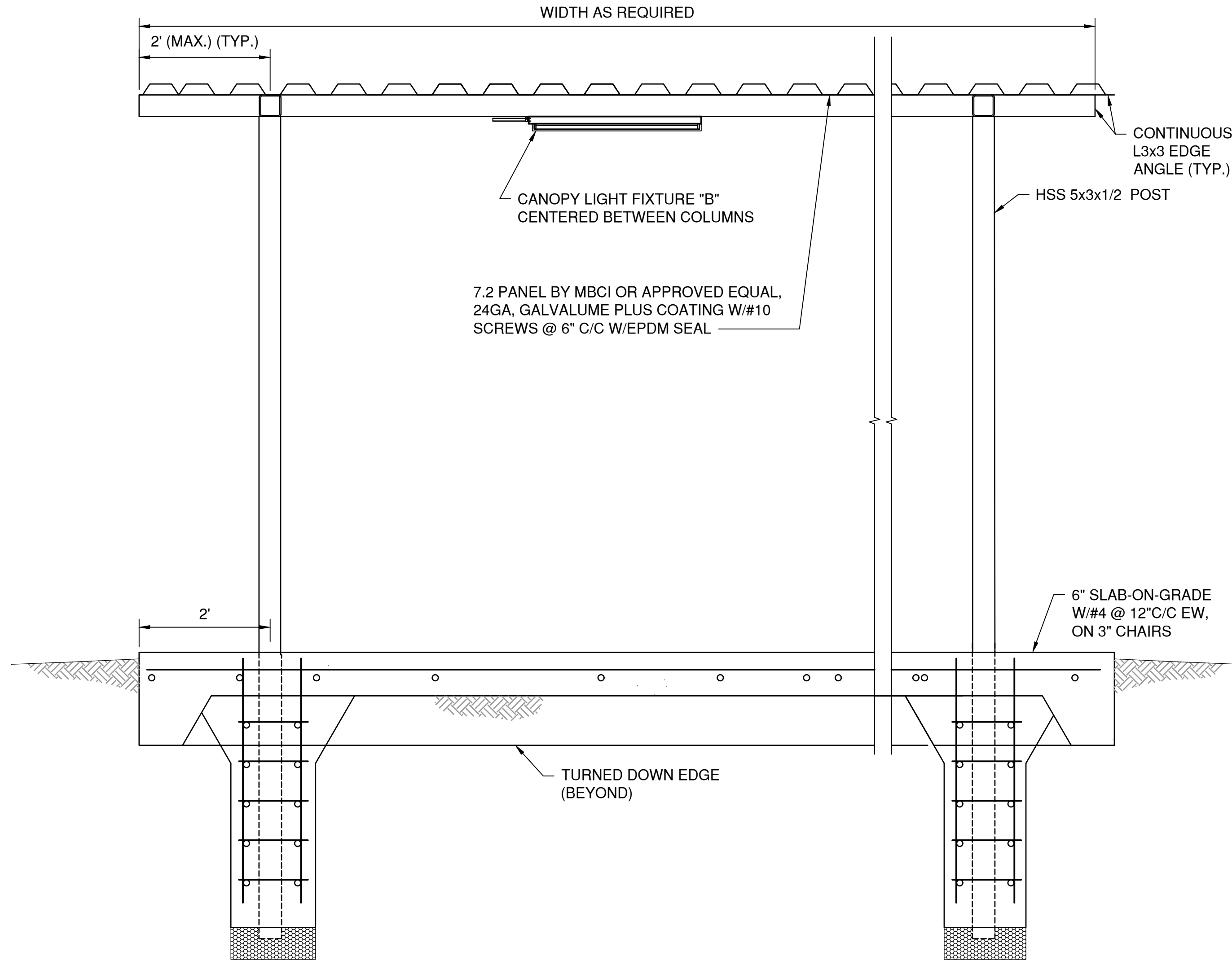
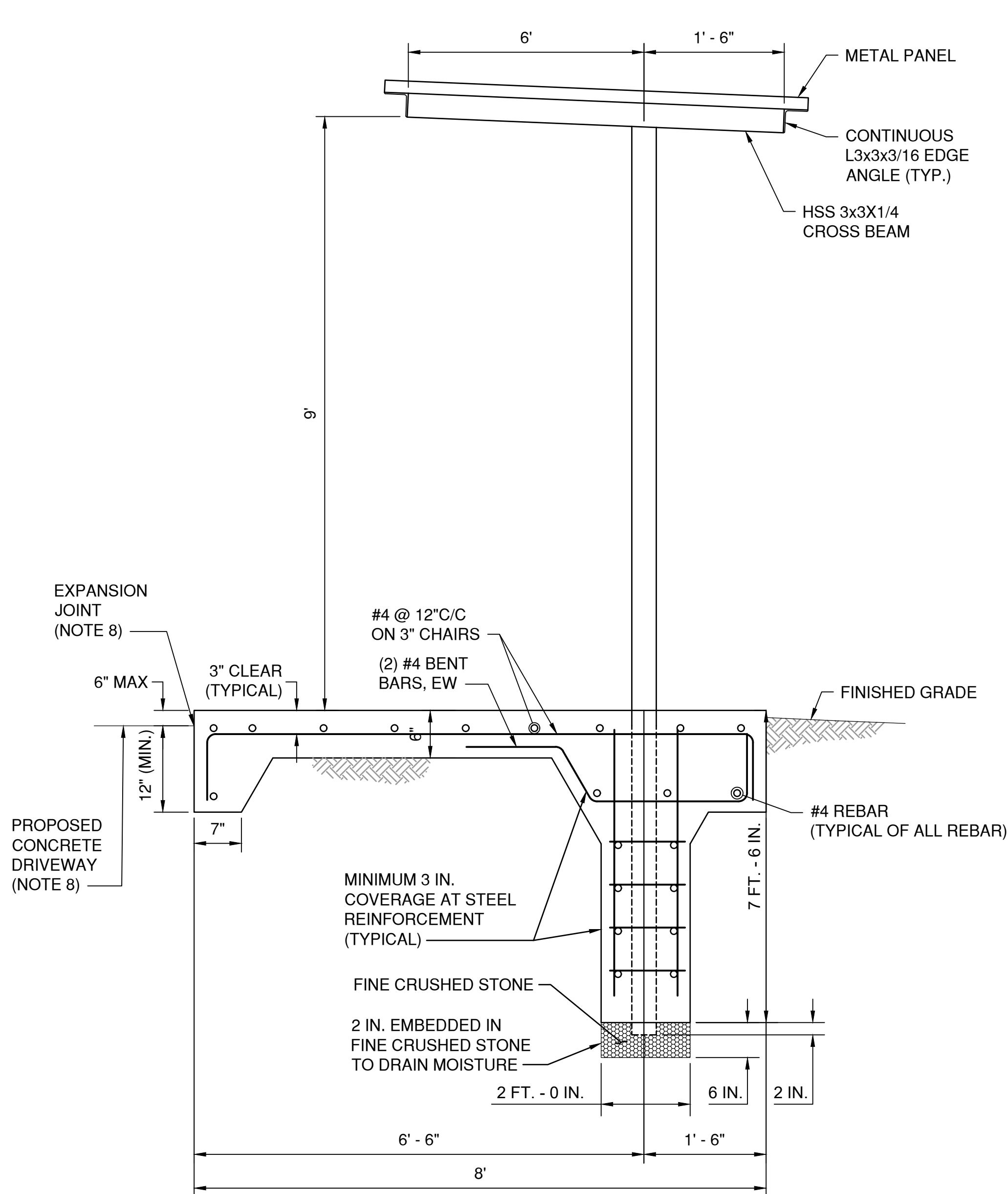
PLAT NO.  
22-118XXXX

E9.11



17217 N. Eldridge, Tomball, TX 77377  
Tel: 832-761-5220  
TSPC No. F-20420  
email: info@burrereng.com



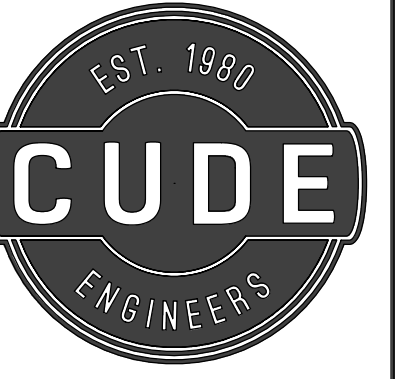


**NOTES:**

- REBAR MEMBERS SHOWN IN DRAWINGS ARE MINIMUM SIZE ONLY AND ARE SUBJECT TO CHANGE DURING THE SUBMITTAL PROCESS PER REVIEW BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF TEXAS. CONTRACTOR SHALL PROVIDE DRAWINGS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF TEXAS WITH SUBMITTALS PRIOR TO INSTALLATION OF CONCRETE FOUNDATION.
- REFER TO EQUIPMENT RACK DETAIL FOR MOUNTED EQUIPMENT, DEVICES, AND UNISTRUT MEMBERS SUPPORTING EQUIPMENT. ALL REQUIRED CONNECTING HARDWARE SHALL BE STAINLESS STEEL AND PROVIDED BY CONTRACTOR.
- SLOPE SLAB-ON-GRADE TO DRAIN.
- RACKS SHALL BE GROUNDED PER THE NATIONAL ELECTRICAL CODE. PROVIDE AS A MINIMUM ONE 3/4" x 10' STAINLESS STEEL GROUND ROD ON EACH SIDE OF THE ELECTRICAL EQUIPMENT RACK.
- ALL NUTS, BOLTS, WASHERS, OTHER FASTENERS AND HARDWARE ON ELECTRICAL EQUIPMENT RACK SHALL BE STAINLESS STEEL.
- METAL PANEL SHALL BE GALVANIZED AND SHOP PAINTED. G90 ZINC COATING; WITH UNPAINTED TOP AND BOTTOM SURFACES CLEANED, PRETREATED AND PRIMED WITH MANUFACTURER'S BAKED-ON, LEAD- AND CHROMATE-FREE RUST-INHIBITIVE PRIMER COMPLYING WITH PERFORMANCE REQUIREMENTS OF FS TT-P-664.
- REFER TO CIVIL SHEETS FOR ADDITIONAL INFORMATION.

**ELECTRICAL EQUIPMENT RACK WITH CANOPY DETAIL**

N.T.S.

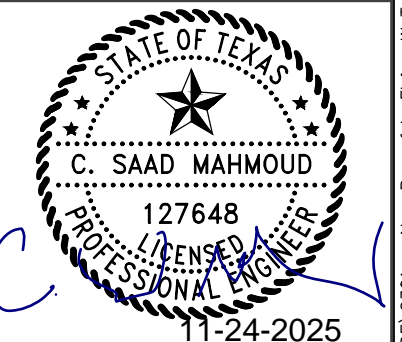


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San Antonio, Texas 78231  
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FLYING W  
SANITARY SEWER  
IMPROVEMENTS  
CANOPY DETAILS

DATE  
11/24/2025  
PROJECT NO.  
04024-003  
DRAWN BY  
CSM  
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EWB

REVISIONS	1	2	3	4	5	6	7	8



CUDE ENGINEERS  
TBPELS No. 10048500

PLAT NO.  
22-118XXXX

**E9.12**

