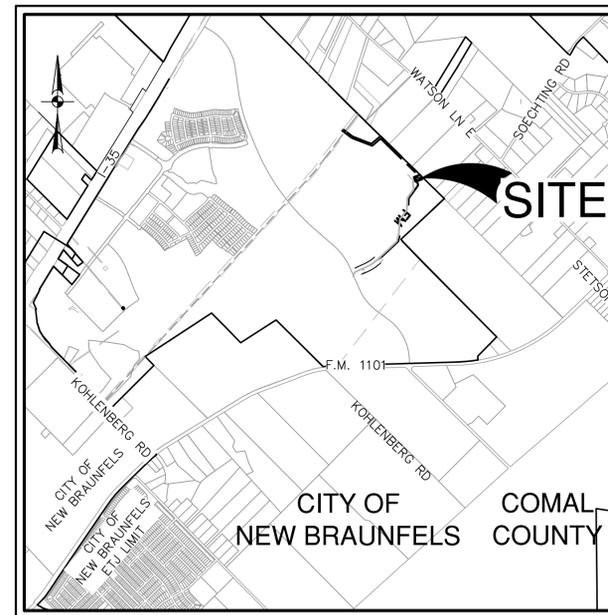


# MAYFAIR LIFT STATION #3 AND FORCE MAIN

## COMAL COUNTY, TEXAS

### NBU NO. WW-264458

# CIVIL CONSTRUCTION PLANS



LOCATION MAP  
1" = 2000'

FM 5968 IH 35N  
NEW BRAUNFELS, TX 78130

PREPARED FOR:

**SOUTHSTAR AT MAYFAIR DEVELOPER LLC**  
1118 VINTAGE WAY  
NEW BRAUNFELS, TX 78132

FEBRUARY 2026

**PAPE-DAWSON**

1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



**NBU NOTES:**

1. THE ENGINEER OF RECORD ACKNOWLEDGES THAT ALL PROPOSED WATER OR WASTEWATER IMPROVEMENTS MUST COMPLY WITH TCEQ, CITY OF NEW BRAUNFELS, W&WW DESIGN CRITERIA, SOUND ENGINEERING JUDGEMENT, AND ANY OTHER GOVERNING ENTITY ORDINANCES OR CODES.
2. THE ENGINEER OF RECORD ACKNOWLEDGES THAT THE POINT OF DELIVERY FOR THE NBU WATER SYSTEM IS THE MAIN SIDE OF THE SERVICE/LATERAL/LEAD FROM THE CUSTOMER'S METER/BACKFLOW/EASEMENT EDGE. THE CUSTOMER IS RESPONSIBLE FOR DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE BEYOND THE POINT OF DELIVERY AND HAS SOLE CONTROL AND SUPERVISION OVER THE CUSTOMER'S INSTALLATION INCLUDING REVIEW, PERMITTING, AND COMPLIANCE WITH ALL CITY PLUMBING CODES OR OTHER APPLICABLE CODES.
3. THE ENGINEER OF RECORD ACKNOWLEDGES THAT THE POINT OF DELIVERY FOR AN NBU WASTEWATER SYSTEM IS THE MAIN SIDE OF THE SERVICE LATERAL FROM THE CUSTOMER'S CLEAN OUT OR PROPERTY LINE WHICH EVER IS NEARER. THE CUSTOMER IS RESPONSIBLE FOR DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE BEYOND THE POINT OF DELIVERY AND HAS SOLE CONTROL AND SUPERVISION OVER THE CUSTOMER'S INSTALLATION INCLUDING REVIEW, PERMITTING AND COMPLIANCE WITH ALL CITY PLUMBING CODES AND OTHER CODES AS APPLICABLE.
4. WATER IS A PRECIOUS COMMODITY IN THE STATE OF TEXAS AND NEW BRAUNFELS UTILITIES (NBU) IS PASSIONATE ABOUT PROTECTING THE LOCAL RESOURCE. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ACQUIRING A FIRE HYDRANT METER SO THAT ALL WATER USED FOR CONSTRUCTION OR TESTING PURPOSES IS PROPERLY ACCOUNTED FOR. NBU WILL NOT TOLERATE ANY WATER THEFT, REGARDLESS OF THE AMOUNT. IF WATER THEFT IS DISCOVERED NBU'S CONTRACTOR SHALL BE SUBJECT TO MONETARY PENALTIES, CRIMINAL CHARGES, AND STOPPAGE OF ALL CONSTRUCTION ACTIVITIES RELATED TO THE PROJECT. COSTS ASSOCIATED WITH ANY WORK STOPPAGE RESULTING FROM WATER THEFT SHALL BE AT THE FULL EXPENSE OF THE CONTRACTOR.
5. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.
6. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER RECORD.
7. NEW MANHOLES MUST BE CONSTRUCTED OF OR LINED WITH CORROSION RESISTANT MATERIAL. WHERE NEW CONSTRUCTION CONNECTS TO AN EXISTING MANHOLE THAT IS NOT CONSTRUCTED OF A CORROSION RESISTANT MATERIAL, THE EXISTING MANHOLE MUST BE LINED WITH OR REPLACED WITH A CORROSION RESISTANT MATERIAL.

**NOTES:**

- TYPE 3 DEVELOPMENT
- THIS PROJECT IS WITHIN THE EDWARDS AQUIFER TRANSITION ZONES.
- NO PORTION OF THIS PROPERTY ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0295F EFFECTIVE DATE 9/2/2009.
- FOLLOWING PERMITS ARE REQUIRED PRIOR TO START OF CONSTRUCTION:
  1. CITY OF NEW BRAUNFELS PUBLIC INFRASTRUCTURE PERMIT
  2. NEW BRAUNFELS UTILITY APPROVAL
  3. TCEQ APPROVAL

**NBU AS-BUILT REQUIREMENTS:**

NBU REQUIRES GPS POINTS FOR CERTAIN WATER, WASTEWATER AND ELECTRIC IMPROVEMENTS. SOME OF THIS INFORMATION/DATA MUST BE PERFORMED DURING CONSTRUCTION, PRIOR TO BACKFILLING OPERATIONS. CONTRACTOR SHALL COORDINATE WITH NBU INSPECTOR TO VERIFY ANY ADDITIONAL ITEMS NOT SHOWN BELOW THAT NEED TO BE GPS LOCATED AND THE SURVEY/DELIVERY REQUIREMENTS REGARDING THIS INFORMATION.

GPS POINTS SHALL BE REQUIRED FROM THE DEVELOPER'S CONTRACTOR OR ENGINEER. A MINIMUM OF THREE COORDINATE POINTS FOR GEOREFERENCING SHALL BE REQUIRED. THE WATER AND WASTEWATER GPS POINTS SHALL BE TO SURVEY GRADE. THE ELECTRIC GPS POINTS SHALL BE TO MAP GRADE.

**WATER**

- VERTICAL BENDS AND EDGE OF STEEL CASING (IF APPLICABLE) PRIOR TO BACKFILL
- HORIZONTAL BENDS PRIOR TO BACKFILL
- TEES PRIOR TO BACKFILL
- FITTINGS (REDUCERS AND COUPLINGS) PRIOR TO BACKFILL
- FIRE HYDRANTS (TOP OF FLANGE)
- VALVES
- METERS (TOP CENTER OF BOX)
- BLOW OFF ASSEMBLY
- CORNER SLAB OF WATER TANK & GATE VALVE ON TANK

**WASTEWATER**

- MANHOLES (AND INVERT DEPTH(S))
- CLEANOUTS
- CORNER SLAB OF LIFT STATION

**ELECTRIC**

- POLES
- TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK)
- PULL BOXES
- STREET LIGHTS

SEE NBU'S "CAD/GPS DELIVERABLES" ON NBU WEBSITE AT NBUTEXAS.COM FOR COMPLETE DETAILS AND REQUIREMENTS.

**REPORT**

NAME: MAYFAIR LIFT STATION#3 BASIS OF DESIGN REPORT  
FIRM: PAPE-DAWSON ENGINEERS  
DATE: DECEMBER 2025

NAME: SUBSURFACE EXPLORATION AND FOUNDATION ANALYSIS - PROPOSED NEW LIFT STATION #3  
FIRM: INTEGRATED TESTING AND ENGINEERING COMPANY OF SAN ANTONIO, L.P.  
DATE: SEPTEMBER 02, 2025

NAME: SUBSURFACE EXPLORATION AND FOUNDATION ANALYSIS - PROPOSED NEW LIFT STATION ACCESS ROAD  
FIRM: INTEGRATED TESTING AND ENGINEERING COMPANY OF SAN ANTONIO, L.P.  
DATE: MARCH 05, 2025

Date: Feb 18, 2026 10:46am User: ID: 81mg File: P:\30002\74\03\_CAD\01\_Civil\CS - 30002-74.dwg

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

**CONSTRUCTION PLAN NOTES**

Revised 03/2020

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If construction has not commenced within one-year of City approval for construction inspection, that approval is no longer valid.

The most current editions of the City of San Antonio Standard Specifications and the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges shall be followed for all construction except as amended by the City of New Braunfels Standard Details.

All responsibility for the adequacy of these plans remains with the engineer of record. In accepting these plans, the City of New Braunfels must rely upon the adequacy of the work of the engineer of record.

Prior to the start of construction, the contractor shall contact the City of New Braunfels to schedule a preconstruction meeting.

For Public Infrastructure Permit or Grading Permit Projects:

- For inspections, you must call before 12:00 p.m., 48 hours prior to your inspection request.
- Each inspection will be allotted 1 hour unless you request for more time.
- Once your request has been accepted, you will receive a call from the City of New Braunfels Inspector.

For Commercial Permit (CP) Projects:

- All inspections are to be called in at 830-221-4068 or,
- Faxed in at 830-608-2117 or,
- E-mailed at [inspections@nbtexas.org](mailto:inspections@nbtexas.org).

It is the Contractor's responsibility to see that all temporary and permanent traffic control devices are properly installed and maintained in accordance with the plans and latest edition of the Texas Manual on Uniform Traffic Control Devices. If, in the opinion of the engineering representative and the construction inspector, the barricades and signs do not conform to established standards or are incorrectly placed or are insufficient in quantity to protect the general public, the construction inspector shall have the option to stop operations until such time as the conditions are corrected. If the need arises, additional temporary traffic control devices may be ordered by the Engineering representative at the Contractor's expense.

A TxDOT Type II B-B blue reflective raised pavement marker shall be installed in the center of the roadway adjacent to all fire hydrants. In locations where hydrants are situated on corners, blue reflective raised pavement markers shall be installed on both approaches which from the hydrant. The raised pavement marker shall meet TxDOT material, epoxy and adhesive specifications.

**Groundwater**

It shall be the responsibility of the developer, contractor, subcontractors, builders, Geo-technical engineer, and project engineer to immediately notify the Office of the City Engineer and project engineer if the presence of groundwater within the site is evident. Upon notification the project engineer shall respond with plan revisions for the mitigation of the groundwater issue. The City Engineer shall respond within two (2) business days upon receipt of the mitigation plan. All construction activity, impacted by the discovery of groundwater, shall be suspended until the City Engineer grants a written approval of the groundwater mitigation plan.

**Record Drawings**

As per Platting Ordinance Section 118-38m.: When all of the improvements are found to be constructed and completed in accordance with the approved plans and specifications and with the City's standards, and upon receipt of one set of "Record Drawing" plans, and a digital copy of all plans (PDF copy) the City Engineer shall accept such improvements for the City of New Braunfels, subject to the guaranty of material and workmanship provisions in this Section.

**Construction Note**

Engineer of Record is responsible to ensure that erosion control measures and stormwater control sufficient to mitigate off site impacts are in place at all stages of construction.

**Drainage Note**

Drainage improvements sufficient to mitigate the impact of construction shall be installed prior to adding impervious cover.

**Finished Floor Elevations**

The elevation of the lowest floor shall be at least 10 inches above the finished grade of the surrounding ground, which shall be sloped in a fashion so as to direct stormwater away from the structure. Properties adjacent to stormwater conveyance structures must have floor slab elevation or bottom of floor joists a minimum of one foot above the 100-year water flow elevation in the structure. Driveways serving houses on the downhill side of the street shall have a properly sized cross swale preventing runoff from entering the garage.

**Soils Testing**

Proctors shall be sampled from on-site material (on-site is defined as limits of construction for this plan set) and a copy of the proctor results shall be delivered to the City of New Braunfels Street Inspector prior to any density tests.

**Roadway**

All roadway compaction tests shall be the responsibility of the developer's Geotechnical Engineer. Flexible base or fill/embankment material shall be placed in uniform layers not to exceed eight inches (8") loose. The required density for the fill/embankment material shall meet the requirements of TxDOT's Specification Item 132. The required density for the flexible base material shall meet the requirements of TxDOT's Specification Item 247. Each layer of material, inclusive of subgrade, shall be compacted as specified and tested for density and moisture in accordance with Test Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geotechnical Engineer and approved by the City of New Braunfels Street Inspector. At a minimum, tests shall be taken every 200 LF for each lift. Upon completion of testing, the Geotechnical Engineer will provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of flexible base, and fill material, and subgrade, has been completed in accordance with the plans. Additional density tests may be requested by the City of New Braunfels Inspector.

**Item 340**

Asphaltic concrete pavement shall be the type of hot mix asphalt as defined in TxDOT's standard specifications for current TxDOT Standard Specifications for Construction of Highways, Street and Bridges.

The City of New Braunfels will not accept the use of Recycled Asphalt Pavement (RAP) or Recycled Asphalt Shingles (RAS) in asphalt mixtures for new roadways. Any debris inclusions within new asphalt pavements will result in asphalt removal and replacement from curb to curb for limits to be determined by the City of New Braunfels.

The asphaltic concrete pavement surface course shall be plant mixed, hot laid type "D" meeting the specification requirements of TxDOT Item 340. The asphaltic concrete pavement sub-surface courses shall be plant mixed, hot laid type "B" meeting the specification requirements of TxDOT Item 340. The mixture shall be designed per the design requirements specified in TxDOT Item 340 and shall be compacted to between 91 and 95 percent of the maximum theoretical density as determined by TxDOT test method TEX-227-F. Place the mixture when the roadway surface temperature is at or above 60°F. Complete all compaction operations before the pavement temperature drops below 160°F. The asphalt cement content by percent of total mixture weight shall fall within a tolerance of ±0.5 percent from a specific mix design.

**Utility Trench Compaction**

All utility trench compaction tests within the street pavement/sidewalk section shall be the responsibility of the developer's Geotechnical Engineer. Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose. Determine the maximum lift thickness based on the ability of the compacting operation and equipment used to meet the required density. Each layer of material shall be compacted to a minimum 95% density and tested for density and moisture in accordance with Test Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geotechnical Engineer and approved by the City of New Braunfels Street Inspector. At a minimum, tests shall be taken every 200 LF for each lift and every other service line. Upon completion of testing the Geotechnical Engineer shall provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of fill material has been completed in accordance with the plans. Additional density tests may be requested by the City of New Braunfels Inspector.

**Curb Cut Due to Construction of New Right-Of-Way Construction**

(Indicate the 2 Options on the construction plans).

- Sawcut existing street and match to new construction.
- Sawcut existing curb to tie into existing construction.

**Construction Stabilized Entrance**

Sawcut curb for construction entrance.

Stabilized construction area shall be constructed of 3"x5" rock to be placed a minimum length of 25-ft. and maintained so that construction debris does not fall within the city right-of-way. Right-of-way must be cleared from mud, rocks, etc. at all times.

**(Notes to Be Placed on All WW Plan & Detail Sheets)**

Ensure all driveway approaches are built in general accordance with A.D.A. specifications.

No valves, hydrants, etc. shall be constructed within curbs, sidewalks, or driveways.

**Signing and Pavement Marking Plan Notes**

The Contractor shall furnish and install all regulatory and warning signs, streets name signs and sign mounts in accordance with approved engineering plans. The City will inspect all signs at final inspection.

The Contractor shall install all pavement markings in accordance with approved engineering plans. The Contractor shall notify the City at least twenty-four (24) hours prior to the installation of all sealer and final markings. The City will inspect all markings at final application.

**Seeding and Establishment of Vegetation within Earthen Channels, Stormwater Basins and Disturbed Areas**

Seeding for the purpose of establishing vegetation within constructed earthen channels, basins and disturbed areas shall be conducted in accordance with Item 164 (Seeding for Erosion Control of TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges manual. Only seed types and mixes specified for the San Antonio District (District 15 in Tables 1 and 2 under Item 164 shall be utilized. During the Cool Season (Sept 1-Nov 30, Cereal Rye and seed species specified for the San Antonio District in Table 3 may be used. For Cool Season seeding applications, cool season seed mixes shall be used in conjunction with seed mixes for the San Antonio District as specified in Table 1 and 2 under Item 164.

It may be deemed necessary to incorporate topsoil and soil amendments (i.e. compost/ fertilizer into existing soil in order to facilitate vegetation growth. Topsoil, compost and fertilizer additions shall be conducted according to Items 160, 161 and 166 of TxDOT's Standard Specifications manual, respectively.

Areas requiring permanent vegetation (earthen channels, ponds, etc.) are required to meet TxDOT Specifications for Item 160 Topsoil. Testing per Tex-128-E will be required at the City's request.

Watering may also be necessary to facilitate and expedite the sprouting and growth of vegetation. Item 168 of TxDOT's Standard Specifications manual shall be adhered to for vegetative watering.

If extended drought conditions exist that hinder or prohibit the growth and establishment of vegetation, the contractor/ developer shall provide a plan to the City of New Braunfels describing the measures that will be taken to stabilize earthen drainage infrastructure until a time when growing conditions become more favorable.

**SEQUENCE OF CONSTRUCTION**

1. Install erosion and sedimentation controls
2. Clear site and begin earthworks
3. Trench and install all underground utilities
4. Install lift station and ancillary equipment
5. Start-up and wet testing of lift station, training of operators
6. Removal of erosion and sediment devices

**CHANNEL MAINTENANCE PLAN**

The following are guidelines for the overall maintenance of the channel system and drainage easement by the designated maintenance entity as defined by the executed drainage agreement. The designated maintenance entity will be responsible for the operation, maintenance, and repair of the system and easement to ensure that it operates as designed.

- **Inspections.** The channel should be inspected to assure proper operation at least 4 times annually. One of these inspections should occur during or immediately following wet weather.
- **Mowing.** The side slopes and bottom of the channel that are covered with grass must be mowed regularly to discourage woody growth and control weeds. Grass areas in and around the channel must be mowed at least four times annually to limit vegetation height to 12 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing is performed, a mulching mower should be used, or grass clippings should be caught and removed. Vegetation shall be maintained so as to match the intent of the original design of the channel and preserve the flow conveyance capacity. Any woody vegetation which becomes established shall be periodically removed or mulched to ground level. Any removal of brush which results in disturbance of established grades shall be repaired/re-graded and revegetated.
- **Debris, Litter, and Obstruction Removal.** Debris and litter may accumulate in the channel and/or near the drop structure and outfall and should be removed during regular mowing operations and inspections or after large rainfall events. Any other obstructions that impede flow as intended by the original design shall be removed in a timely manner.
- **Erosion Control.** The channel side slopes and embankment may periodically suffer from slumping and erosion. Regrading and re-establishment of vegetation may be required to correct the problems. Vegetation should be re-established to the original design standards. Inspection of sediment deposits along the length of the channel should occur during the stated intervals. All sediment deposits exceeding 12" in depth or which are preventing positive drainage should be removed from the channel at least once annually. All sediment should be removed and disposed of properly.

WASTEWATER QUANTITY TABLE	
ITEM	QUANTITIES
8-INCH ASTM D2241 SDR 21 PVC FORCE MAIN	4411 LF
18-INCH STEEL ENCASEMENT (0.25" THICKNESS MIN.)	120 LF
15-INCH ASTM D3040 PVC GRAVITY SEWER (115 PSI MIN)	974 LF
12-INCH ASTM D3040 PVC GRAVITY SEWER (115 PSI MIN)	109 LF
8-INCH ASTM D3040 PVC GRAVITY SEWER (115 PSI MIN)	59 LF
45° BEND	9 EA
22.5° BEND	8 EA
11.25° BEND	12 EA
8-INCH PLUG VALVE, DI	4 EA
8-INCH WYE	1 EA
4'-0" DIA. PRECAST CONCRETE MANHOLE	7 EA
6'-0" DIA. POLYMER CONCRETE MANHOLE	1 EA
5'-0" DIA. POLYMER CONCRETE DROP MANHOLE	1 EA
BYPASS PUMPING FOR 24" WASTEWATER LINE	1 LS

\* QUANTITY TABLE IS FOR WASTEWATER LINES ONLY AND DOES NOT INCLUDE LIFT STATION ITEMS.

DATE	
NO.	REVISION



**PAPE-DAWSON**  
 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.622.5653  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 CONSTRUCTION NOTES 1

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	G-2

Date: September 9, 2025, 12:46 PM - User ID: jlling  
 File: p:\300\02\74\03 CAD\01\_Civil\CON - 30002-74.dwg

**General Notes**

- All materials and construction procedures within the scope of the project shall be approved by New Braunfels Utilities and comply with the current "New Braunfels Utilities Water Systems Connection/Construction Policy".
- Contractor shall not proceed with any pipe installation work until they obtain a copy of the plans from the Consultant or Engineer and notify NBU Water Systems Engineering at 830-608-8971 with at least two (2) working days (48 hours) notice. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A NOTICE TO PROCEED FROM NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
- The Developer dedicates the water / wastewater mains upon completion by the Contractor and acceptance by the New Braunfels Utilities Water System. NBU will own and maintain said water / wastewater mains which are located within platted utility easements or public ROW of proposed developments. (As applicable).
- Contractor agrees to assume sole and complete responsibility for job site conditions during the construction of the project, including safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours. The contractor shall defend, indemnify and hold the owners and the engineer and his employees, partners officers, directors, or consultants harmless from any and all liability, real or alleged, in connection with the performance of the work on this project, excepting from liability arising from sole negligence of the owner or engineer, engineer's directors, officers, employees, or consultants.
- Contractor to contact the engineer-of-record (EOR) for any field changes. Any revisions or changes to the approved construction plans will require additional approval by NBU in writing.
- 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.
- Contractor shall be responsible for restoring to its original or better condition, any damage to existing fences, curbs, streets, driveways, landscaping and structures, and existing utilities (not adjusted on plans). Cost of Restoration, if any, shall be the Contractor's entire expense.
- The Contractor shall avoid cutting roots larger than one (1) inch in diameter when excavating near existing trees. Excavation in vicinity of trees shall proceed with caution.
- Contractor shall procure all permits and licenses, pay all charges, fees and taxes and give all notices necessary and incidental to the due and lawful prosecution of the work.
- No extra payment shall be allowed for work called for on the 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.
- Contractor is responsible for removal of all waste materials upon project completion. The contractor shall not permanently place any waste materials in the 100-year flood plain without first obtaining an approved flood plain development permit.
- The contractor shall not place any materials on the recharge zone of the Edwards aquifer without an approved water pollution abatement plan from the TCEQ 31 TAC 313.4 and 31 TAC 313.9.
- Barricades and warning signs shall conform to the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and shall be located to provide maximum protection to the public as well as construction personnel and equipment while providing continuous traffic flow at all times during construction. The contractor is responsible for maintaining all devices during construction. Contractor is required to verify project elevations. The term "match existing" shall be understood to signify both horizontal and vertical alignment.
- The location of utilities, either underground or overhead, shown within the right of way are approximate and shall be verified by the contractor before beginning construction operations.
- OSHA regulations prohibit operations that will bring persons or equipment within 10 feet of an energized line. Where workmen and/or equipment must work close to an energized electrical line, the contractor shall notify the electrical power company involved and make whatever adjustments necessary to ensure the safety of those workmen.
- It shall be the contractor's responsibility to locate utility service lines as required for construction. Contractors shall call the One Call System for water/wastewater location.
- Due to federal regulations Title 49, part 192 (b), Gas companies must maintain access to gas valves at all times. The contractor must protect and work around any gas valves that are in the project area.
- The contractor is fully responsible for the traffic control and will be responsible for furnishing all traffic control devices, and flaggers. The construction methods shall be conducted to provide the least possible interference to traffic. The continuous movement of the traffic in one direction, at minimum, shall be maintained at all times. The contractor shall clean up and remove from the work area any loose material resulting from contract operations at the end of each workday.
- Prior to ordering materials to be used in construction, contractor shall provide the engineer with four (4) copies of the source, type, gradation, material specification data and / or shop drawings, as applicable, to satisfy the requirements of the following items and all material items referred to in these listed items:
  - Water mains and services
  - Wastewater mains and services
- Water jetting the backfill within a street will not be permitted. Wastewater trenches subject to traffic shall conform to NBU Connection and Construction Policy Manual.
- Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical information and the anticipated installation site(s) within the project work area in order to implement Contractor's trench excavation safety protection systems, programs and/or procedures. The Contractor's implementation of the systems, programs and/or procedures shall provide for adequate trench excavation safety protection that complies with 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.
- Utility Trench Compaction with street R.O.W.**
  - All utility trench compaction test within the street pavement section shall be the responsibility of the developer's Geo-technical engineer.
  - Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose.
  - Each layer of material shall be compacted as specified and tested for density and moisture in accordance with Text Methods TEX-113-E, TEX-114-E, TEX-115-E.
  - The number and location of required tests shall be determined by the Geo-technical Engineer and approved by the City of New Braunfels Street Inspector.
  - Upon completion of testing the Geo-technical Engineer shall provide the City of New Braunfels Street inspector with all testing documentation and a certification stating that the placement of fill material has been completed in accordance with the plans.

**NBU Water Notes**

- The point of delivery for an owned and maintained water line is typically the domestic or irrigation water meter, fire line up to the containment backflow device, or hydrant meter or as determined by NBU.
- Water infrastructure must be constructed in accordance with the NBU Water Connection Policy.
- All water mains shall be constructed of AWWA C900 DR 14 PVC, AWWA C900 DR 18 PVC or minimum CL 250 Ductile Iron Pipe.
- All residential water services shall be single services constructed of 1-inch ASTM B88 Type K Copper tubing, 1-inch AWWA C901 SDR9 CTS polyethylene tubing may be permitted with special approval from NBU only.
- All 2-inch service lines shall be constructed of AWWA C901 SDR9 CTS polyethylene tubing.
- Water mains shall have a minimum of 48 inches of cover to finished grade. Concrete encasement will be required if minimum cover cannot be met.
- Pipe bedding of water lines shall be compliant with NBU specification No. 120, "Utility Trenching and Backfill".
- Contractor shall install line stoppers at their cost for an outage during construction if system valves are not available or the existing valves do not function. Line stoppers will be required based on the following criteria:
  - If the number of residential customers affected is greater than 20 and expected to last more than 4 hours.
  - If any commercial customers are affected by the outage then the use of line stoppers will be determined on a case by case basis.
  - If any critical care customers are affected by the outage then the use of line stoppers will be determined on a case by case basis.
  - System conditions may require a line stopper and may not be known until construction commences.
- Contractor will keep the area on top of, around, and within the water meter box free of all objects and debris.
- Placement of meter boxes or vaults in sidewalks, driveways, drive aisles, parking areas, or other areas exposed to vehicular traffic is not permitted. Any meter boxes or vaults set in these areas will be relocated at the contractor's and/or developer's expense.
- Meter boxes or vaults must be set at proposed grade. Any meter boxes that are not set at the final grade will be adjusted at contractor's and/or developer's expense.
- Meter boxes for 5/8-inch and 1-inch meters must be DFW Plastics DFW38C-14-AF1MP.
- Meter boxes for 1.5" meters must be DFW Plastics DFW65C-14-AF1MP.
- Meter boxes for 2" meters must be DFW Plastics DFW1730F-12-AF1MP.
- Thrust blocks are not permitted without special approval. Joints must be restrained with restraining systems approved by NBU and restraint length shall be submitted to NBU at the time of plan submittal.
- Contractor shall install tracer wire on top of non-ferrous water mains in accordance with NBU specifications. Tracer wire should run from valve to valve and exit at a tracer wire access point. The tracer wire should be attached to the top of the pipe using tape. Excess wire should be coiled within the tracer wire access point riser.
- Contractor shall coordinate with the assigned water/wastewater inspector for completion of the Field Acceptance Checklist. All testing and acceptance shall conform to NBU Specifications, including but not limited to:
  - Bacteriological Testing
  - Hydrostatic Testing (performed valve to valve)
- The NBU water system shall be protected from hazards with appropriate backflow prevention assemblies installed on all irrigation systems, fire suppression systems and multi-unit complexes along with multi-level properties on the domestic meter containment. NBU can assist with the decision on appropriate backflow assemblies on a case-by-case basis. Contact NBU backflow prevention specialist for more details. Email questions to crossconnection@nbutexas.com
- All backflow prevention assemblies shall be tested upon installation and reports sent to NBU via the online tracking system. Contact an NBU backflow prevention specialist for more details. Email questions to crossconnection@nbutexas.com
- All residential and commercial properties shall have a Customer Service Inspection certificate (CSI Inspection) completed upon completion of the building or home structure. Contact an NBU backflow prevention specialist for more details. Email questions to crossconnection@nbutexas.com

**NBU Wastewater Notes**

- The point of delivery for an NBU owned and maintained wastewater line is typically the cleanout, property line, or edge of easement or as determined by NBU.
- The contractor shall maintain service to the existing wastewater system at all times during construction.
- All new wastewater mains and fittings shall be minimum 8-inch diameter (ASTM D-3034 SDR-26 PVC).
- All residential wastewater service laterals shall be extended four (4) feet into the Public Utility Easement and a cleanout installed at the ROW line per NBU Standard Details. Services to lots will extend four (4) feet past the underground electric conduit if electric is installed in the front easement.
- All sewer cleanouts that lead to NBU mains shall be installed with a protective utility shroud and pivoting marker pole during time of construction.
- Pipe bedding of wastewater lines shall be compliant with NBU specification No. 120, "Utility Trenching and Backfill".
- Wastewater mains shall have a minimum of 48 inches of cover to finished grade and wastewater laterals must have a minimum of 36 inches of cover to finished grade. Concrete encasement will be required if minimum cover cannot be met.
- All gravity wastewater pipes shall have gasketed, compression or fused joints per 30 TAC §217.53 (c) (2).
- For wastewater lines less than 24 inches in diameter, select initial backfill material shall be placed in two lifts.
  - The first lift shall be spread uniformly and simultaneously on each side and under the shoulders of the pipe to the mid-point or spring line of the pipe.
  - The second lift shall be placed to a depth as shown on the pipe backfill detail. For pipes larger than 24-inch, 12-inch maximum lifts shall be used.
- All manholes shall be water-tight, either monolithic, cast-in-place concrete structures or prefabricated manholes specifically approved by NBU. Polymer concrete is required for manholes on mains 18-inch diameter and larger, at force main discharge points, or at drop manholes with high corrosion potential.
- Manholes shall have bolted water-tight rings and covers. In non-paved areas, a manhole marker assembly shall be installed on the manhole cover.
- Manhole vents shall be installed at intervals no greater than 1500 feet.
- All manholes shall be constructed so that the top of the ring is six inches (6") above surrounding ground in non-paved areas. In paved areas, the manhole ring shall be flush with pavement.
- All new manholes, unless approved by NBU, shall have covers with 32-inch openings.
- Wastewater pipe connections to pre-cast manholes will be compression joints or mechanical "boot type" joint as approved by NBU.
- Existing manholes shall be lined, coated, or replaced with a corrosion resistant material if a new connection is made by a main or lateral.
- Wastewater mains shall be tested from manhole to manhole.
- In areas where a new wastewater manhole is to be constructed over an existing wastewater system, it shall be the contractor's responsibility to test the existing manholes before construction. After the proposed manhole(s) has been built, the contractor shall re-test the existing system to the satisfaction of the construction inspector, no separate pay.
- NBU Inspector to be present for all wastewater lines to be installed at depths of 15 feet or greater from final grade.
- Where the minimum 9-foot separation distance between wastewater lines and water lines / mains cannot be maintained, the installation of wastewater lines shall be in strict accordance with TCEQ requirements. The wastewater line shall be constructed of ASTM D2241 PVC or AWWA C900 PVC with pressure rating of 150 psi and shall be in accordance with 30 TAC §217.53 (d) (3) (A) (i).
- Contractor shall coordinate with the assigned water/wastewater inspector for completion of the Field Acceptance Checklist. No testing will be performed prior to 30 days from complete installation. All testing and acceptance shall conform to NBU Specifications be completed in the following order:
  - Pipe Deflection Test (Mandrel Test)
  - Pipe Low Pressure Air Test
  - Manhole Vacuum Test
  - Manhole Protective Coating Test
  - CCTV Inspection (within 72 hours of cleaning and flushing)
- TCEQ and EPA require erosion and sedimentation control for construction of wastewater collection systems. Developer or authorized representative shall provide erosion and sedimentation control as notes on the project's plan and profile sheets. All temporary erosion and sedimentation controls shall be removed by the Contractor at final acceptance of the project by NBU Water Systems.

**FORCE MAIN CONSTRUCTION NOTES**

- WHERE PIS ARE SHOWN ON THE PLAN AND A FITTING IS NOT INDICATED TO BE INSTALLED, THIS TRANSITION SHALL BE ACHIEVED BY DEFLECTING THE PIPE JOINT. THE LAYING SCHEDULE PROVIDED BY THE PIPE MANUFACTURE SHALL PROVIDE REVISED FLOW ELEVATIONS TO MAKE THIS TRANSITION BASED ON ACTUAL JOINT LOCATIONS. THE CONTRACTOR IS TO PROVIDE PIPE JOINT DEFLECTIONS TO ACHIEVE PI OR GRADE BREAK CHANGES PER THE TABLE BELOW:

JOINT DEFLECTION (3' MAX)		
PIPE JOINT DEFLECTION	VERTICAL DEFLECTION (%)	HORIZONTAL DEFLECTION (")
1 JOINT	0-5%	0-3
2 JOINTS	5-10%	3-6
3 JOINTS	10-15%	6-9

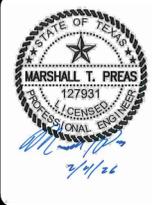
JOINT DEFLECTION (2' MAX)		
PIPE JOINT DEFLECTION	VERTICAL DEFLECTION (%)	HORIZONTAL DEFLECTION (")
1 JOINT	0-3.3%	0-2
2 JOINTS	3.3-6.7%	2-4
3 JOINTS	6.7-10%	4-6

- IF CONTRACTOR SELECTS RESTRAINED JOINT PIPE WITH MAX DEFLECTION LESS THAN 2 DEGREES, CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINE LAYING LENGTHS TO MEET PIS, GRADE BREAKS, AND CURVES.
- RESTRAINED JOINT TO CONFORM TO REQUIREMENTS OF NBU STANDARD SPECIFICATION ITEM 510. PIPE.

**BYPASS PUMPING NOTES**

- CONTRACTOR TO FURNISH BYPASS PUMPING EQUIPMENT AS REQUIRED TO PROVIDE DIVERSION OF FLOWS AND TEMPORARY ISOLATION OF SANITARY SEWER SECTIONS DURING CONSTRUCTION.
- WHEN TOTAL BYPASSING AND PUMPING ARE REQUIRED, SUPPLY THE PUMPS, CONDUITS, AND OTHER EQUIPMENT TO DIVERT THE FLOW OF SEWER AROUND THE LINE SECTION WHERE WORK IS TO BE PERFORMED.
- BEGIN THE FLOW DIVERSION AT THE UPSTREAM MANHOLE. DIVERT FLOW TO THE DOWNSTREAM MANHOLE OF THE LINE SECTION BEING WORKED.
- THE TOTAL BYPASS SYSTEM MUST HAVE SUFFICIENT CAPACITY TO HANDLE PEAK FLOW DURING A WET WEATHER EVENT.
- CONTRACTOR IS RESPONSIBLE FOR FURNISHING THE NECESSARY LABOR AND SUPERVISION TO SET UP AND OPERATE THE PUMPING AND BYPASSING. IF PUMPING IS REQUIRED ON A 24-HOUR BASIS OR OUTSIDE OF SPECIFIED NORMAL WORK HOURS, USE ENGINES WITH HOSPITAL RATED NOISE SUPPRESSION EQUIPMENT.
- A COMPREHENSIVE BYPASS PUMPING PLAN (BPP) SHALL BE SUBMITTED BY THE CONTRACTOR. THE BPP SHALL BE SUBMITTED A MINIMUM OF (2) TWO WEEKS PRIOR TO COMMENCING ANY PORTION OF THE PROPOSED SCOPE OF WORK AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEGINNING WORK.
- CONTRACTOR SHALL SUBMIT FOLLOWING INFORMATION IN ORDER FOR THE PROPOSED BPP TO BE REVIEWED AND APPROVED.
  - LISTING OF SAFETY PRECAUTIONS AND TRAFFIC CONTROL MEASURES.
  - CERTIFICATION THAT STAFF TO BE USED FOR THE WORK ARE PROPERLY TRAINED IN CONFINED SPACE ENTRY AND HAZARDOUS ENVIRONMENTS.
  - DETAILED PLAN AND DESCRIPTION OF PROPOSED PUMPING SYSTEM, INDICATE NUMBER, SIZE, MATERIAL, LOCATION AND METHOD OF INSTALLATION OF SUCTION AND DISCHARGE PIPING, SIZE OF PIPELINE OR CONVEYANCE SYSTEM TO BE BYPASSED, STAGING AREA FOR PUMPS, SITE ACCESS POINT, AND EXPECTED FLOW.
  - SIZE AND LOCATION OF MANHOLE OR ACCESS POINTS FOR SUCTION AND DISCHARGE HOSE OR PIPING.
  - SECTION'S SHOWING SUCTION AND DISCHARGE PIPE DEPTH, EMBEDMENT, SELECT FILL AND SPECIAL BACKFILL, IF BURED.
  - TEMPORARY PIPE SUPPORTS AND ANCHORING REQUIRED.
  - THRUST AND RESTRAINT BLOCK SIZES AND LOCATIONS.
  - SEWER PLUGGING METHOD AND TYPE OF PLUGS.
  - BYPASS PUMP SIZES, CAPACITY, NUMBER OF EACH SIZE TO BE ON SITE AND POWER REQUIREMENTS.
  - BACKUP PUMP, POWER AND PIPING EQUIPMENT.
  - CALCULATIONS OF STATIC LIFT, FRICTION LOSSES, AND FLOW VELOCITY. PUMP CURVES SHOWING PUMP OPERATING RANGE.
  - CALCULATIONS FOR SELECTION OF BYPASS PUMPING PIPE SIZE.
  - METHOD OF PROTECTING DISCHARGE MANHOLES OR STRUCTURES FROM EROSION AND DAMAGE.
  - SCHEDULE FOR INSTALLATION AND MAINTENANCE OF BYPASS PUMPING LINES.
  - PROCEDURES TO MONITOR UPSTREAM MAINS FOR BACKUP IMPACTS.
  - PROCEDURES FOR SETUP AND BREAKDOWN OF PUMPING OPERATIONS.
  - EMERGENCY PLAN DETAILING PROCEDURES TO BE FOLLOWED IN EVENT OF PUMP FAILURES, SEWER OVERFLOWS, SERVICE BACKUPS, AND SEWAGE SPILLAGE.
  - Q.1. MAINTAIN COPY OF EMERGENCY PLAN ON SITE FOR DURATION OF PROJECT.

NO.	REVISION	DATE



**PAPE-DAWSON**  
 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.6633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 CONSTRUCTION NOTES 2

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	G-3

Date: September 9, 2025, 12:46 PM - User ID: jlling  
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**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY LIFT STATIONS AND FORCE MAINS GENERAL CONSTRUCTION NOTES**

- 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 HOUSTON STANDARD SPECIFICATIONS.
- 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.
- PRIOR TO COMMENCING ANY REGULATED ACTIVITY, THE APPLICANT OR HIS AGENT MUST NOTIFY THE HOUSTON REGIONAL OFFICE, IN WRITING, OF THE DATE ON WHICH THE REGULATED ACTIVITY WILL BEGIN.
- 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.
- 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 ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.
- 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.
- DRY WELL SUMP PUMPS:
  - 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.
  - A PUMP MUST HAVE A SUBMERSIBLE MOTOR AND WATERTIGHT WIRING.
  - A DRY WELL FLOOR MUST SLOPE TOWARD A SUMP SIZED FOR PROPER DRAINAGE.
  - THE MINIMUM SUMP DEPTH IS 6.0 INCHES AND MUST PREVENT STANDING WATER ON A DRY WELL FLOOR UNDER NORMAL OPERATION.
  - A SUMP PUMP MUST OPERATE AUTOMATICALLY BY USE OF A FLOAT SWITCH OR OTHER LEVEL-DETECTING DEVICE.
  - A SUMP PUMP MUST USE SEPARATE PIPES CAPABLE OF DISCHARGING MORE THAN THE MAXIMUM LIQUID LEVEL OF AN ASSOCIATED WET WELL.
  - A SUMP PUMP OUTLET PIPE MUST BE AT LEAST 1.5 INCHES IN DIAMETER AND HAVE AT LEAST TWO CHECK VALVES IN SERIES.
- PUMP CONTROLS.
  - A LIFT STATION PUMP MUST OPERATE AUTOMATICALLY, BASED ON THE WATER LEVEL IN A WET WELL.
  - THE LOCATION OF A WET WELL LEVEL MECHANISM MUST ENSURE THAT THE MECHANISM IS UNAFFECTED BY CURRENTS, RAGS, GREASE, OR OTHER FLOATING MATERIALS.
  - A LEVEL MECHANISM MUST BE ACCESSIBLE WITHOUT ENTERING THE WET WELL.
  - WET WELL CONTROLS WITH A BUBBLER SYSTEM REQUIRE DUAL AIR SUPPLY AND DUAL CONTROLS.
  - 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.
  - 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.
- WET WELLS.
  - A WET WELL MUST BE ENCLOSED BY WATERTIGHT AND GAS TIGHT WALLS.
  - A PENETRATION THROUGH A WALL OF A WET WELL MUST BE GAS TIGHT.
  - 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.
  - A GRAVITY PIPE DISCHARGING TO A WET WELL MUST BE LOCATED SO THAT THE INVERT ELEVATION IS ABOVE THE LIQUID LEVEL OF A PUMP'S "ON" SETTING.
  - GATE VALVES AND CHECK VALVES ARE PROHIBITED IN A WET WELL.
  - GATE VALVES AND CHECK VALVES MAY BE LOCATED IN A VALVE VAULT NEXT TO A WET WELL OR IN A DRY WELL.
  - PUMP CYCLE TIME, BASED ON PEAK FLOW, MUST EQUAL OR EXCEED THOSE IN THE FOLLOWING TABLE:

CYCLE TIMES	
PUMP HORSEPOWER	MINIMUM CYCLE TIME (MIN.)
< 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)

- WET WELL SLOPES.
  - A WET WELL FLOOR MUST HAVE A SMOOTH FINISH AND MINIMUM SLOPE OF 10% TO A PUMP INTAKE.
  - A WET WELL DESIGN MUST PREVENT DEPOSITION OF SOLIDS UNDER NORMAL OPERATING CONDITIONS.
  - A LIFT STATION WITH GREATER THAN 5.0 MILLION GALLONS PER DAY FIRM PUMPING CAPACITY MUST HAVE ANTI-VORTEX BAFFLING.
- DRY WELL ACCESS.
  - AN UNDERGROUND DRY WELL MUST BE ACCESSIBLE.
  - A STAIRWAY IN A DRY WELL MUST USE NON-SLIP STEPS AND CONFORM TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS WITH RESPECT TO RISE AND RUN.
  - A LADDER IN A DRY WELL MUST MADE OF NON-CONDUCTIVE MATERIAL AND RATED FOR THE LOAD NECESSARY FOR STAFF AND EQUIPMENT TO DESCEND AND ASCEND.
- VENTILATION SHALL BE PROVIDED FOR LIFT STATIONS, INCLUDING BOTH WET AND DRY WELLS.
- 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.
- A FLOOR DRAIN FROM A VALVE VAULT TO A WET WELL MUST PREVENT GAS FROM ENTERING A VALVE VAULT BY INCLUDING FLAP VALVES, "P" TRAPS, SUBMERGED OUTLETS, OR A COMBINATION OF THESE DEVICES.
- PUMPS.
  - GENERAL REQUIREMENTS. A RAW WASTEWATER PUMP, WITH THE EXCEPTION OF A GRINDER PUMP, MUST:
    - BE DESIGNED TO PREVENT CLOGGING
    - BE CAPABLE OF PASSING A SPHERE OF 2.5 INCHES IN DIAMETER OR GREATER; AND
    - HAVE GREATER THAN 3.0 INCH DIAMETER SUCTION AND DISCHARGE OPENINGS.
  - SUBMERSIBLE AND NON-SUBMERSIBLE PUMPS.
    - 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.
    - A PUMP SUPPORT MUST PREVENT MOVEMENT AND VIBRATION DURING OPERATION.
    - 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.
    - SUBMERSIBLE PUMP RAILS AND LIFTING CHAINS MUST BE CONSTRUCTED OF A MATERIAL THAT PERFORMS TO AT LEAST THE STANDARD OF SERIES 300 STAINLESS STEEL.
  - LIFT STATION PUMPING CAPACITY. THE FIRM PUMPING CAPACITY OF A LIFT STATION MUST HANDLE THE EXPECTED PEAK FLOW.
  - PUMP HEAD CALCULATIONS.
    - 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.
    - 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.
    - THE SELECTED FRICTION COEFFICIENT (HAZEN-WILLIAMS "C" VALUE) USED IN FRICTION HEAD LOSS CALCULATIONS MUST BE BASED ON THE PIPE MATERIAL SELECTED.
    - 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.
  - FLOW CONTROL.
    - 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.
    - A WASTEWATER TREATMENT SYSTEM WITH A PEAK FLOW THAT IS GREATER THAN 300,000 GALLON PER DAY MUST USE THREE OR MORE PUMPS, UNLESS DUPLEX, AUTOMATICALLY CONTROLLED, VARIABLE CAPACITY PUMPS ARE PROVIDED.
  - SELF-PRIMING PUMPS.
    - 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.
    - 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.
    - A SELF-PRIMING PUMP MUST VENT AIR BACK INTO THE WET WELL DURING PRIMING.
  - VACUUM-PRIMING PUMPS.
    - 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.
    - 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.
  - 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.
  - 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.

- 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.
- PIPING.
  - HORIZONTAL PUMP SUCTIONS.
    - EACH PUMP MUST HAVE A SEPARATE SUCTION PIPE THAT USES AN ECCENTRIC REDUCER.
    - PIPES IN A WET WELL MUST HAVE A TURNDOWN TYPE FLARED INTAKE.
  - VALVES.
    - THE DISCHARGE SIDE OF EACH PUMP FOLLOWED BY A FULL-CLOSING ISOLATION VALVE MUST ALSO HAVE A CHECK VALVE.
      - A CHECK VALVE MUST BE A SWING TYPE VALVE WITH AN EXTERNAL LEVER.
      - 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.
    - A GRINDER PUMP INSTALLATION MAY USE A RUBBER-BALL CHECK VALVE OR A SWING-TYPE CHECK VALVE.
    - A BUTTERFLY VALVE, TILTING-DISC CHECK VALVE, OR ANY OTHER VALVE USING A TILTING-DISC IN A FLOW PIPE IS PROHIBITED.
  - PIPES.
    - 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.
    - WALL PENETRATIONS MUST ALLOW FOR PIPE FLEXURE WHILE EXCLUDING EXFILTRATION OR INFILTRATION.
    - PIPE SUCTION VELOCITIES MUST BE AT LEAST 3.0 FEET PER SECOND BUT NOT MORE THAN 7.0 FEET PER SECOND.
- EMERGENCY PROVISIONS FOR LIFT STATIONS.
  - 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.
  - 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.
  - AN ALARM SYSTEM MUST SELF-ACTIVATE FOR A POWER OUTAGE, PUMP FAILURE, OR A HIGH WET WELL WATER LEVEL.
  - A LIFT STATION CONSTRUCTED TO PUMP RAW WASTEWATER MUST HAVE SERVICE RELIABILITY BASED ON:
    - RETENTION CAPACITY.
      - 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.
      - FOR CALCULATION PURPOSES, THE OUTAGE PERIOD BEGINS WHEN A LIFT STATION PUMP FINISHED ITS LAST NORMAL CYCLE, EXCLUDING A STANDBY PUMP.
    - 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.
    - PORTABLE GENERATORS AND PUMPS.
      - A LIFT STATION MAY USE PORTABLE GENERATORS AND PUMPS TO GUARANTEE SERVICE IF THE REPORT INCLUDES:
        - THE STORAGE LOCATION OF EACH GENERATOR AND PUMP;
        - THE AMOUNT OF TIME THAT WILL BE NEEDED TO TRANSPORT EACH GENERATOR OR PUMP TO A LIFT STATION;
        - THE NUMBER OF LIFT STATIONS FOR WHICH EACH GENERATOR OR PUMP IS DEDICATED AS A BACKUP; AND
        - THE TYPE OF ROUTINE MAINTENANCE AND UPKEEP PLANNED FOR EACH PORTABLE GENERATOR AND PUMP TO ENSURE THAT THEY WILL BE OPERATIONAL WHEN NEEDED.
      - AN OPERATOR THAT IS KNOWLEDGEABLE IN OPERATION OF THE PORTABLE GENERATORS AND PUMPS SHALL BE ON CALL 24 HOURS PER DAY EVERY DAY.
      - THE SIZE OF A PORTABLE GENERATOR MUST HANDLE THE FIRM PUMPING CAPACITY OF THE LIFT STATION.
  - SPILL CONTAINMENT STRUCTURES.
    - THE USE OF A SPILL CONTAINMENT STRUCTURE AS A SOLE MEANS OF PROVIDING SERVICE RELIABILITY IS PROHIBITED.
    - 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.
    - THE REPORT MUST INCLUDE A DETAILED MANAGEMENT PLAN FOR CLEANING AND MAINTAINING EACH SPILL CONTAINMENT STRUCTURE.
    - 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.
    - A LIFT STATION MUST BE FULLY ACCESSIBLE DURING A 25-YEAR 24-HOUR RAINFALL EVENT.
  - LIFT STATION SYSTEM CONTROLS MUST PREVENT OVER-PUMPING UPON RESUMPTION OF NORMAL POWER AFTER A POWER FAILURE. BACKUP OR STANDBY UNITS 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.

**TEXAS COMMISSION OF ENVIRONMENTAL QUALITY CHAPTER 217 DESIGN CRITERIA FOR SEWERAGE SYSTEMS COMPLIANCE NOTES**

- FLOODPLAIN: THIS PROJECT IS NOT IN THE 100 YEAR FLOODPLAIN IN ACCORDANCE WITH FEMA MAP PANEL NO. 48091C0460F (DATED 09/02/2009), COMAL COUNTY, TEXAS.
- DROP MANHOLE: A DROP PIPE SHALL BE PROVIDED FOR A SEWER ENTERING A MANHOLE MORE THAN 24 INCHES ABOVE THE INVERT. CHAPTER 217.55(1)(2)(H).
- BEDDING: SHALL BE IN ACCORDANCE WITH CHAPTER 217.54(a)(2), CLASS IA, IB, II, OR III AS DESCRIBED IN ASTM D-2321 (ANSI K65.171) SHALL BE USED FOR ALL FLEXIBLE AND SEMI-RIGID PIPES.
- TESTS: AIR TEST AND DEFLECTION TEST SHALL BE IN ACCORDANCE WITH CHAPTER 217.57(a)(1) AND 217.57(b).
- SEWER LINE / WATER LINE SEPARATION SHALL BE IN ACCORDANCE WITH TEXAS NATURAL RESOURCE CONSERVATION COMMISSION RULES, CHAPTER 217.53(d)

THE FOLLOWING RULES APPLY TO SEPARATION DISTANCES BETWEEN POTABLE WATER AND SANITARY SEWER TREATMENT PLANTS, AND WATERLINES AND SANITARY SEWERS.

- WATER LINE/NEW SEWER LINE SEPARATION. WHEN NEW SANITARY SEWERS ARE INSTALLED, THEY SHALL BE INSTALLED NO CLOSER TO WATERLINES THAN NINE FEET IN ALL DIRECTIONS. SEWERS THAT PARALLEL WATERLINES MUST BE INSTALLED IN SEPARATE TRENCHES. WHERE THE NINE FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE FOLLOWING GUIDELINES WILL APPLY:
  - WHERE A SANITARY SEWER PARALLELS A WATERLINE, THE SEWER SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC MEETING ASTM SPECIFICATIONS WITH A PRESSURE RATING FOR BOTH THE PIPE AND JOINTS OF 150 PSI. THE VERTICAL SEPARATION SHALL BE A MINIMUM OF TWO FEET BETWEEN OUTSIDE DIAMETERS AND THE HORIZONTAL SEPARATION SHALL BE A MINIMUM OF FOUR FEET BETWEEN THE OUTSIDE DIAMETERS. THE SEWER SHALL BE LOCATED BELOW THE WATERLINE.
  - WHERE A SANITARY SEWER CROSSES A WATERLINE AND THE SEWER IS CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC WITH A MINIMUM DISTANCE OF 6 INCHES BETWEEN OUTSIDE DIAMETERS SHALL BE MAINTAINED. IN ADDITION THE SEWER SHALL BE LOCATED BELOW THE WATERLINE WHERE POSSIBLE AND ONE LENGTH OF THE SEWER PIPE MUST BE CENTERED ON THE WATERLINE.
  - WHERE A SEWER CROSSES UNDER A WATERLINE AND THE SEWER IS CONSTRUCTED OF ABS TRUSS PIPE, SIMILAR SEMI-RIGID PLASTIC COMPOSITE PIPE, CLAY PIPE OR CONCRETE PIPE WITH GASKET JOINTS, A MINIMUM TWO FOOT SEPARATION DISTANCE SHALL BE MAINTAINED. THE INITIAL BACKFILL SHALL BE CEMENT STABILIZED SAND (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR ALL SECTIONS OF SEWER WITHIN NINE FEET OF THE WATERLINE. THIS INITIAL BACKFILL SHALL BE FROM ONE QUARTER THE DIAMETER BELOW THE CENTER LINE OF THE PIPE TO ONE DIAMETER (BUT NOT LESS THAN 12 INCHES) ABOVE THE TOP OF THE PIPE.
  - WHERE A SEWER CROSSES OVER A WATERLINE ALL PORTIONS OF THE SEWER WITHIN NINE FEET OF THE WATERLINE SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC PIPE WITH A PRESSURE RATING OF AT LEAST 150 PSI USING APPROPRIATE ADAPTERS. IN LIEU OF THIS PROCEDURE THE NEW CONVEYANCE MAY BE ENCASED IN A JOINT OF 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT 5 FEET INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHOULD BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEAL.
- WATER LINE/MANHOLE SEPARATION. UNLESS SANITARY SEWER MANHOLES AND THE CONNECTING SEWER CAN BE MADE WATERTIGHT AND TESTED FOR NO LEAKAGE, THEY MUST BE INSTALLED SO AS TO PROVIDE A MINIMUM OF NINE (9) FEET OF HORIZONTAL CLEARANCE FROM AN EXISTING OR PROPOSED WATERLINE. WHERE THE NINE (9) FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, A CARRIER PIPE AS DESCRIBED IN SUBSECTION (A) (4) OF THIS SECTION MAY BE USED WHERE APPROPRIATE.

DATE \_\_\_\_\_

NO. \_\_\_\_\_

REVISION \_\_\_\_\_

**PAPE-DAWSON**

1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 832.632.6533

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**

NEW BRAUNFELS, TEXAS

TCEQ NOTES

PLAT NO. \_\_\_\_\_

JOB NO. 30002-74

DATE FEBRUARY 2026

DESIGNER LL

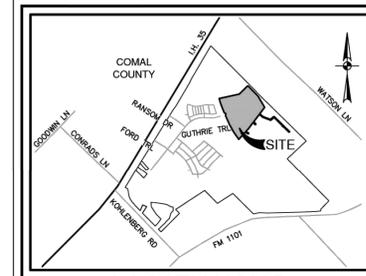
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SHEET G-4

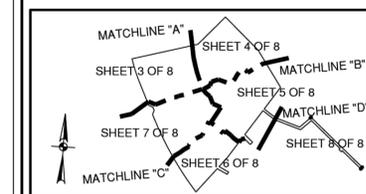
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Date: September 9, 2025, 12:47 PM - User ID: j.ling  
 File: P:\300\02\74\03 CADD\01\_Civil\PLAT.dwg



LOCATION MAP  
NOT-TO-SCALE



INDEX MAP  
SCALE: 1" = 1000'

SUBDIVISION PLAT  
OF  
**MAYFAIR - E-5 E-24**

BEING 93.755 ACRES OF LAND OUT OF THE 453.746 ACRE TRACT  
 RECORDED IN DOC. NO. 20210603787 OF THE OFFICIAL PUBLIC RECORDS  
 OF COMAL COUNTY, TEXAS, SITUATED IN THE ANTONIO MARIA ENSAURIZAR  
 SURVEY NO. 1, ABSTRACT 1, COMAL COUNTY, TEXAS.

**PAPE-DAWSON**  
 1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.832.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800  
 DATE OF PREPARATION: January 27, 2026

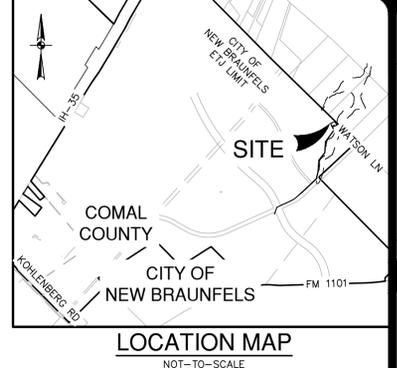
CURVE TABLE					CURVE TABLE					CURVE TABLE							
CURVE #	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH	CURVE #	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH	CURVE #	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH			
C1	5400.00'	144702"	N29°43'11"W	1389.49'	1393.35'	C56	50.00'	1674430"	N32°46'23"E	99.43'	146.38'	C111	425.00'	1501'25"	N33°24'10"W	111.12'	111.44'
C2	2900.00'	84055"	N17°59'12"W	438.01'	438.43'	C57	15.00'	385215"	S82°47'25"E	9.98'	10.18'	C112	15.00'	907000"	N19°06'33"E	21.21'	23.56'
C3	15.00'	385215"	N88°20'20"E	9.98'	10.18'	C58	15.00'	907000"	S57°33'33"E	21.21'	23.56'	C113	15.00'	907000"	S67°33'22"E	21.21'	23.56'
C4	50.00'	1674430"	S57°33'33"E	99.43'	146.38'	C59	525.00'	511'20"	S14°49'13"E	47.53'	47.55'	C114	528.00'	373000"	S24°08'22"E	32.25'	32.25'
C5	15.00'	385215"	S71°23'5"W	9.98'	10.18'	C60	15.00'	907000"	S27°35'07"W	21.21'	23.56'	C115	475.00'	1501'25"	S33°41'10"E	124.20'	124.55'
C6	575.00'	511'20"	S14°49'13"E	53.06'	53.07'	C61	28.00'	807000"	N67°24'53"W	32.14'	34.91'	C116	15.00'	907000"	S40°05'07"W	21.21'	23.56'
C7	15.00'	907000"	S62°24'53"E	21.21'	23.56'	C62	975.00'	1511'20"	N18°49'13"W	257.71'	258.47'	C117	225.00'	107000"	S54°05'07"W	39.22'	39.27'
C8	15.00'	907000"	N27°35'07"E	21.21'	23.56'	C63	25.00'	907000"	N32°46'23"E	35.38'	39.27'	C118	15.00'	907000"	N75°54'53"W	21.21'	23.56'
C9	225.00'	327000"	N12°43'53"W	124.04'	125.66'	C64	25.00'	907000"	S57°33'33"E	35.38'	39.27'	C119	975.00'	5701'25"	N28°24'10"W	85.46'	85.49'
C10	15.00'	385215"	N4°51'00"W	9.98'	10.18'	C65	625.00'	511'20"	S14°49'13"E	56.58'	56.60'	C120	975.00'	373000"	N24°08'22"W	59.55'	59.56'
C11	50.00'	1674430"	N59°35'07"E	99.43'	146.38'	C66	15.00'	907000"	S27°35'07"W	21.21'	23.56'	C121	25.00'	907000"	N22°36'33"E	35.38'	39.27'
C12	15.00'	385215"	S55°58'45"E	9.98'	10.18'	C67	15.00'	907000"	N62°24'53"W	21.21'	23.56'	C122	325.00'	3128'35"	N83°20'30"E	176.31'	178.54'
C13	325.00'	4411'20"	S53°19'13"E	244.49'	250.65'	C68	475.00'	511'20"	N14°49'13"W	43.00'	43.02'	C123	500.00'	287000"	S66°54'53"E	241.92'	244.35'
C14	150.00'	6818'40"	S25°04'7"W	168.43'	178.84'	C69	15.00'	907000"	N32°46'23"E	21.21'	23.56'	C124	15.00'	907000"	S75°54'53"E	21.21'	23.56'
C15	15.00'	385215"	S17°39'00"W	9.98'	10.18'	C70	15.00'	907000"	S30°24'53"E	21.21'	23.56'	C125	15.00'	907000"	S82°05'07"W	21.21'	23.56'
C16	50.00'	1674430"	S82°05'07"W	99.43'	146.38'	C71	175.00'	3424'22"	S27°30'4"E	103.52'	105.09'	C126	300.00'	287000"	N66°54'53"W	145.15'	146.61'
C17	15.00'	385215"	N33°28'45"W	9.98'	10.18'	C72	15.00'	7750'48"	S19°06'09"W	18.85'	20.38'	C127	150.00'	3458'35"	S81°35'50"W	90.15'	91.57'
C18	15.00'	907000"	S82°05'07"W	21.21'	23.56'	C73	125.00'	14333'34"	S65°18'20"W	31.68'	31.76'	C128	15.00'	907000"	N70°53'22"W	21.21'	23.56'
C19	15.00'	8738'30"	S84°40'8"E	20.77'	22.94'	C74	15.00'	907000"	N62°24'53"W	21.21'	23.56'	C129	472.00'	373000"	N24°08'22"W	28.83'	28.83'
C20	1030.00'	513'43"	S47°56'31"E	93.96'	93.99'	C75	175.00'	327000"	N12°43'53"W	96.47'	97.74'	C130	15.00'	907000"	N22°36'33"E	21.21'	23.56'
C21	970.00'	5700'22"	N47°49'51"W	84.73'	84.75'	C76	25.00'	907000"	N59°35'07"E	35.38'	39.27'	C131	970.00'	4720'19"	S79°09'53"E	778.83'	801.43'
C22	15.00'	9234'50"	S83°22'33"W	21.69'	24.24'	C77	15.00'	907000"	N59°35'07"E	21.21'	23.56'	C132	15.00'	9234'50"	S91°18'18"E	21.69'	24.24'
C23	15.00'	907000"	S75°54'53"E	21.21'	23.56'	C78	275.00'	4411'20"	S53°19'13"E	206.87'	212.09'	C133	15.00'	907000"	S82°05'07"W	21.21'	23.56'
C24	325.00'	107000"	S47°54'53"E	56.65'	56.72'	C79	15.00'	907000"	S13°46'28"W	21.21'	23.56'	C134	550.00'	287000"	N66°54'53"W	266.11'	268.78'
C25	15.00'	3736'42"	S81°43'14"E	9.87'	9.85'	C80	175.00'	2141'20"	S47°50'47"W	65.85'	66.23'	C135	375.00'	3128'35"	S83°20'30"W	203.43'	208.01'
C26	50.00'	15513'25"	S25°43'53"E	97.67'	135.46'	C81	15.00'	907000"	S82°05'07"W	21.21'	23.56'	C136	15.00'	907000"	N67°23'22"W	21.21'	23.56'
C27	15.00'	3736'42"	S55°53'29"W	9.87'	9.85'	C82	175.00'	143000"	N60°09'53"W	44.17'	44.29'	C137	312.00'	658'35"	N18°54'10"W	37.97'	37.99'
C28	175.00'	77000"	S33°35'07"W	21.37'	21.38'	C83	125.00'	827000"	N26°24'53"W	164.01'	178.90'	C138	15.00'	9234'50"	N30°52'33"E	21.69'	24.24'
C29	15.00'	907000"	S14°54'53"E	21.21'	23.56'	C84	175.00'	14333'34"	N65°18'20"E	44.35'	44.47'	C139	15.00'	907000"	S62°24'53"E	21.21'	23.56'
C30	250.00'	197000"	N50°24'53"W	82.52'	82.90'	C85	15.00'	7750'48"	S83°03'02"E	18.85'	20.38'	C140	175.00'	537000"	S43°54'53"E	156.17'	161.88'
C31	15.00'	907000"	N85°54'53"W	21.21'	23.56'	C86	175.00'	2317'15"	S55°46'15"E	70.64'	71.13'	C141	475.00'	173000"	S61°39'53"E	144.52'	145.08'
C32	275.00'	107000"	S54°05'07"W	47.94'	48.00'	C87	125.00'	143000"	S80°09'53"E	31.55'	31.83'	C142	15.00'	907000"	S75°54'53"E	21.21'	23.56'
C33	15.00'	907000"	S14°05'07"W	21.21'	23.56'	C88	15.00'	907000"	S75°54'53"E	21.21'	23.56'	C143	15.00'	8738'30"	S80°54'22"W	20.77'	22.94'
C34	1975.00'	27000"	S31°54'53"E	68.84'	68.94'	C89	15.00'	907000"	S82°05'07"W	21.21'	23.56'	C144	1030.00'	4747'00"	N79°09'53"W	834.32'	858.00'
C35	15.00'	907000"	S77°54'53"E	21.21'	23.56'	C90	525.00'	173000"	N61°39'53"W	159.73'	160.35'	C145	15.00'	8738'30"	S59°14'08"W	20.77'	22.94'
C36	65.00'	2707000"	S12°05'07"W	91.92'	306.31'	C91	125.00'	537000"	N43°54'53"W	111.55'	115.63'	C146	728.00'	27000"	N16°24'53"W	25.41'	25.41'
C37	2025.00'	27000"	N31°54'53"W	70.68'	70.69'	C92	15.00'	907000"	N27°35'07"E	21.21'	23.56'	C147	15.00'	907000"	N27°35'07"E	21.21'	23.56'
C38	1025.00'	5701'25"	N28°24'10"W	89.84'	89.87'	C93	125.00'	2141'20"	N47°55'47"E	47.04'	47.32'	C148	388.00'	2701'4"	S21°08'20"E	16.96'	16.96'
C39	1025.00'	373000"	N24°08'22"W	62.60'	62.61'	C94	15.00'	907000"	S76°13'32"E	21.21'	23.56'	C149	292.00'	376'35"	S20°44'10"E	16.87'	16.87'
C40	15.00'	385215"	N41°49'35"W	9.98'	10.18'	C95	100.00'	6818'40"	S25°47'7"W	112.29'	119.23'	C150	652.00'	27000"	N16°24'53"W	22.76'	22.76'
C41	50.00'	1674430"	N22°36'33"E	99.43'	146.38'	C96	25.00'	907000"	S82°05'07"W	35.38'	39.27'	C151	748.00'	27000"	N16°24'53"W	26.11'	26.11'
C42	15.00'	385215"	N87°02'40"E	9.98'	10.18'	C97	15.00'	907000"	N75°54'53"W	21.21'	23.56'	C152	325.00'	7702'11"	S56°23'47"E	39.89'	39.91'
C43	15.00'	907000"	N22°36'33"E	21.21'	23.56'	C98	325.00'	127000"	N43°05'07"E	67.94'	68.07'	C153	275.00'	7702'11"	S56°23'47"E	33.75'	33.77'
C44	368.00'	658'35"	N18°54'10"W	44.78'	44.81'	C99	15.00'	907000"	N82°05'07"E	21.21'	23.56'						
C45	15.00'	9234'50"	N61°42'18"W	21.69'	24.24'	C100	275.00'	107000"	S47°54'53"E	47.94'	48.00'						
C46	970.00'	4719'57"	S89°01'18"W	73.33'	73.35'	C101	25.00'	807000"	S25°43'53"E	32.14'	34.91'						
C47	1030.00'	4331'17"	N69°06'59"E	81.86'	81.88'	C102	225.00'	77000"	S33°35'07"W	27.47'	27.49'						
C48	15.00'	8738'30"	N28°24'22"E	20.77'	22.94'	C103	15.00'	907000"	S75°54'53"E	21.21'	23.56'						
C49	872.00'	27000"	N16°24'53"W	23.46'	23.46'	C104	300.00'	197000"	N50°24'53"W	66.02'	66.32'						
C50	15.00'	907000"	N62°24'53"W	21.21'	23.56'	C105	15.00'	907000"	N47°05'07"E	21.21'	23.56'						
C51	15.00'	3736'42"	S33°46'46"W	9.87'	9.85'	C106	100.00'	3458'35"	N81°35'50"E	60.10'	61.05'						
C52	50.00'	15513'25"	N87°43'53"W	97.67'	135.46'	C107	250.00'	287000"	S66°54'53"E	120.96'	122.17'						
C53	15.00'	3736'42"	N83°38'31"W	9.87'	9.85'	C108	15.00'	907000"	S75°54'53"E	21.21'	23.56'						
C54	1025.00'	1511'20"	N18°49'13"W	270.83'	271.72'	C109	275.00'	127000"	S43°05'07"W	57.49'	57.60'						
C55	15.00'	385215"	N31°39'40"W	9.98'	10.18'	C110	15.00'	907000"	N85°54'53"W	21.21'	23.56'						

PLAT NOTES APPLY TO EVERY PAGE  
OF THIS MULTIPLE PAGE PLAT

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ON SHEET 1 OF 8

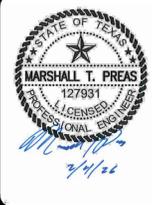
CURVE DATA  
ON SHEET 2 OF 8

SHEET 2 OF 8



LOCATION MAP  
NOT-TO-SCALE

DATE	
NO. REVISION	



**PAPE-DAWSON**  
 1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.832.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

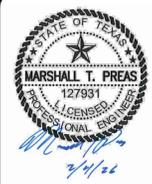
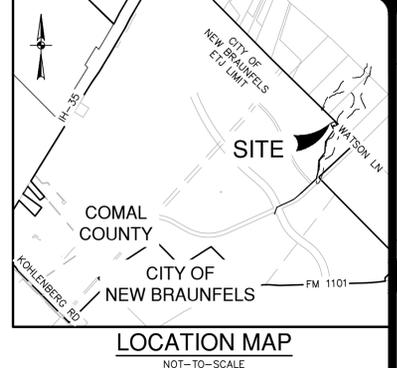
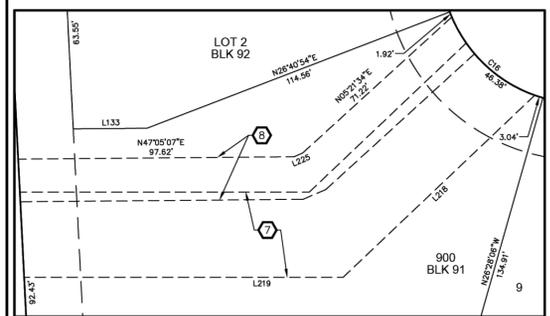
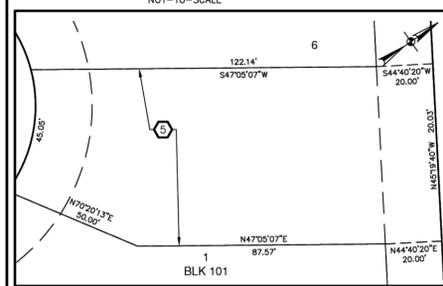
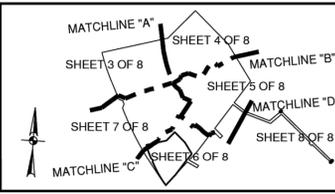
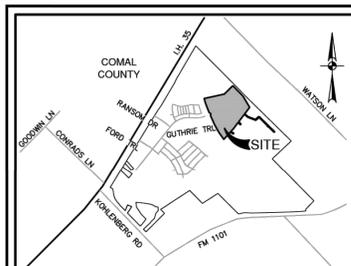
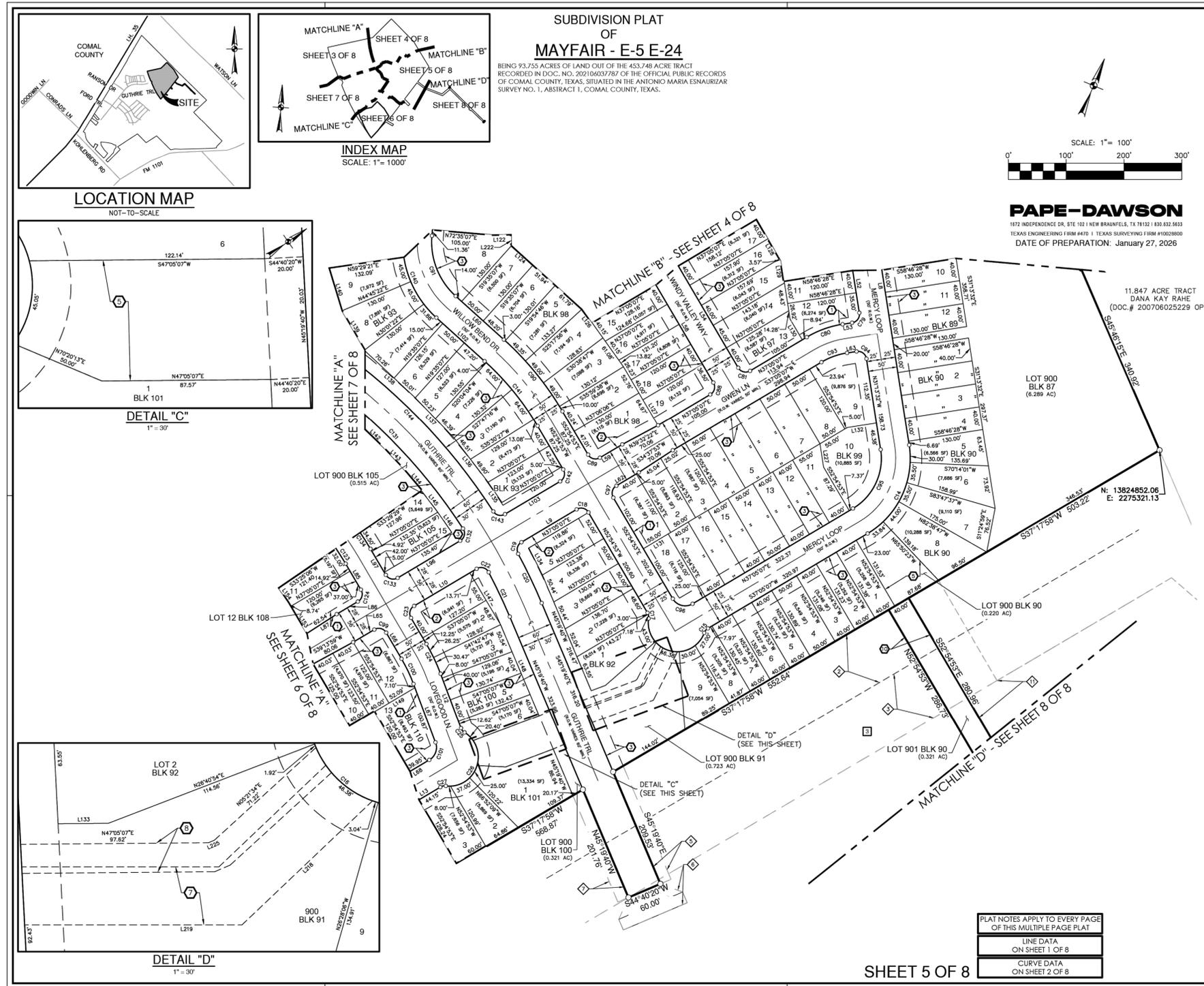
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS

PLAT

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	G-6







**PAPE-DAWSON**  
 1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800  
 DATE OF PREPARATION: January 27, 2026

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 PLAT

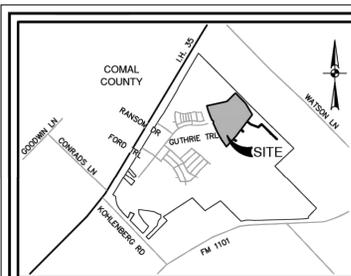
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JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
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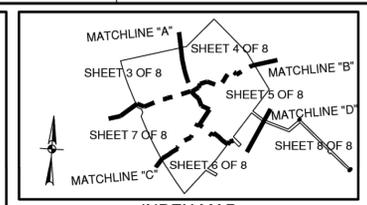
MAYFAIR - PARCEL E-5 E-24  
 Civil Job No. 30002-74; Survey Job No. 9205-18

PLAT NOTES APPLY TO EVERY PAGE  
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CURVE DATA ON SHEET 2 OF 8

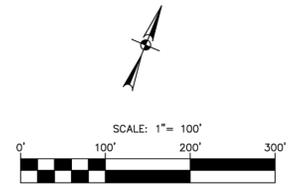


LOCATION MAP  
NOT-TO-SCALE



INDEX MAP  
SCALE: 1"= 1000'

**SUBDIVISION PLAT  
OF  
MAYFAIR - E-5 E-24**  
BEING 93.755 ACRES OF LAND OUT OF THE 453.748 ACRE TRACT  
RECORDED IN DOC. NO. 202106037787 OF THE OFFICIAL PUBLIC RECORDS  
OF COMAL COUNTY, TEXAS, SITUATED IN THE ANTONIO MARIA ENSAURIZAR  
SURVEY NO. 1, ABSTRACT 1, COMAL COUNTY, TEXAS.



**PAPE-DAWSON**  
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800  
DATE OF PREPARATION: January 27, 2026

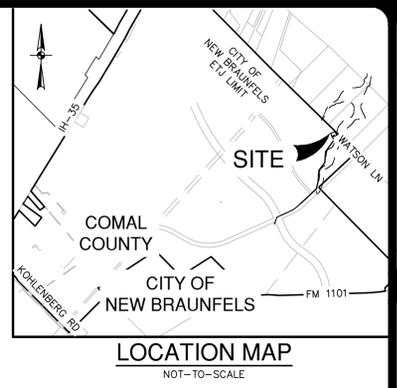


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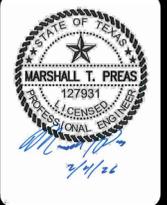
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CURVE DATA ON SHEET 2 OF 8

SHEET 6 OF 8



LOCATION MAP  
NOT-TO-SCALE

DATE	
NO. REVISION	



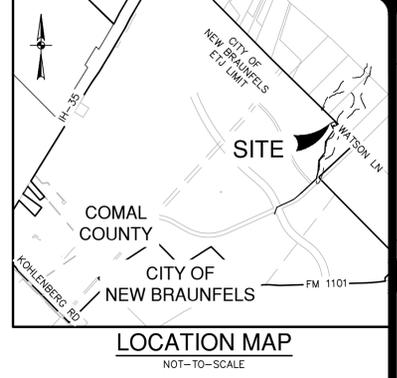
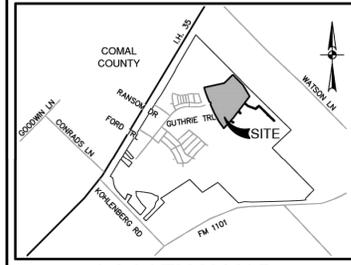
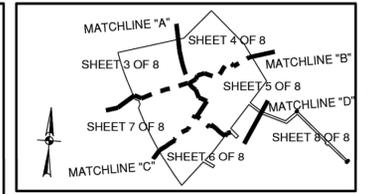
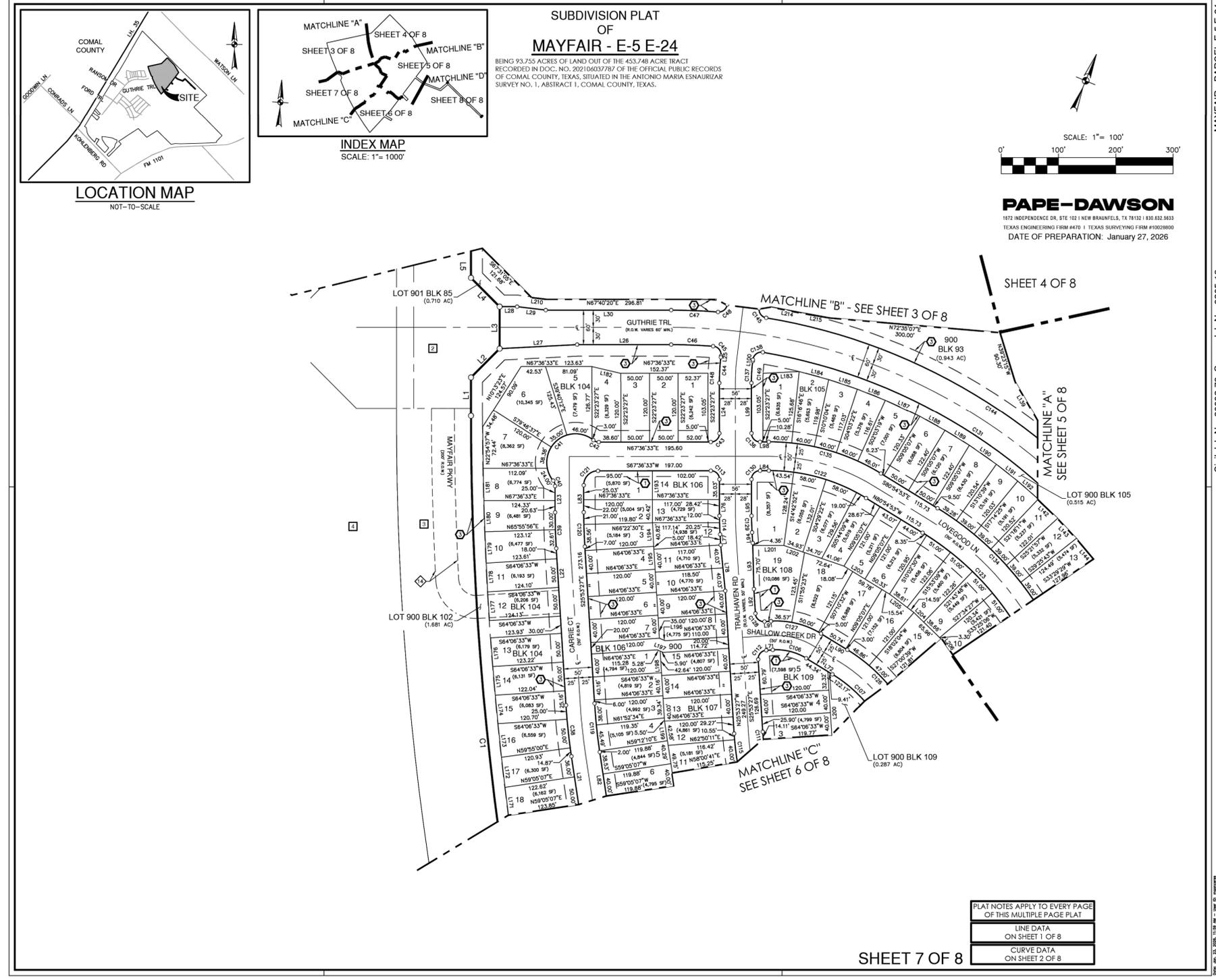
**PAPE-DAWSON**  
1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
PLAT

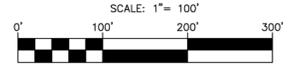
PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	G-10

MAYFAIR - PARCEL E-5 E-24  
Civil Job No. 30002-74; Survey Job No. 9205-18

Date: September 9, 2025, 12:47 PM - User ID: J.Ling  
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**SUBDIVISION PLAT OF MAYFAIR - E-5 E-24**  
 BEING 93.755 ACRES OF LAND OUT OF THE 453.746 ACRE TRACT RECORDED IN DOC. NO. 20210603787 OF THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS, SITUATED IN THE ANTONIO MARIA ENSAURIZAR SURVEY NO. 1, ABSTRACT 1, COMAL COUNTY, TEXAS.



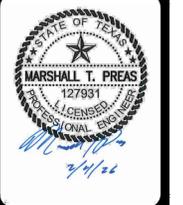
**PAPE-DAWSON**  
 1872 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800  
 DATE OF PREPARATION: January 27, 2026

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 LINE DATA ON SHEET 1 OF 8  
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SHEET 7 OF 8

MAYFAIR - PARCEL E-5 E-24  
 Civil Job No. 30002-73; Survey Job No. 9205-18

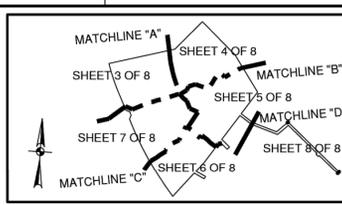
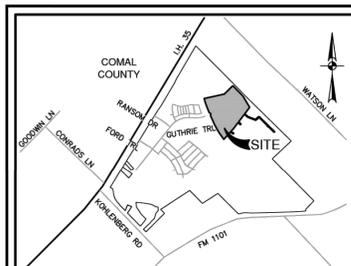
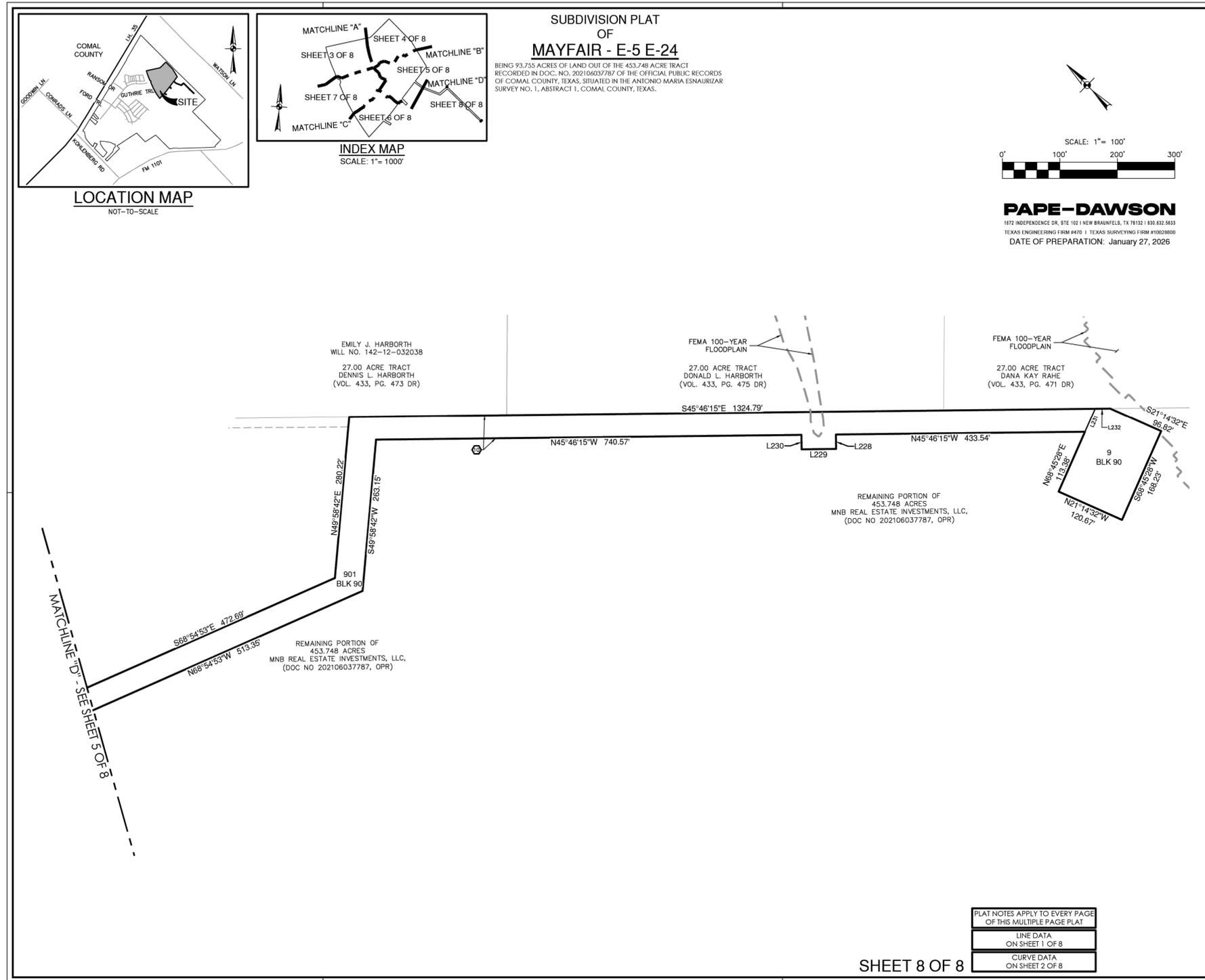
NO.	REVISION	DATE



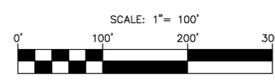
**PAPE-DAWSON**  
 1872 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 PLAT

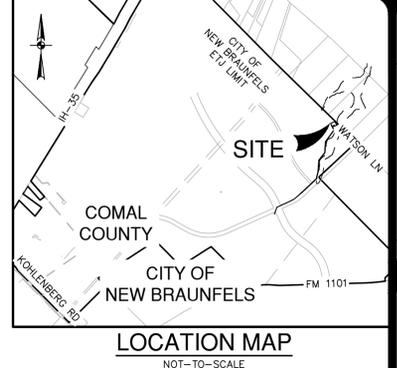
PLAT NO.	30002-74
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	G-11



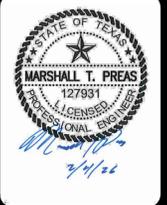
**SUBDIVISION PLAT OF MAYFAIR - E-5 E-24**  
 BEING 93.755 ACRES OF LAND OUT OF THE 453.748 ACRE TRACT RECORDED IN DOC. NO. 202106037787 OF THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS, SITUATED IN THE ANTONIO MARIA ESNAURIZAR SURVEY NO. 1, ABSTRACT 1, COMAL COUNTY, TEXAS.



**PAPE-DAWSON**  
 1872 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800  
 DATE OF PREPARATION: January 27, 2026



NO.	REVISION	DATE



**PAPE-DAWSON**  
 1872 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 PLAT

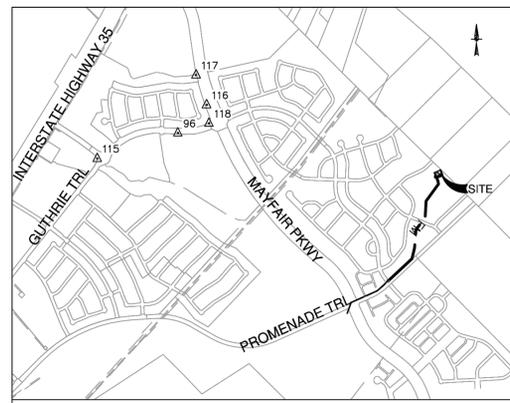
PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
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MAYFAIR - PARCEL E-5 E-24  
 Civil Job No. 30002-73; Survey Job No. 9205-18

SHEET 8 OF 8

PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT
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CURVE DATA ON SHEET 2 OF 8



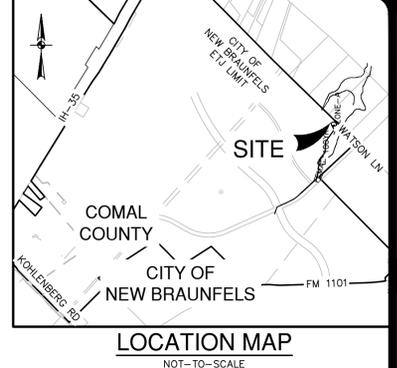
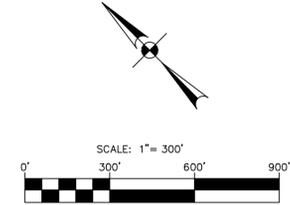
**BENCHMARK LOCATION MAP**  
SCALE 1" = 1500'

BENCHMARKS				
Point #	Northing	Easting	Elevation	Full Description
96	13,826,377	2,272,557	725.78	SET MAG NAIL & WASHER (TRAY)
115	13,825,929	2,271,131	713.73	CP
116	13,826,872	2,273,066	740.81	CP
117	13,827,395	2,272,880	719.67	CP
118	13,826,547	2,273,108	731.08	CP

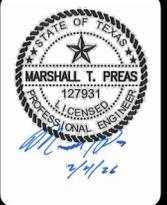
SECTOR	SERVICE AREA (AC)	LUEs
E-1	25	197
E-2	25	186
E-3	85	256
E-4	20	24
E-5	26	100
E-24	63	207
UNDEVELOPED/OFFSITE	21	0
SUM	265	970

**WASTEWATER LEGEND**

- PROPERTY LINE
- SANITARY SEWER EASEMENT
- PROPOSED WASTEWATER & MH
- PROPOSED FORCE MAIN
- PROPOSED FENCE
- SERVICE AREA

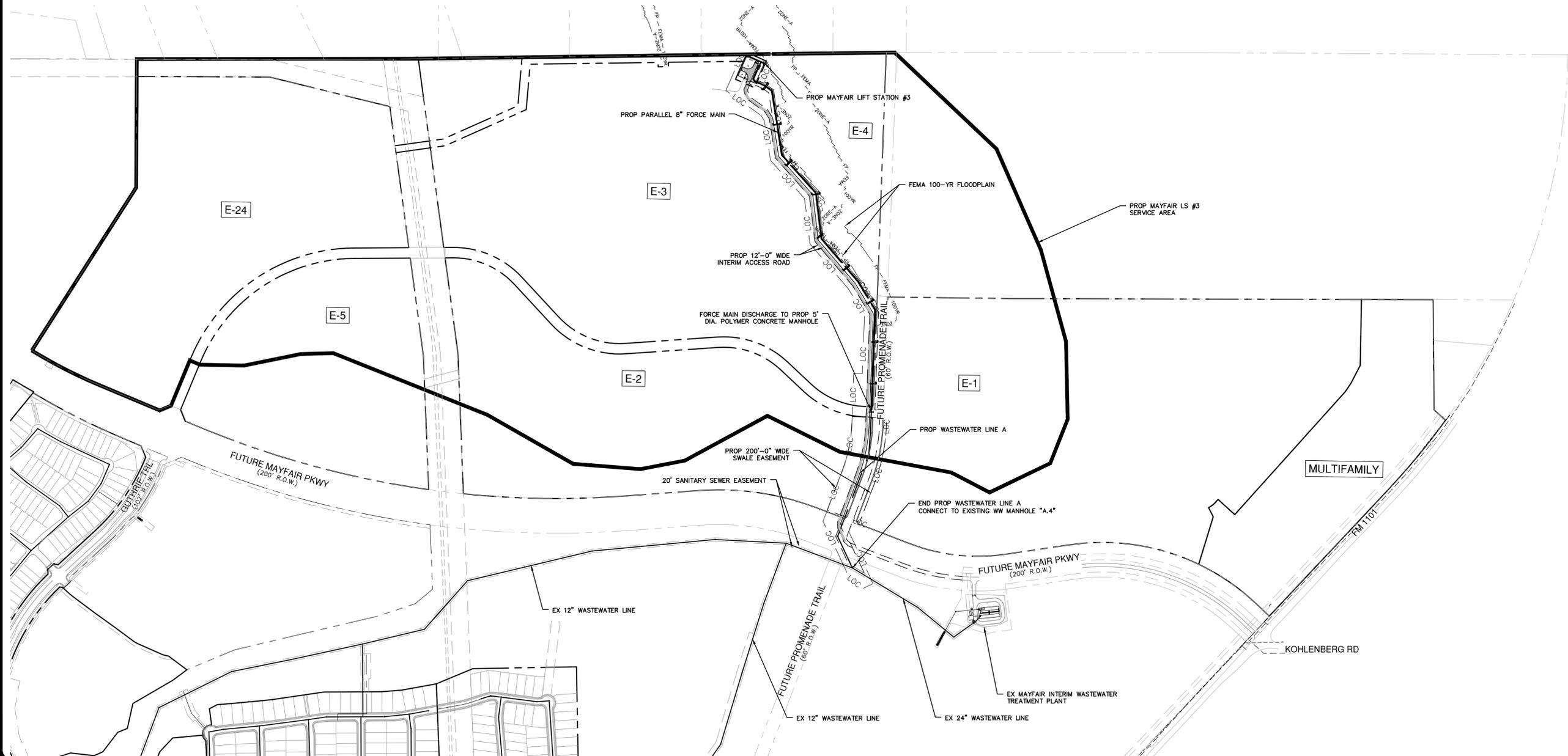


NO.	REVISION	DATE



**PAPE-DAWSON**  
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10228800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
SERVICE AREA MAP

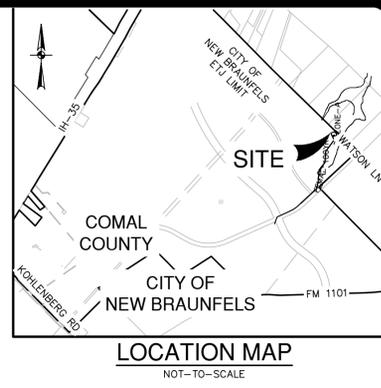
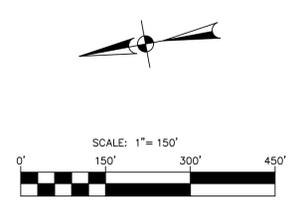
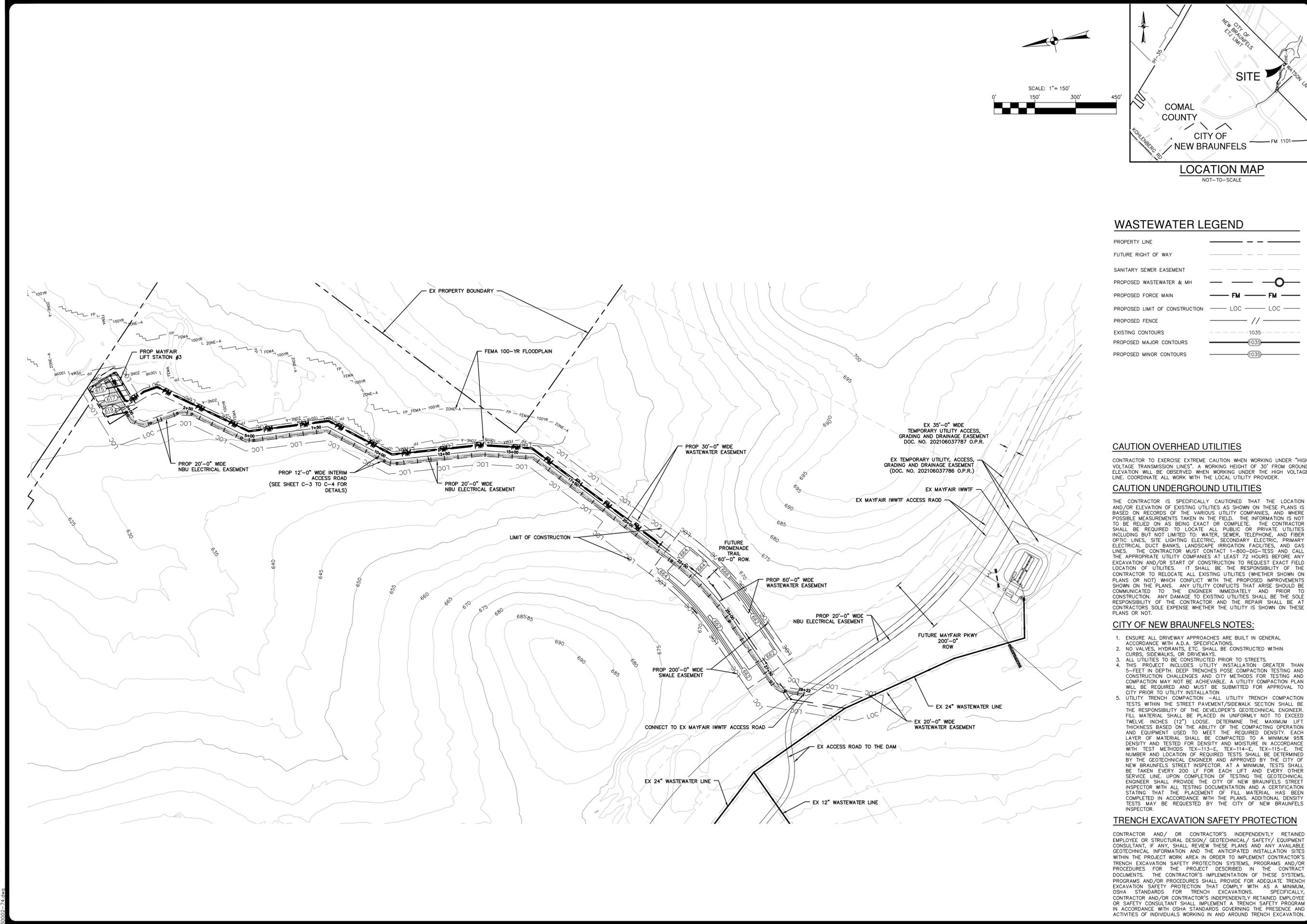


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PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP_DRAWN JL
SHEET	C-1

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### WASTEWATER LEGEND

PROPERTY LINE	---
FUTURE RIGHT OF WAY	----
SANITARY SEWER EASEMENT	---
PROPOSED WASTEWATER & MH	—○—
PROPOSED FORCE MAIN	—FM— FM
PROPOSED LIMIT OF CONSTRUCTION	—LOC— LOC
PROPOSED FENCE	///
EXISTING CONTOURS	-----1035
PROPOSED MAJOR CONTOURS	-----1035
PROPOSED MINOR CONTOURS	-----1035

### CAUTION OVERHEAD UTILITIES

CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING UNDER "HIGH VOLTAGE TRANSMISSION LINES". A WORKING HEIGHT OF 30' FROM GROUND ELEVATION WILL BE OBSERVED WHEN WORKING UNDER THE HIGH VOLTAGE LINE. COORDINATE ALL WORK WITH THE LOCAL UTILITY PROVIDER.

### CAUTION UNDERGROUND UTILITIES

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, AND FIBER OPTIC LINES, SITE LIGHTING, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. THE CONTRACTOR MUST CONTACT 1-800-DIG-TESS AND CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION AND/OR START OF CONSTRUCTION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES (WHETHER SHOWN ON PLANS OR NOT) WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

- ### CITY OF NEW BRAUNFELS NOTES:
- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
  - NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
  - ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
  - THIS PROJECT INCLUDES UTILITY INSTALLATION GREATER THAN 5- FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
  - UTILITY TRENCH COMPACTION - ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORMLY NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

### TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/ EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES 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.

DATE	
NO.	REVISION

**PAPE-DAWSON**  
 1671 INDEPENDENCE DR. STE 102 NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

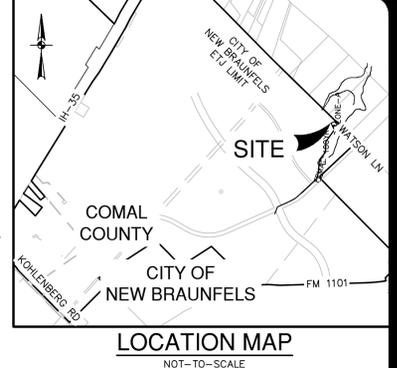
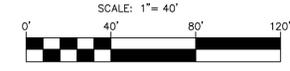
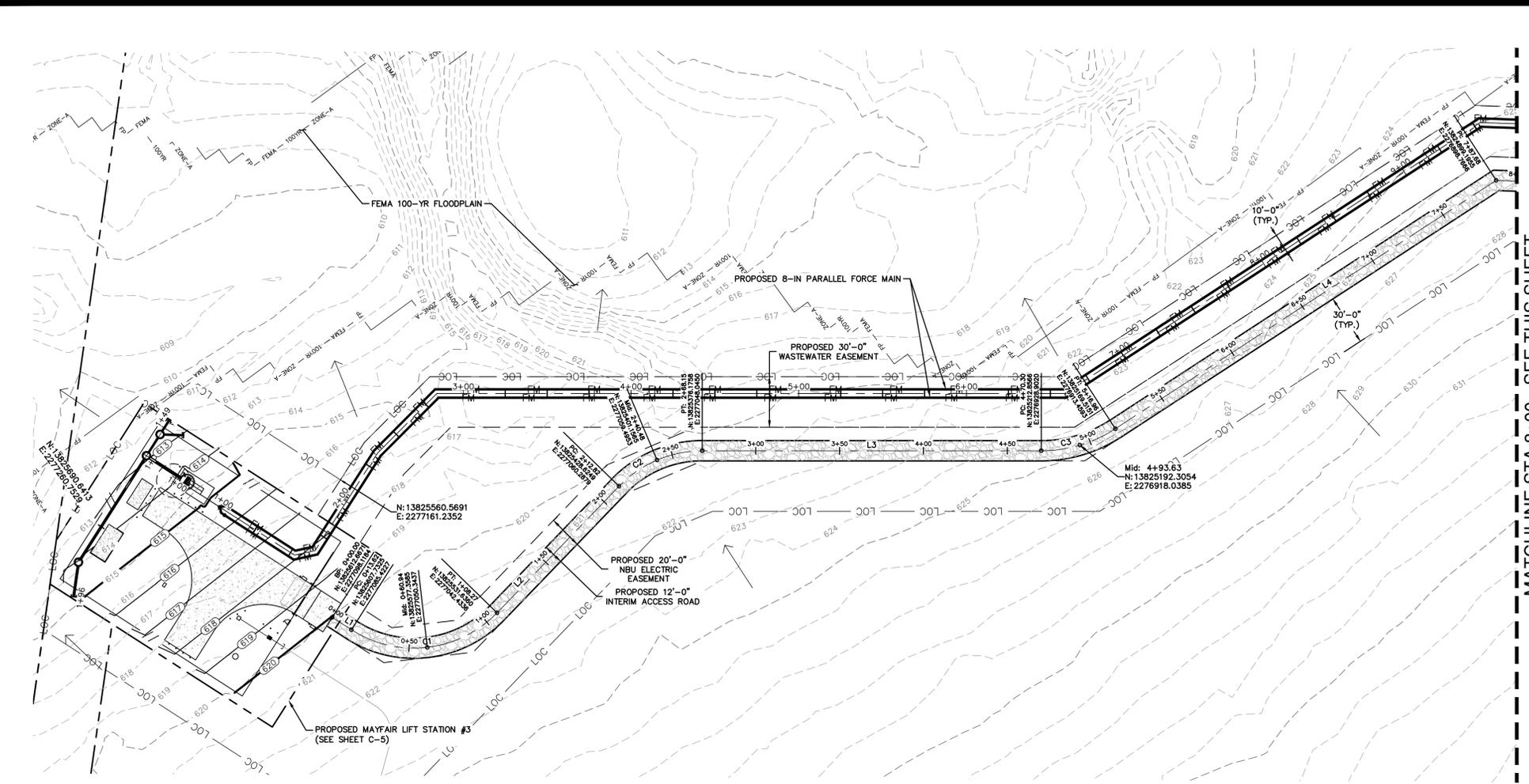
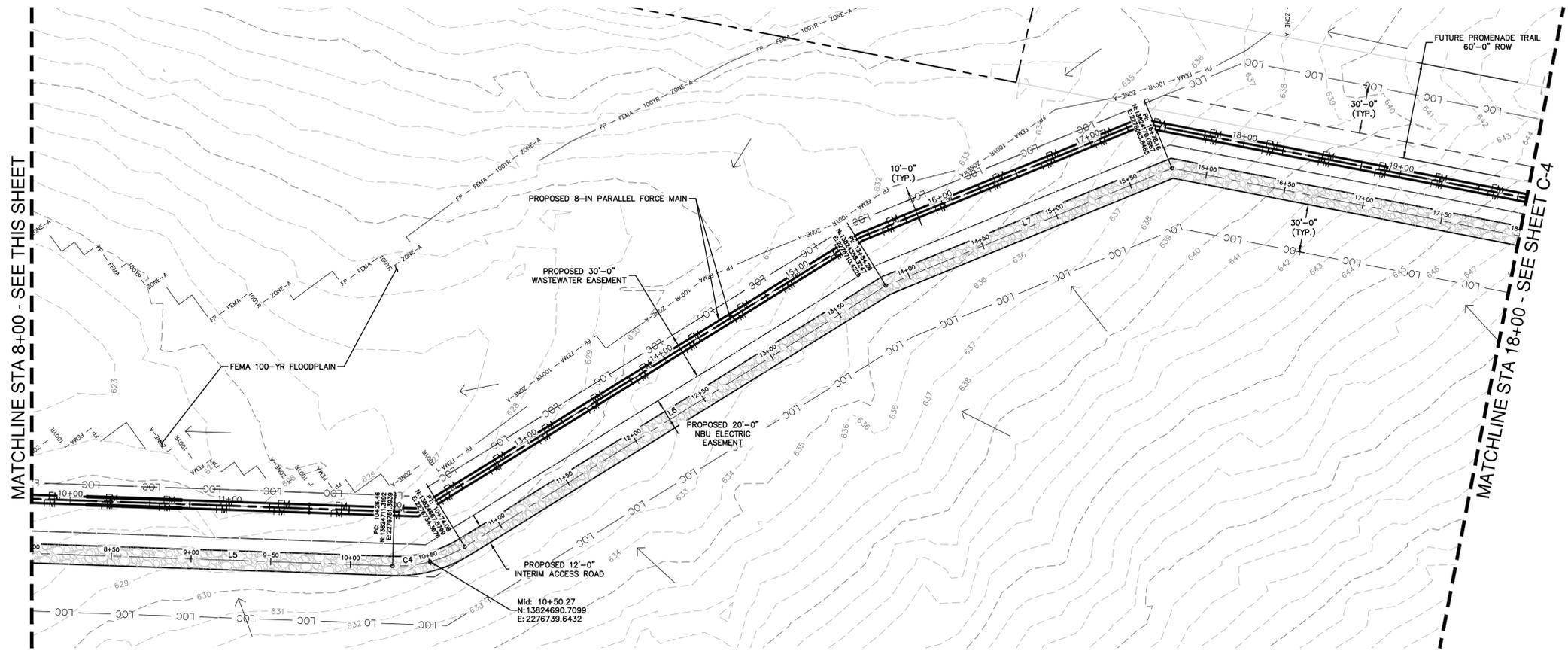
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 LIFT STATION SITE ACCESS PLAN

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-2

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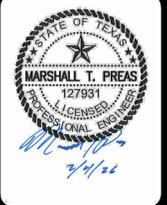


**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	---
EXISTING SANITARY SEWER	---
EXISTING MAJOR CONTOURS	735
EXISTING MINOR CONTOURS	734
LIMIT OF CONSTRUCTION	LOC
PROPOSED WASTEWATER EASEMENT	---
PROPOSED MAJOR CONTOURS	735
PROPOSED MINOR CONTOURS	734
FLOW ARROW	→

- NOTES**
- SEE SHEET C-4 FOR PROPOSED INTERIM ACCESS ROAD ALIGNMENT TABLE.
  - SEE SHEET C-10 FOR INTERIM ACCESS ROAD SECTION.

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NO.	REVISION

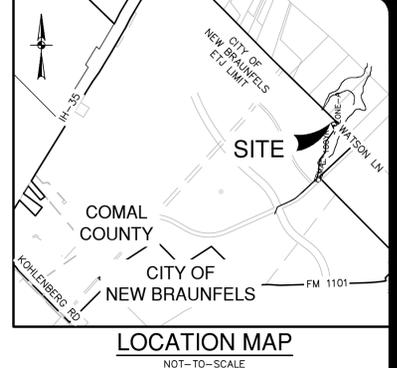
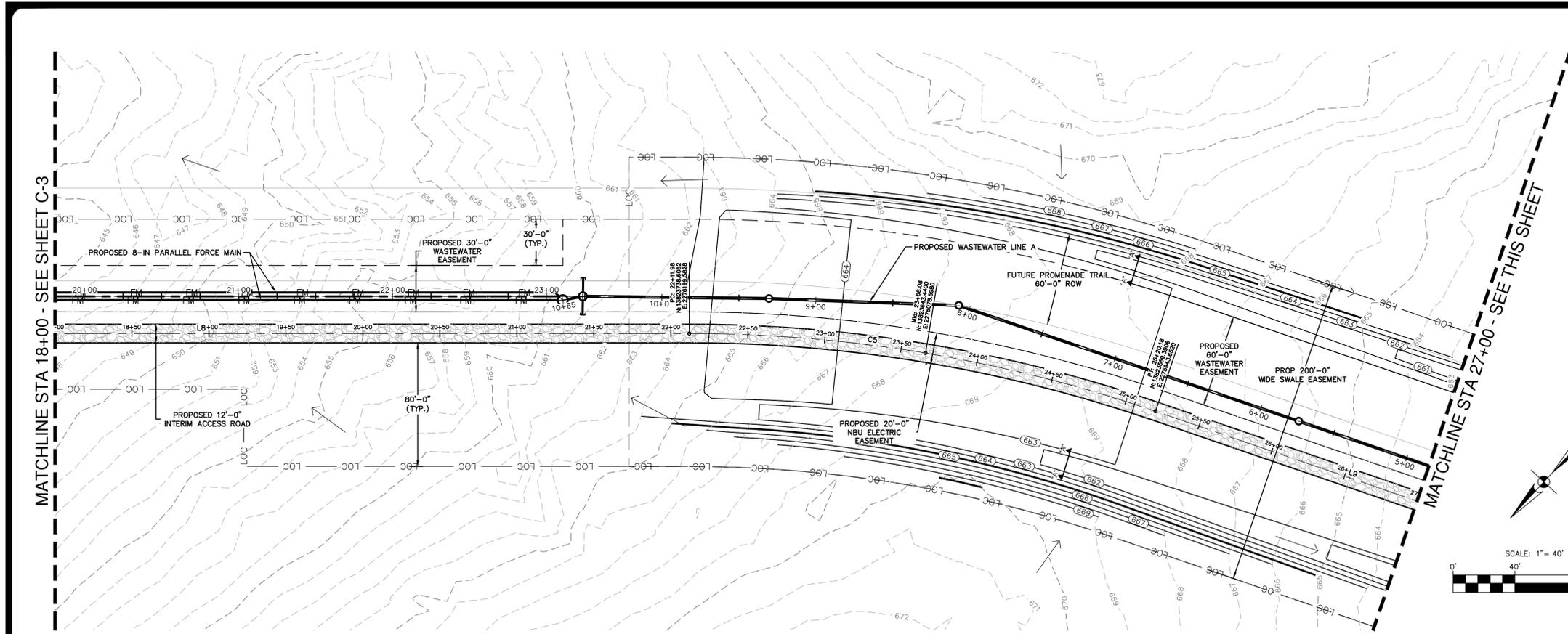


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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 LIFT STATION INTERIM ACCESS ROAD PLAN (1 OF 2)

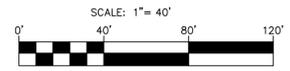
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JOB NO.	30002-74
DATE	FEBRUARY 2026
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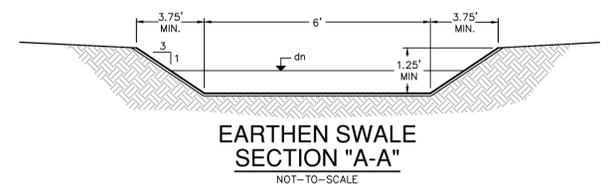
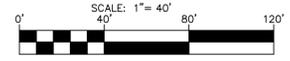
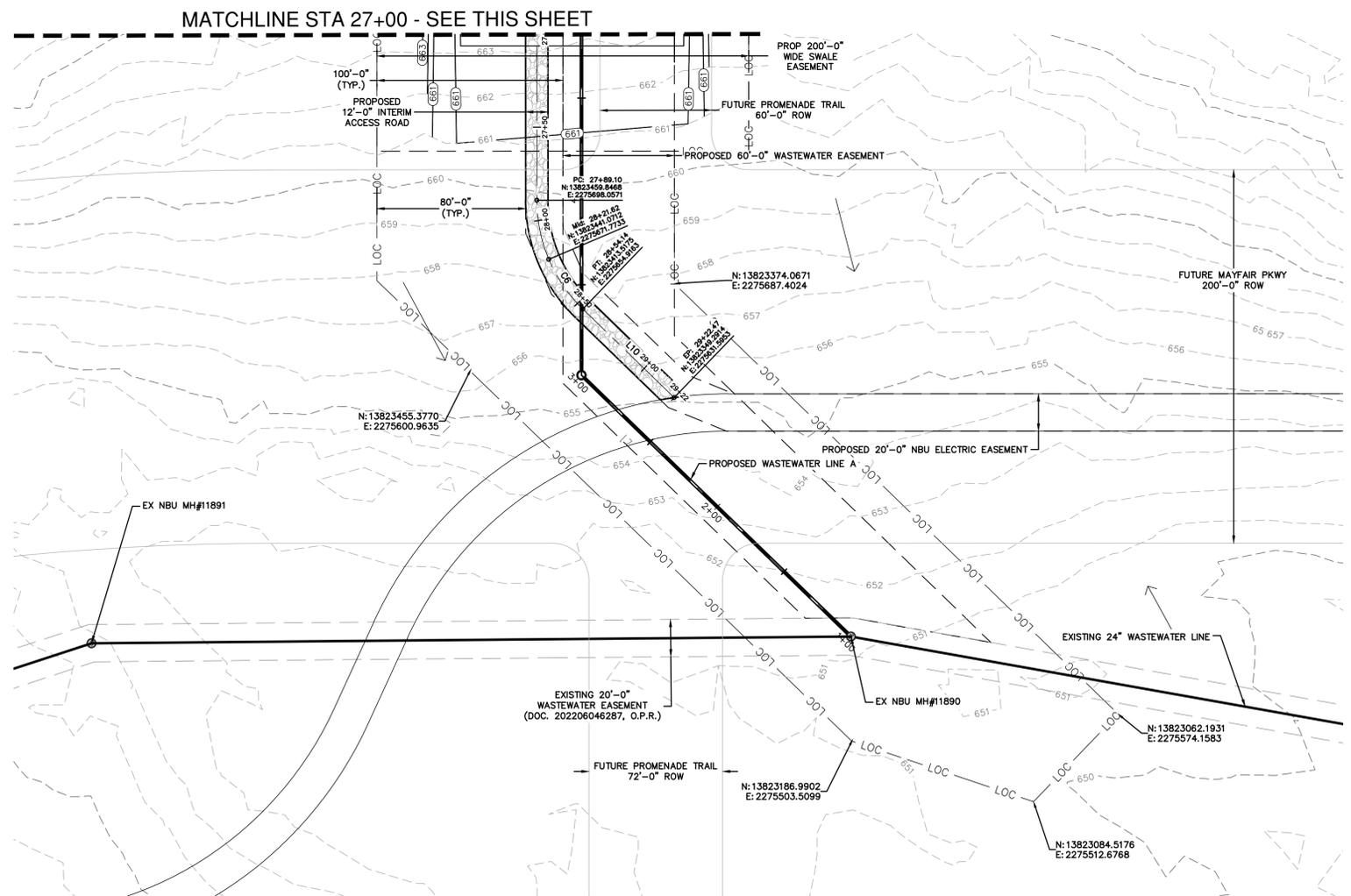


**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	---
EXISTING SANITARY SEWER	---
EXISTING MAJOR CONTOURS	755
EXISTING MINOR CONTOURS	734
LIMIT OF CONSTRUCTION	LOC
PROPOSED WASTEWATER EASEMENT	---
PROPOSED MAJOR CONTOURS	735
PROPOSED MINOR CONTOURS	736
FLOW ARROW	→



**NOTES**  
 1. SEE SHEET C-10 FOR INTERIM ACCESS ROAD SECTION.



ALIGNMENT PROPOSED INTERIM ACCESS ROAD

NUMBER	LENGTH	RADIUS	DELTA	LINE/CHORD DIRECTION	START STATION	END STATION	START NORTING	START EASTING	END NORTING	END EASTING
L1	13.621'			S68° 45' 35.19"W	0+00.00	0+13.62	13825612.6671	2277098.1184	13825607.7325	2277085.4227
C1	94.648'	69.000	078.5929	S29° 27' 48.04"W	0+13.62	1+08.27	13825607.7325	2277085.4227	13825531.6360	2277042.4336
L2	104.547'			S09° 49' 59.11"E	1+08.27	2+12.82	13825531.6360	2277042.4336	13825428.6249	2277060.2879
C2	55.330'	69.000	045.9442	S13° 08' 20.48"W	2+12.82	2+68.15	13825428.6249	2277060.2879	13825376.1758	2277048.0450
L3	202.159'			S36° 06' 40.07"W	2+68.15	4+70.30	13825376.1758	2277048.0450	13825212.8566	2276928.9020
C3	46.653'	81.000	033.0000	S19° 36' 40.07"W	4+70.30	5+16.96	13825212.8566	2276928.9020	13825169.5151	2276913.4593
L4	270.719'			S03° 06' 40.07"W	5+16.96	7+87.68	13825169.5151	2276913.4593	13824899.1955	2276898.7666
L5	238.781'			S38° 06' 40.07"W	7+87.68	10+26.46	13824899.1955	2276898.7666	13824711.3192	2276751.3939
C4	47.619'	81.000	033.6836	S21° 16' 09.50"W	10+26.46	10+74.08	13824711.3192	2276751.3939	13824667.5799	2276734.3676
L6	310.181'			S04° 25' 38.94"W	10+74.08	13+84.26	13824667.5799	2276734.3676	13824358.3247	2276710.4225
L7	193.905'			S13° 53' 54.07"W	13+84.26	15+78.16	13824358.3247	2276710.4225	13824170.0967	2276663.8465
L8	633.818'			S47° 05' 43.07"W	15+78.16	22+11.98	13824170.0967	2276663.8465	13823738.6052	2276199.5828
C5	308.203'	936.000	018.8662	S56° 31' 42.21"W	22+11.98	25+20.18	13823738.6052	2276199.5828	13823569.3906	2275943.6520
L9	268.918'			S65° 57' 41.34"W	25+20.18	27+89.10	13823569.3906	2275943.6520	13823459.8468	2275698.0571
C6	65.038'	81.000	046.0051	S42° 57' 32.19"W	27+89.10	28+54.14	13823459.8468	2275698.0571	13823413.5175	2275654.9163
L10	68.329'			S19° 57' 23.03"W	28+54.14	29+22.47	13823413.5175	2275654.9163	13823349.2914	2275631.5953

DATE \_\_\_\_\_

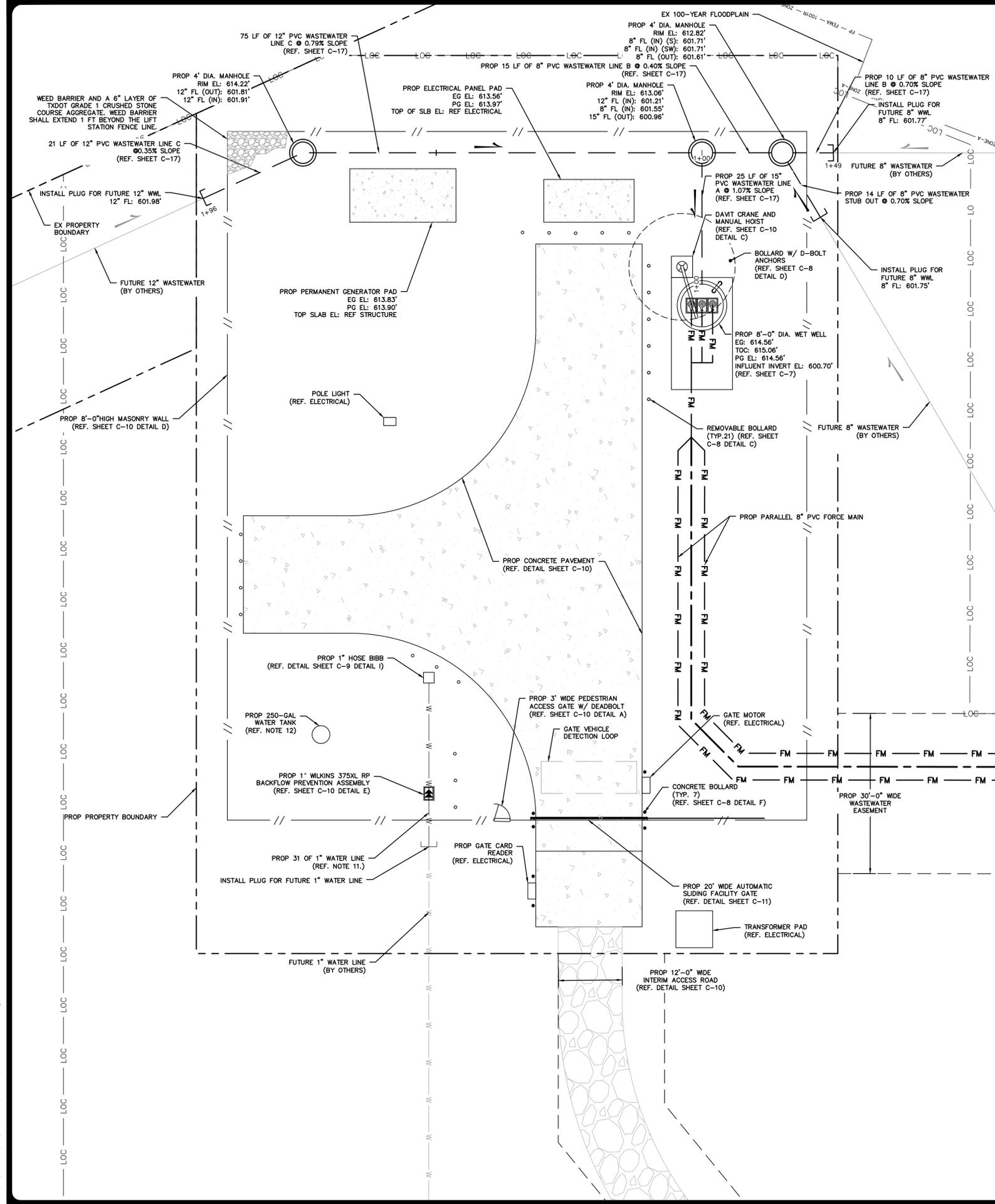
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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 LIFT STATION INTERIM ACCESS ROAD PLAN (2 OF 2)

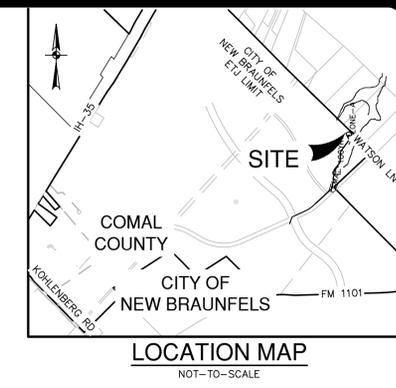
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 JOB NO. 30002-74  
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**LIFT STATION NOTES**

- ALL SUPPORT BRACKETS, HARDWARE, BOLTS, ETC. INSIDE WET WELL SHALL BE TYPE 316 STAINLESS STEEL.
- ALL GRAVITY PVC PIPE TO BE ASTM D3034 SDR 26 PIPING WITH TRACER TAPE. ALL FM PVC PIPE TO BE ASTM D2241 SDR 26 (CLASS 200) WITH TRACER TAPE.
- ALL PUMP DISCHARGE PIPING IN WET WELL, VALVE VAULT, AND UP TO ADAPTER TO BE FLANGED (INSIDE WET WELL/VAULT) OR TR FLEX RESTRAINED MECHANICAL JOINT (WHEN BURIED) DUCTILE IRON PIPING. ALL DUCTILE IRON PIPING SHALL BE EPOXY LINED WITH TNEPEC SERIES 431 PERMA-SHIELD PL CERAMIC EPOXY OR APPROVED EQUAL. ALL DISCHARGE PIPING SHOULD BE RESTRAINED.
- ALL EXPOSED DUCTILE IRON PIPING, FITTINGS, AND VALVES SHALL BE SANDBLASTED AND COATED WITH TWO (2) COATS OF TNEPEC SERIES 27WB EPOXY APPLIED AT 6.0 TO 8.0 DRY MILS AND TOPCOATED WITH TNEPEC SERIES 740 UVX APPLIED AT 3.0 TO 5.0 DRY MILS. FINAL COLOR TO BE APPROVED BY OWNER. SHOP PRIMING WITH TNEPEC SERIES N140 IS ACCEPTABLE. BITUMASTIC COATING SHALL NOT BE APPLIED TO EXPOSED DIP PIPING.
- ALL BURIED DUCTILE IRON PIPING, FITTINGS, AND VALVES SHALL BE WRAPPED WITH A POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C105.
- ALL MECHANICAL JOINT FITTINGS TO BE RESTRAINED USING SERIES 1100 OR 2000PV MEGALUG JOINT RESTRAINTS.
- PUMP SPACING DIMENSIONS SHOWN ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE DETERMINED BY SPECIFIC PUMP MANUFACTURER.
- ELECTRICAL CONTROLS CONCRETE PADS SHALL BE SIZED BASED ON THE SPECIFIC ELECTRICAL EQUIPMENT PROVIDED. CONCRETE PAD SHALL EXTEND A MINIMUM OF 12-INCHES BEYOND THE OUTSIDE EDGE OF EQUIPMENT ON ALL SIDES.
- POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. CONTRACTOR TO GRADE SITE TO DRAIN TOWARDS THE EXISTING FLOODPLAIN. CONTRACTOR TO TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
- PRECAST MANHOLES SHALL BE PROVIDED PER NEW BRAUNFELS UTILITIES SPECIFICATIONS.
- 1-INCH WATER SERVICE LINES SHALL BE CONSTRUCTED OF TYPE K ANNEALED SEAMLESS COPPER TUBING MEETING THE REQUIREMENTS OF ASTM B88.
- PROVIDE ONE (1) 250-GALLON VERTICAL, NON-OPAQUE POLYETHYLENE TANK SUITABLE FOR POTABLE WATER SERVICE (NSF/ANSI 61; UV-STABILIZED). INSTALL ON A LEVEL 6-INCH-THICK BASE OF SAND OR PEA GRAVEL EXTENDING A MINIMUM OF 12 INCHES BEYOND THE TANK OUTSIDE DIAMETER. FURNISH THE TANK WITH ONE (1) 8-INCH-DIAMETER ACCESS OPENING WITH CAP, ONE (1) 2-INCH INLET, ONE (1) 2-INCH OUTLET, ONE (1) 2-INCH FULL-PORT BALL VALVE ON THE OUTLET, AND ONE (1) GARDEN-HOSE ADAPTER. PROVIDE 100 LINEAR FEET OF GARDEN HOSE WITH STANDARD COUPLINGS.
- ALL DISTURBED AREAS OUTSIDE THE LIFT STATION SECURITY WALL ARE TO BE REVEGETATED USING HULLED BERMUDA SEED HYDROMULCHING APPLIED AT A RATE EQUAL TO 45 LBS/ACRE. ALL AREAS BEYOND THE LIMITS OF REQUIRED PAVEMENTS ARE TO BE COVERED WITH CRUSHED STONE.



**WASTEWATER LEGEND**

PROPERTY LINE	---
FUTURE RIGHT OF WAY	---
SANITARY SEWER EASEMENT	---
PROPOSED WASTEWATER & MH	---○---
PROPOSED FORCE MAIN	---FM---
PROPOSED WATER	---W---
PROPOSED LIMIT OF CONSTRUCTION	---LOC---
PROPOSED FENCE	---//---
EXISTING CONTOURS	---1035---
PROPOSED MAJOR CONTOURS	---1035---
PROPOSED MINOR CONTOURS	---1035---

**CAUTION OVERHEAD UTILITIES**

CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING UNDER "HIGH VOLTAGE TRANSMISSION LINES". A WORKING HEIGHT OF 30' FROM GROUND ELEVATION WILL BE OBSERVED WHEN WORKING UNDER THE HIGH VOLTAGE LINE. COORDINATE ALL WORK WITH THE LOCAL UTILITY PROVIDER.

**CAUTION UNDERGROUND UTILITIES**

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, IRRIGATION FACILITIES, AND GAS LINES. THE CONTRACTOR MUST CONTACT 1-800-DIG-TESS AND CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION AND/OR START OF CONSTRUCTION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES (WHETHER SHOWN ON PLANS OR NOT) WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

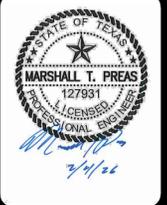
**CITY OF NEW BRAUNFELS NOTES:**

- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- THIS PROJECT INCLUDES UTILITY INSTALLATION GREATER THAN 5-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
- UTILITY TRENCH COMPACTION - ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORMLY NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

**TRENCH EXCAVATION SAFETY PROTECTION**

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES 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.

DATE	
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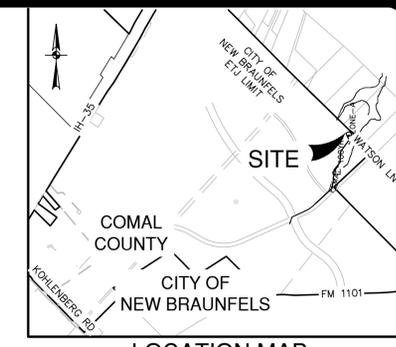
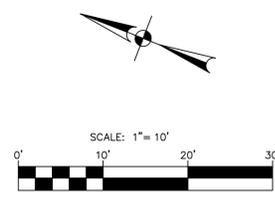
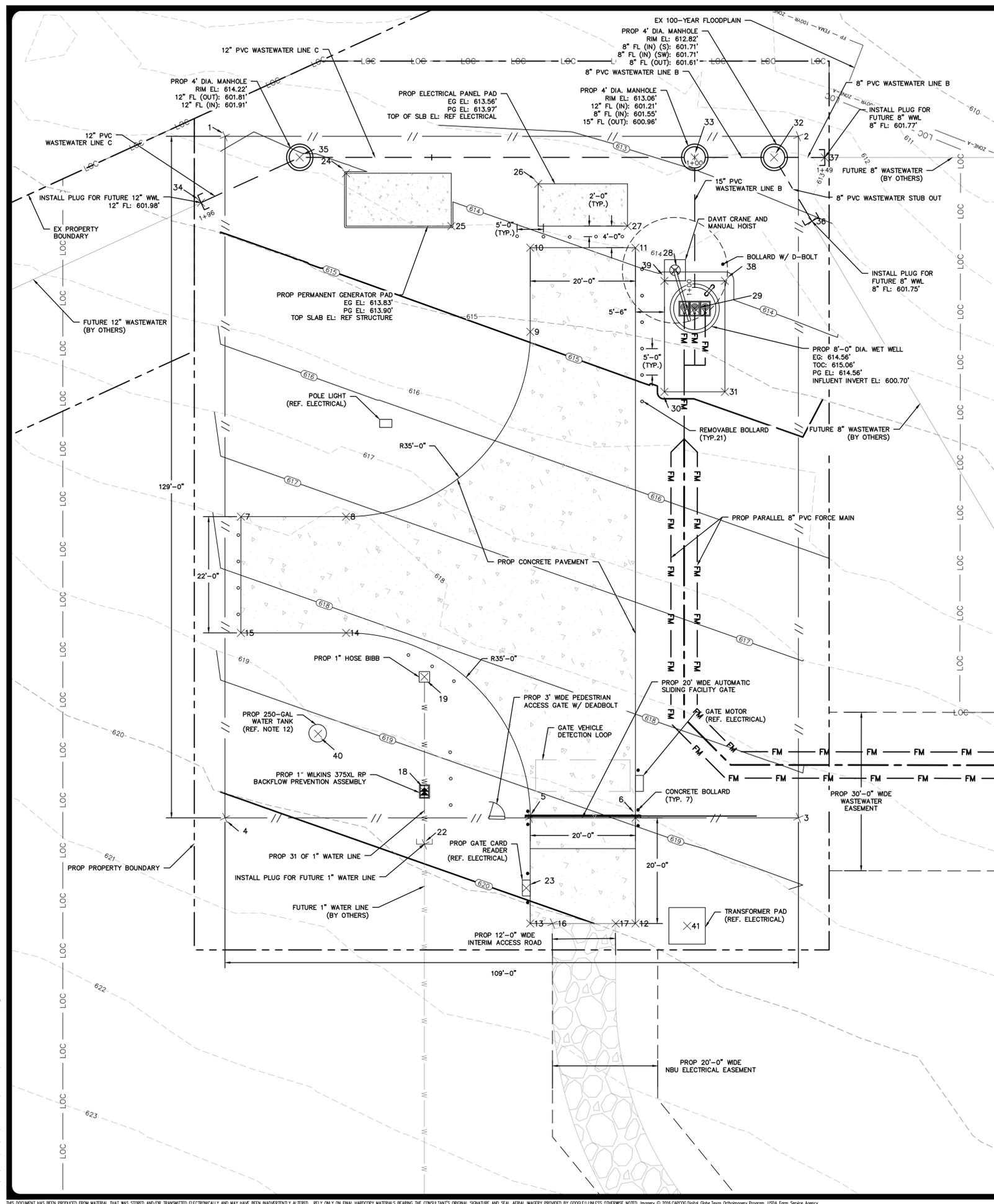
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 LIFT STATION SITE PLAN

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
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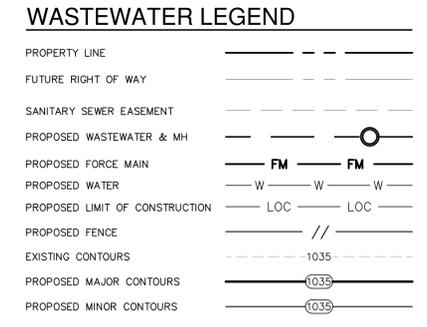
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Point #	Northing	Easting	Description	PG EL
1	13825730.27	2277212.27	SITE FENCE	613.85
2	13825628.67	2277251.76	SITE FENCE	612.43
3	13825581.93	2277131.52	SITE FENCE	618.41
4	13825683.53	2277092.03	SITE FENCE	620.22
5	13825629.45	2277113.05	FENCE/CONCRETE PAVEMENT	619.26
6	13825610.81	2277120.30	FENCE/CONCRETE PAVEMENT	618.93
7	13825701.37	2277146.26	CONCRETE PAVEMENT	617.48
8	13825682.73	2277153.50	CONCRETE PAVEMENT	617.15
9	13825662.79	2277198.80	CONCRETE PAVEMENT	614.91
10	13825668.55	2277213.64	CONCRETE PAVEMENT	614.16
11	13825649.91	2277220.89	CONCRETE PAVEMENT	613.83
12	13825603.57	2277101.66	CONCRETE PAVEMENT	619.89
13	13825622.21	2277094.41	CONCRETE PAVEMENT	620.20
14	13825674.76	2277133.00	CONCRETE PAVEMENT	618.19
15	13825693.40	2277125.75	CONCRETE PAVEMENT	618.52
16	13825618.26	2277095.94	GRAVEL ROAD	620.13
17	13825607.07	2277100.29	GRAVEL ROAD	619.94
18	13825650.01	2277110.41	BACKFLOW PREVENTER	619.36
19	13825657.87	2277130.63	1" HOSE BIB	618.33
22	13825646.39	2277101.10	WATER LINE PLUG	619.83
23	13825625.34	2277100.40	CARD READER	619.90
24	13825706.27	2277214.08	PAD CORNER	613.90
25	13825684.01	2277212.01	PAD CORNER	613.90
26	13825671.53	2277225.44	PAD CORNER	613.97
27	13825652.79	2277224.14	PAD CORNER	613.91
28	13825641.36	2277219.61	JIB CRANE	613.91
29	13825635.24	2277214.22	WET WELL CENTER	614.56
30	13825634.89	2277197.45	WET WELL PAD CORNER	614.56
31	13825624.17	2277201.62	WET WELL PAD CORNER	614.56
32	13825631.54	2277246.35	MANHOLE	612.66
33	13825645.60	2277240.89	MANHOLE	612.88
34	13825729.96	2277198.92	PLUG	614.71
35	13825715.58	2277213.68	MANHOLE	614.05
36	13825620.47	2277237.70	PLUG	613.25
37	13825622.56	2277249.84	PLUG	612.78
38	13825631.78	2277221.19	WET WELL PAD CORNER	614.56
39	13825642.50	2277217.03	WET WELL PAD CORNER	614.56
40	13825672.80	2277113.28	WATER TANK	619.17
41	13825594.24	2277104.80	TRANSFORMER PAD	619.69



**CAUTION OVERHEAD UTILITIES**

CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING UNDER "HIGH VOLTAGE TRANSMISSION LINES". A WORKING HEIGHT OF 30' FROM GROUND ELEVATION WILL BE OBSERVED WHEN WORKING UNDER THE HIGH VOLTAGE LINE. COORDINATE ALL WORK WITH THE LOCAL UTILITY PROVIDER.

**CAUTION UNDERGROUND UTILITIES**

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. THE CONTRACTOR MUST CONTACT 1-800-DIG-TESS AND CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION AND/OR START OF CONSTRUCTION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES (WHETHER SHOWN ON PLANS OR NOT) WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

**CITY OF NEW BRAUNFELS NOTES:**

- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- THIS PROJECT INCLUDES UTILITY INSTALLATION GREATER THAN 5- FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
- UTILITY TRENCH COMPACTION - ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORMLY NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

**TRENCH EXCAVATION SAFETY PROTECTION**

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/ EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES 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.

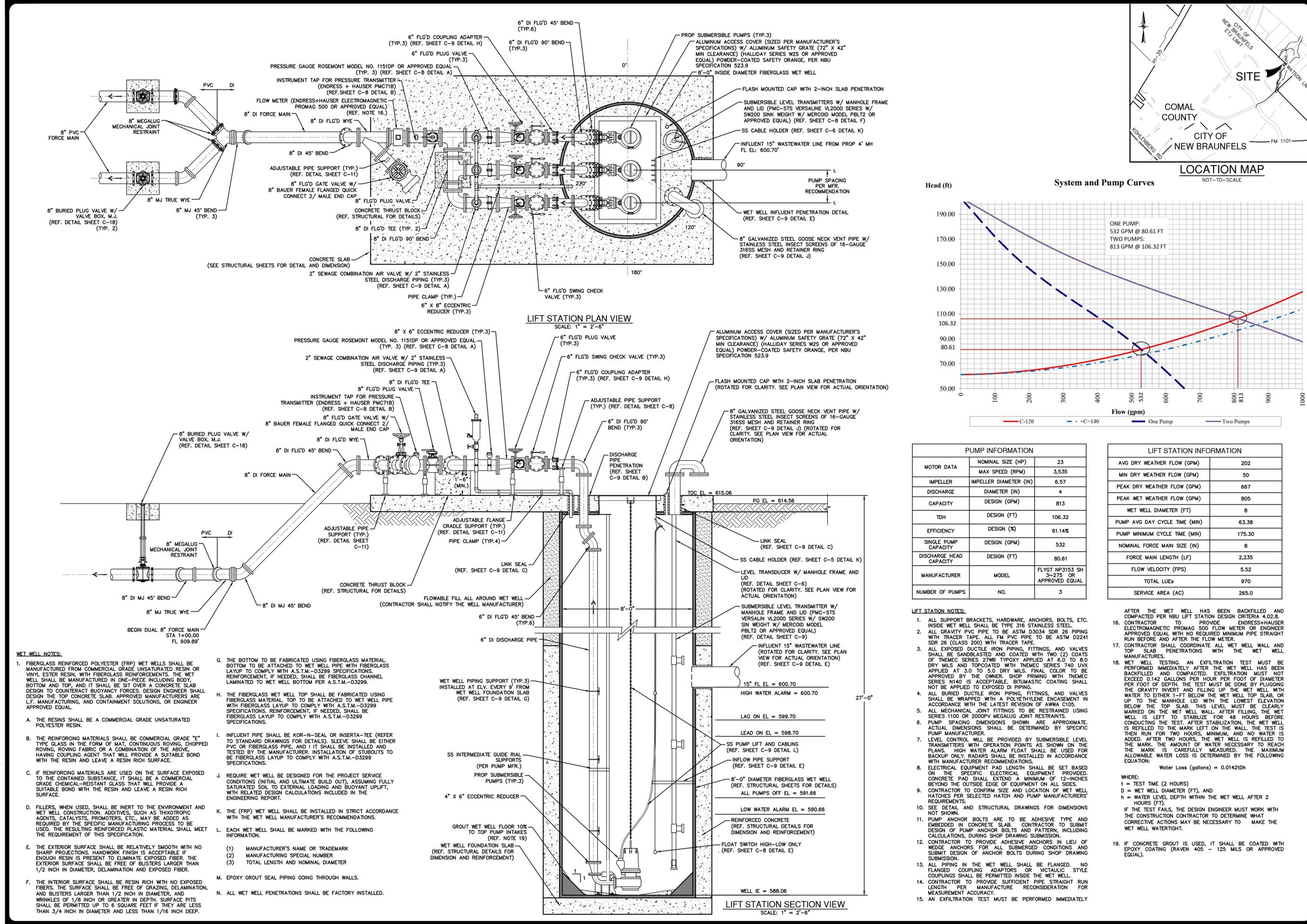
DATE	
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**PAPE-DAWSON**  
 1677 INDEPENDENCE DR. STE 102 NEW BRAUNFELS, TX 78132 | 830.632.6563  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 DIMENSIONAL CONTROL AND GRADING PLAN

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-6

Date: September 9, 2025, 1:00 PM - User ID: jlling  
 File: P:\300\02\7A\03 CAD\01\_Civil\MP&S - 30002-74.dwg



- WET WELL NOTES:**
- FIBERGLASS REINFORCED POLYESTER (FRP) WET WELLS SHALL BE MANUFACTURED FROM COMMERCIAL GRADE UNSATURATED RESIN OR VINYL ESTER RESIN, WITH FIBERGLASS REINFORCEMENTS. THE WET WELL SHALL BE MANUFACTURED IN ONE-PIECE INCLUDING BODY, BOTTOM AND TOP, AND IT SHALL BE SIT OVER A CONCRETE SLAB DESIGN TO COUNTERACT BUOYANCY FORCES. DESIGN ENGINEER SHALL DESIGN THE TOP CONCRETE SLAB, APPROVED MANUFACTURERS ARE L.F. MANUFACTURING, AND CONTAINMENT SOLUTIONS, OR ENGINEER APPROVED EQUAL.
  - THE RESINS SHALL BE A COMMERCIAL GRADE UNSATURATED POLYESTER RESIN.
  - THE REINFORCING MATERIALS SHALL BE COMMERCIAL GRADE "E" TYPE GLASS IN THE FORM OF MAT, CONTINUOUS ROVING, CHOPPED ROVING, ROVING FABRIC OR A COMBINATION OF THE ABOVE, HAVING COUPLING AGENT THAT WILL PROVIDE A SUITABLE BOND WITH THE RESIN AND LEAVE A RESIN RICH SURFACE.
  - 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.
  - 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 BUSTERS LARGER THAN 1/2 INCH IN DIAMETER, DELAMINATION AND EXPOSED FIBER.
  - THE INTERIOR SURFACE SHALL BE RESIN RICH WITH NO EXPOSED FIBERS. THE SURFACE SHALL BE FREE OF GRAZING, DELAMINATION, AND BUSTERS LARGER THAN 1/2 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 3/4 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 LAYUP TO COMPLY WITH A.S.T.M.-D3299 SPECIFICATIONS.
  - INFLUENT PIPE SHALL BE KOR-N-SEAL OR INSERTA-TEE (REFER TO STANDARD DRAWINGS FOR DETAILS). SLEEVE SHALL BE EITHER PVC OR FIBERGLASS PIPE, AND 1 IT SHALL BE INSTALLED AND TESTED BY THE MANUFACTURER. INSTALLATION OF STUBOUTS TO BE FIBERGLASS LAYUP TO COMPLY WITH A.S.T.M.-D3299 SPECIFICATIONS.
  - REQUIRE WET WELL BE DESIGNED FOR THE PROJECT SERVICE CONDITIONS (INITIAL AND ULTIMATE BUILD OUT), ASSUMING FULLY SATURATED SOIL TO 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 RECOMMENDATIONS.
  - EACH WET WELL SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
    - MANUFACTURER'S NAME OR TRADEMARK
    - MANUFACTURER SPECIAL NUMBER
    - TOTAL LENGTH AND NOMINAL DIAMETER
  - EPOXY GROUT SEAL PIPING GOING THROUGH WALLS.
  - ALL WET WELL PENETRATIONS SHALL BE FACTORY INSTALLED.

**PUMP INFORMATION**

MOTOR DATA	NOMINAL SIZE (HP)	23
MAX SPEED (RPM)	3,535	
IMPELLER IMPELLER DIAMETER (IN)	6.57	
DISCHARGE DIAMETER (IN)	4	
CAPACITY DESIGN (GPM)	813	
TDH DESIGN (FT)	106.32	
EFFICIENCY DESIGN (%)	61.14%	
SINGLE PUMP CAPACITY DESIGN (GPM)	532	
DISCHARGE HEAD CAPACITY DESIGN (FT)	80.61	
MANUFACTURER MODEL	FLYGT NP3153 SH 3-275 OR APPROVED EQUAL	
NUMBER OF PUMPS NO.	3	

**LIFT STATION INFORMATION**

AVG DRY WEATHER FLOW (GPM)	202
MIN DRY WEATHER FLOW (GPM)	50
PEAK DRY WEATHER FLOW (GPM)	667
PEAK WET WEATHER FLOW (GPM)	805
WET WELL DIAMETER (FT)	8
PUMP AVG DAY CYCLE TIME (MIN)	63.38
PUMP MINIMUM CYCLE TIME (MIN)	175.30
NOMINAL FORCE MAIN SIZE (IN)	8
FORCE MAIN LENGTH (LF)	2,235
FLOW VELOCITY (FPS)	5.52
TOTAL LUE <sub>s</sub>	970
SERVICE AREA (AC)	265.0

- LIFT STATION NOTES:**
- ALL SUPPORT BRACKETS, HARDWARE, ANCHORS, BOLTS, ETC. INSIDE WET WELL SHALL BE TYPE 316 STAINLESS STEEL.
  - ALL GRAVITY PVC PIPE TO BE ASTM D3034 SDR 26 PIPING WITH TRACER TAPE. ALL FM PVC PIPE TO BE ASTM D2241 SDR 26 (CLASS 200) WITH TRACER TAPE.
  - ALL EXPOSED DUCTILE IRON PIPING, FITTINGS, AND VALVES SHALL BE SANDBLASTED AND COATED WITH TWO (2) COATS OF TNEPEC SERIES 27WB TPOXY APPLIED AT 6.0 TO 8.0 DRY MILS AND TOPCOATED WITH TNEPEC SERIES 740 UVX APPLIED AT 3.0 TO 5.0 DRY MILS. FINAL COLOR TO BE APPROVED BY THE OWNER. SHOP PRIMING WITH TNEPEC SERIES N140 IS ACCEPTABLE. BITUMASTIC COATING SHALL NOT BE APPLIED TO EXPOSED DI PIPING.
  - ALL BURIED DUCTILE IRON PIPING, FITTINGS, AND VALVES SHALL BE WRAPPED WITH A POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C105.
  - ALL MECHANICAL JOINT FITTINGS TO BE RESTRAINED USING SERIES 1100 OR 2000PV MEGALUG JOINT RESTRAINTS.
  - PUMP SPACING DIMENSIONS SHOWN ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE DETERMINED BY SPECIFIC PUMP MANUFACTURER.
  - SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
  - PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
  - CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
  - ALL PIPING IN THE WET WELL SHALL BE FLANGED. NO FLANGED COUPLING ADAPTORS OR METALLIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.
  - CONTRACTOR TO PROVIDE SUFFICIENT PIPE STRAIGHT RUN LENGTH PER MANUFACTURE RECONSIDERATION FOR MEASUREMENT ACCURACY.
  - AN EXFILTRATION TEST MUST BE PERFORMED IMMEDIATELY

AFTER THE WET WELL HAS BEEN BACKFILLED AND COMPACTED PER NBU LIFT STATION DESIGN CRITERIA 4.02.8, CONTRACTOR TO PROVIDE ENDRESS+HAUSER ELECTROMAGNETIC PROMAG 500 FLOW METER OR ENGINEER APPROVED EQUAL WITH NO REQUIRED MINIMUM PIPE STRAIGHT RUN BEFORE AND AFTER THE FLOW METER.

CONTRACTOR SHALL COORDINATE ALL WET WELL WALL AND TOP SLAB PENETRATIONS WITH THE WET WELL MANUFACTURERS.

WET WELL TESTING: AN EXFILTRATION TEST MUST BE PERFORMED IMMEDIATELY AFTER THE WET WELL HAS BEEN BACKFILLED AND COMPACTED. EXFILTRATION MUST NOT EXCEED 0.142 GALLONS PER HOUR PER FOOT OF DIAMETER PER FOOT OF DEPTH. THE TEST MUST BE DONE BY PLUGGING THE GRAVITY INVERT AND FILLING UP THE WET WELL WITH WATER TO EITHER 1-FT BELOW THE WET WELL TOP SLAB, OR UP TO THE MANHOLE LID WITH THE LOWEST ELEVATION BELOW THE TOP SLAB. THIS LEVEL MUST BE CLEARLY MARKED ON THE WET WELL WALL. AFTER FILLING, THE WET WELL IS LEFT TO STABILIZE FOR 48 HOURS BEFORE CONDUCTING THE TEST. AFTER STABILIZATION, THE WET WELL IS REFILLED TO THE MARK LEFT ON THE WALL. THE TEST IS THEN RUN FOR TWO HOURS, MINIMUM, AND NO WATER IS ADDED. AFTER TWO HOURS, THE WET WELL IS REFILLED TO THE MARK. THE AMOUNT OF WATER NECESSARY TO REACH THE MARK IS CAREFULLY MEASURED. THE MAXIMUM ALLOWABLE WATER LOSS IS DETERMINED BY THE FOLLOWING EQUATION:

Water Loss (gallons) = 0.0142hD<sup>2</sup>

WHERE:  
 t = TEST TIME (2 HOURS)  
 D = WET WELL DIAMETER (FT), AND  
 h = WATER LEVEL DEPTH WITHIN THE WET WELL AFTER 2 HOURS (FT).

IF THE TEST FAILS, THE DESIGN ENGINEER MUST WORK WITH THE CONSTRUCTION CONTRACTOR TO DETERMINE WHAT CORRECTIVE ACTIONS MAY BE NECESSARY TO MAKE THE WET WELL WATERTIGHT.

IF CONCRETE GROUT IS USED, IT SHALL BE COATED WITH EPOXY COATING (RAVEN 405 - 125 MILS OR APPROVED EQUAL).

DATE: \_\_\_\_\_

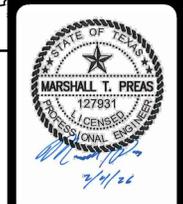
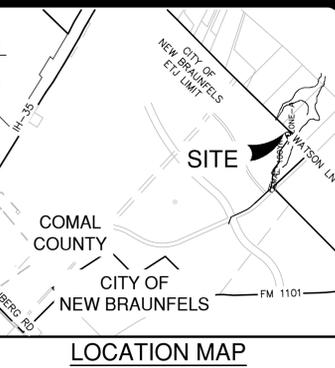
NO. REVISION: \_\_\_\_\_

**PAPE-DAWSON**  
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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS

**MECHANICAL PLAN AND SECTION**

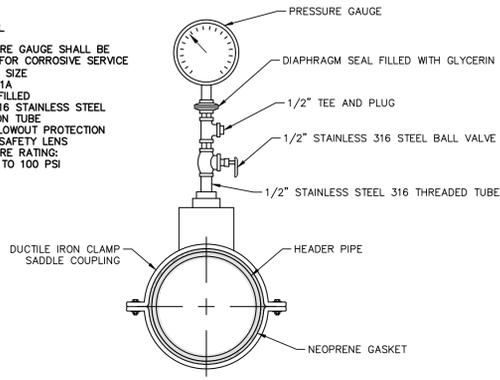
PLAT NO. \_\_\_\_\_  
 JOB NO. 30002-74  
 DATE FEBRUARY 2026  
 DESIGNER LL  
 CHECKED MP DRAWN JL  
 SHEET C-7



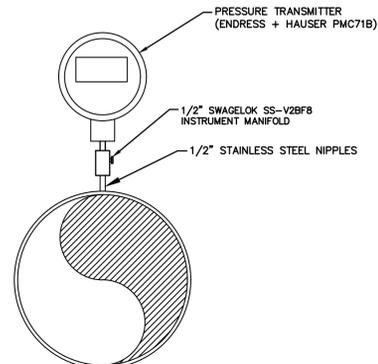
BID SET - NOT FOR CONSTRUCTION

**KEY NOTES:**

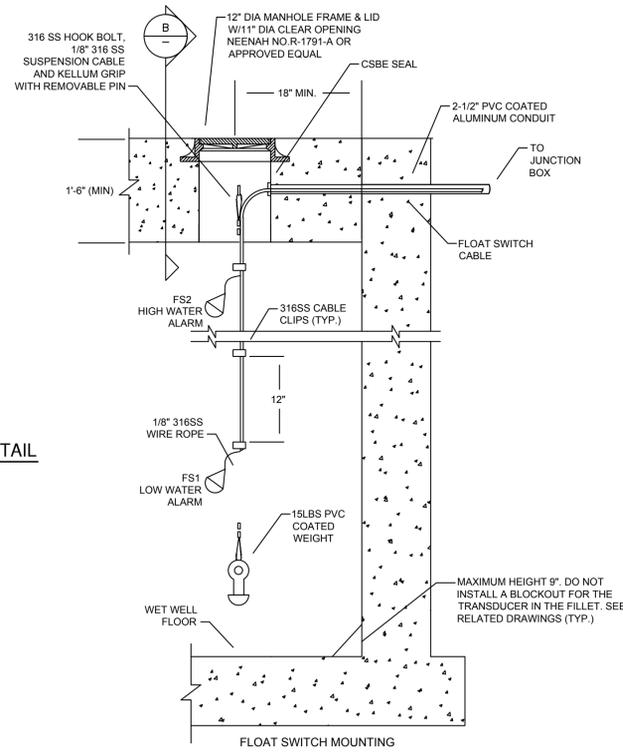
- PRESSURE GAUGE SHALL BE RATED FOR CORROSIVE SERVICE
- 4" DIAL SIZE
- GRADE 1A
- LIQUID FILLED
- TYPE 316 STAINLESS STEEL BOURDON TUBE
- FULL BLOWOUT PROTECTION
- GLASS SAFETY LENS
- PRESSURE RATING: 0 PSI TO 100 PSI



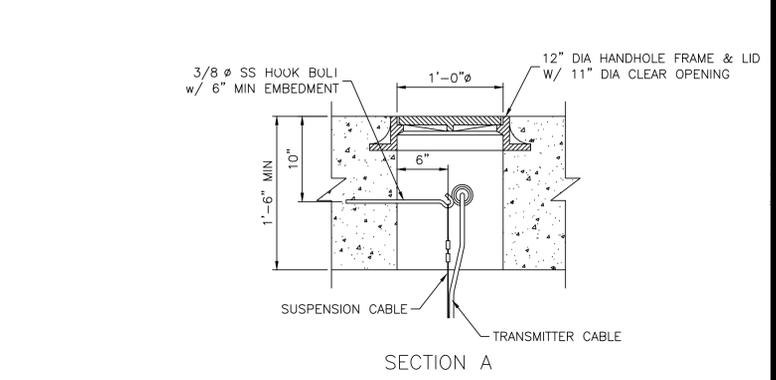
**C-8 A** PRESSURE GAUGE INSTALLATION DETAIL  
N.T.S.



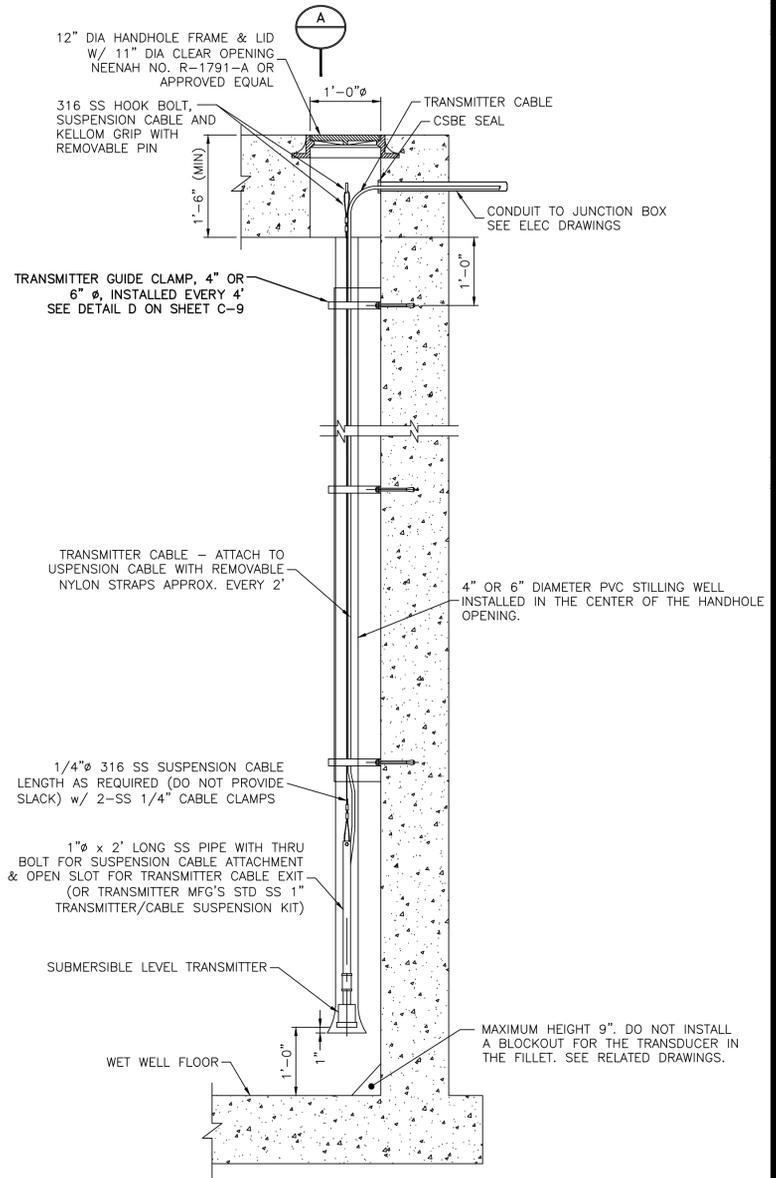
**C-8 B** PRESSURE TRANSMITTER INSTALLATION DETAIL  
N.T.S.



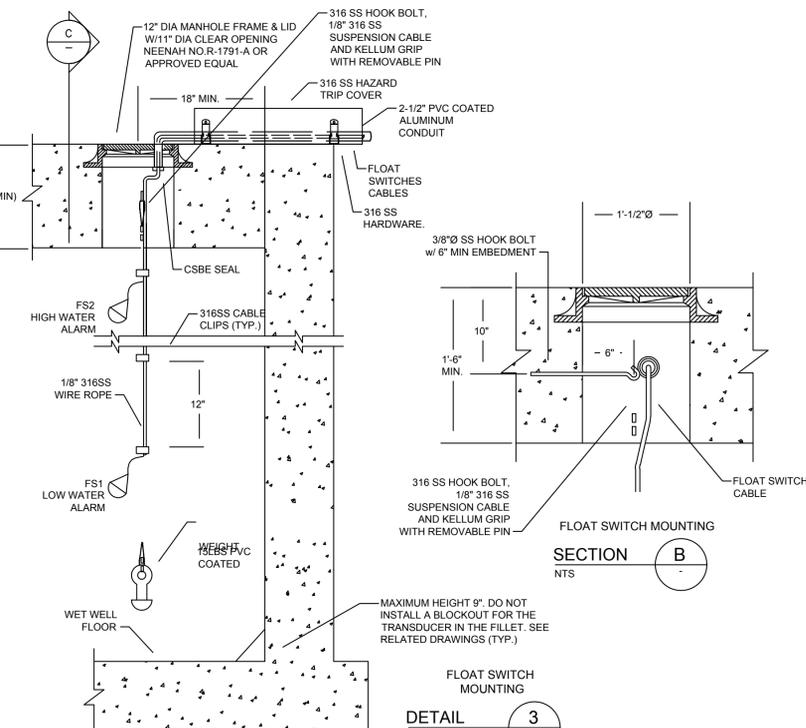
**DETAIL 2**  
N.T.S.



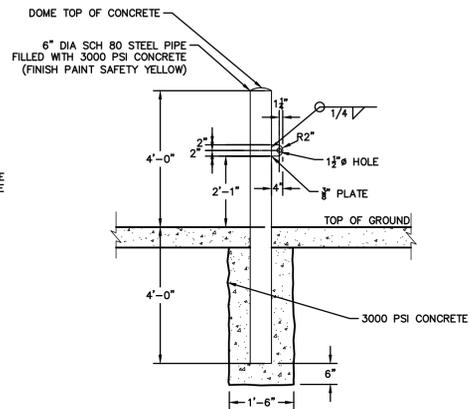
**SECTION A**



**C-8 g** SUBMERSIBLE TRANSDUCER WELL LEVEL SYSTEM DETAIL  
N.T.S.

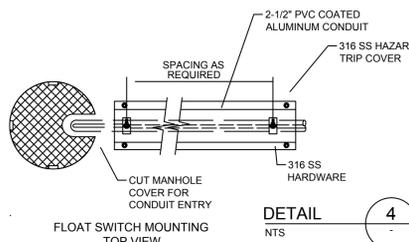


**C-8 E** FLOAT SWITCH MOUNTING DETAIL  
N.T.S.

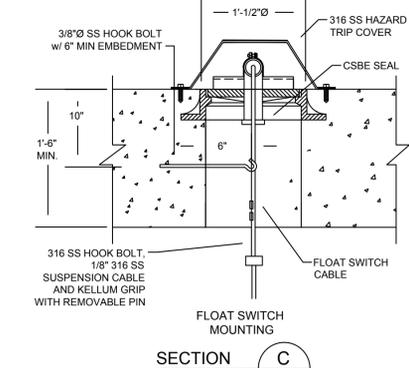


**C-8 F** CONCRETE BOLLARD  
N.T.S.

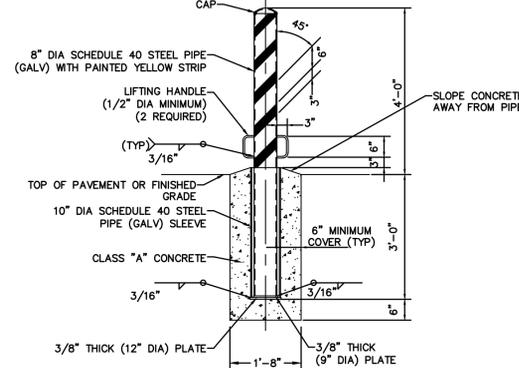
**C-8 D** BOLLARD W/D BOLT DETAIL  
N.T.S.



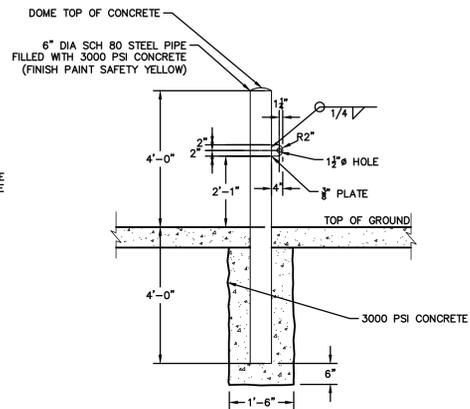
**DETAIL 4**  
N.T.S.



**SECTION C**  
N.T.S.

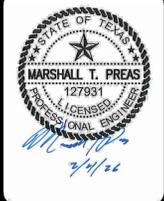


**C-8 C** REMOVABLE STEEL BOLLARD DETAIL  
N.T.S.



**C-8 D** BOLLARD W/D BOLT DETAIL  
N.T.S.

DATE	
NO.	REVISION

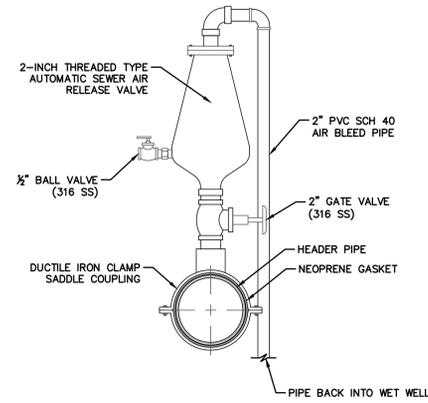


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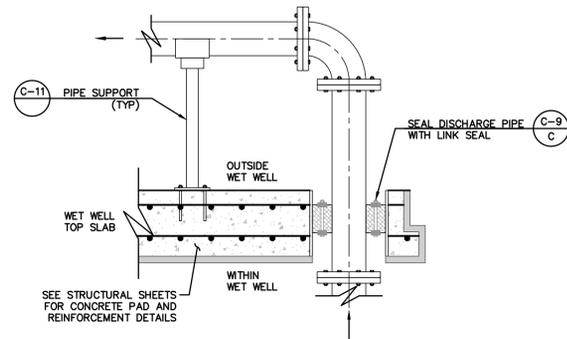
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
LIFT STATION CONSTRUCTION DETAILS (1 OF 4)

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-8

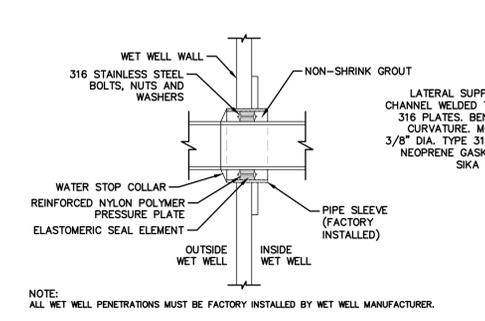
Date: September 9, 2025, 1:01 PM - User ID: jlling  
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C-9 A AIR RELEASE VALVE INSTALLATION DETAIL  
N.T.S.

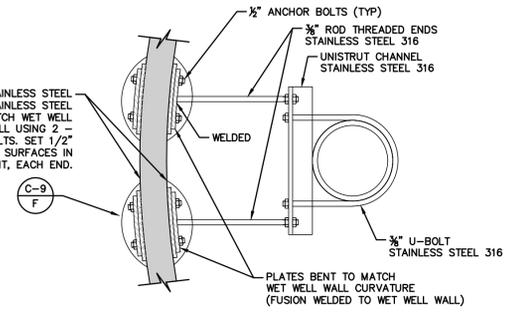


C-9 B DISCHARGE PIPE PENETRATION DETAIL  
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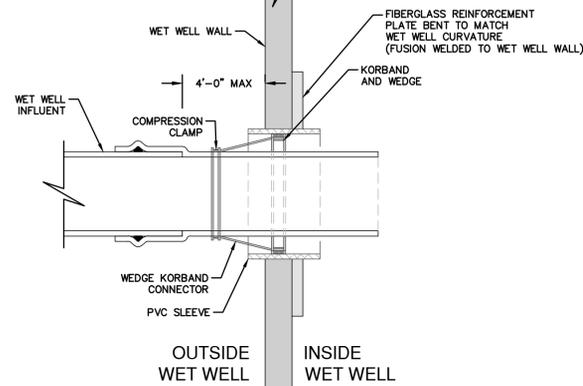


NOTE:  
ALL WET WELL PENETRATIONS MUST BE FACTORY INSTALLED BY WET WELL MANUFACTURER.

C-9 C LINK SEAL DETAIL  
N.T.S.

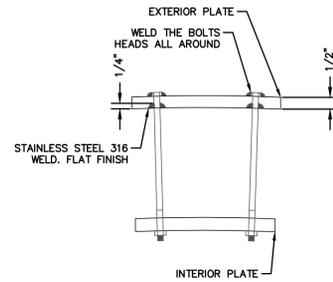


C-9 D INFLOW TOP VIEW DETAIL  
N.T.S.

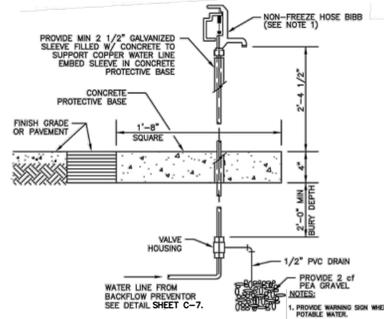


\*NOTE  
1. ALL NUTS SHALL BE LOCK-NUTS.  
2. ALL WET WELL PENETRATIONS MUST BE FACTORY INSTALLED BY WET WELL MANUFACTURER.

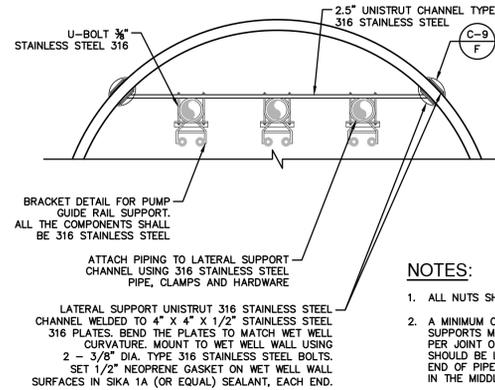
C-9 E WET WELL INFLUENT PENETRATION DETAIL  
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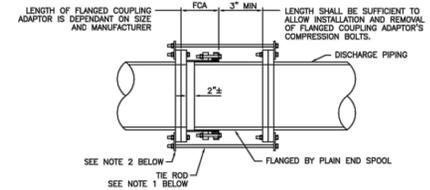
C-9 F PLATES DETAIL  
N.T.S.



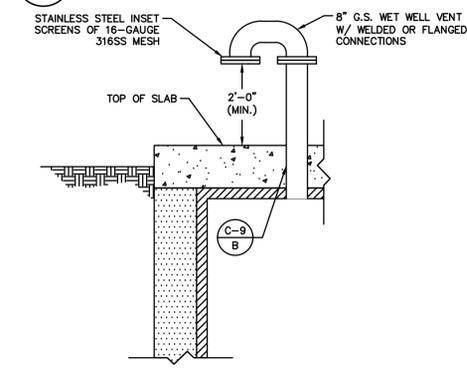
C-9 I NON FREEZE HOSE BIBB DETAIL  
N.T.S.



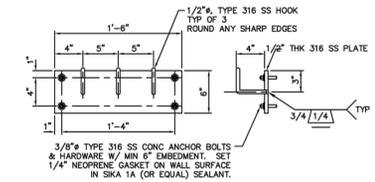
C-9 G WET WELL PIPING SUPPORT DETAIL  
N.T.S.



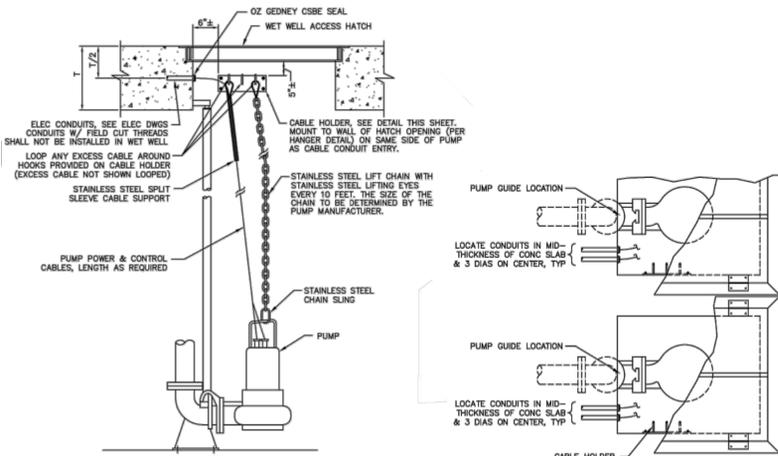
C-9 H FLANGED COUPLING ADAPTOR RESTRAINT DETAIL  
N.T.S.



C-9 J TYPICAL HIGH PROFILE WET WELL VENTILATION DETAIL  
N.T.S.



C-9 K SS CABLE HOLDER ASSEMBLY DETAIL  
N.T.S.



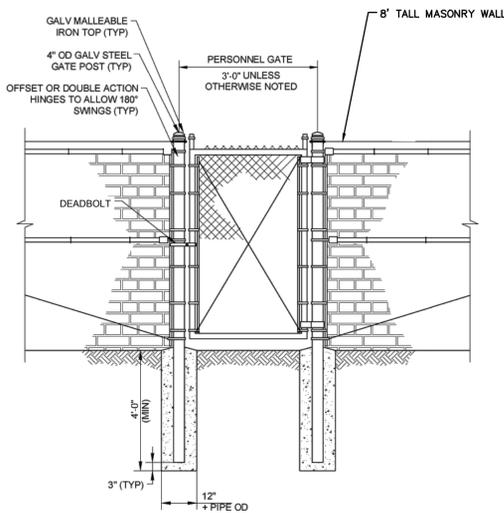
C-9 L SS PUMP LIFTING CABLING DETAIL  
N.T.S.

DATE	
NO.	REVISION

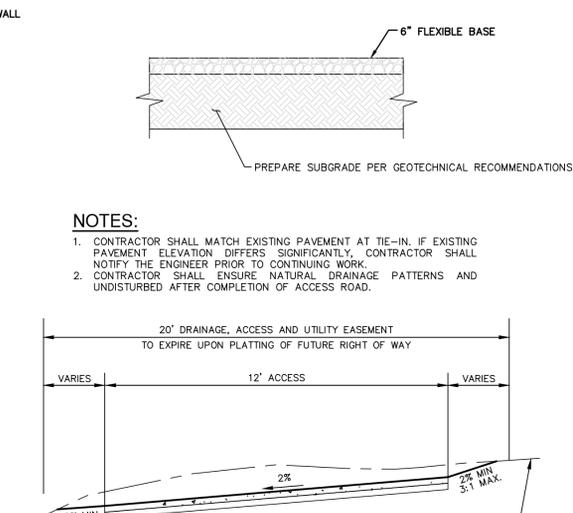
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TEXAS SURVEYING FIRM #479 | TEXAS ENGINEERING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
LIFT STATION CONSTRUCTION DETAILS (2 OF 4)

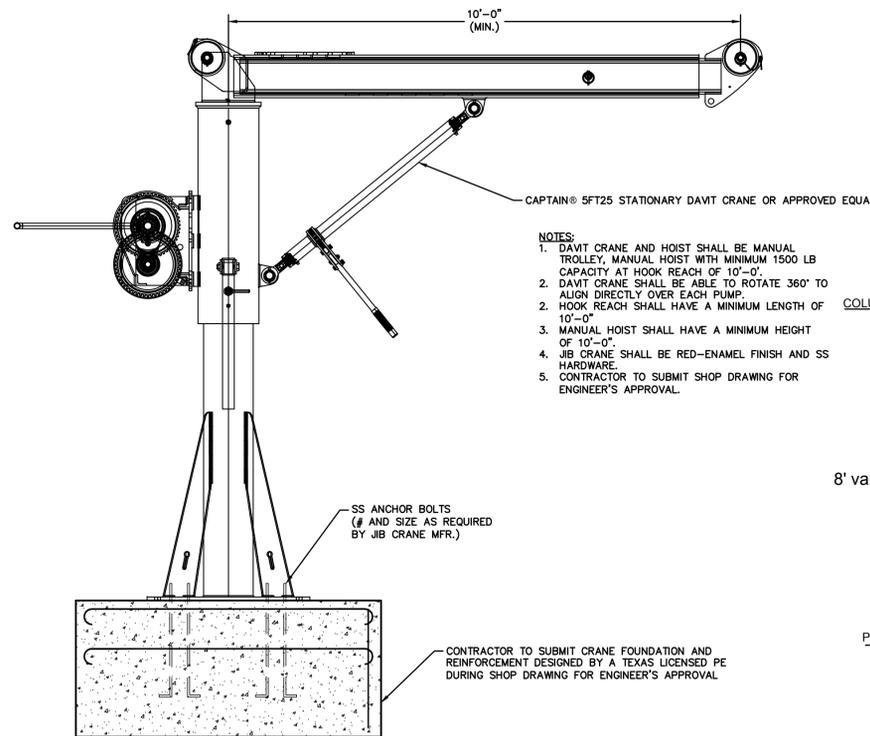
PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP_DRAWN_JL
SHEET	C-9



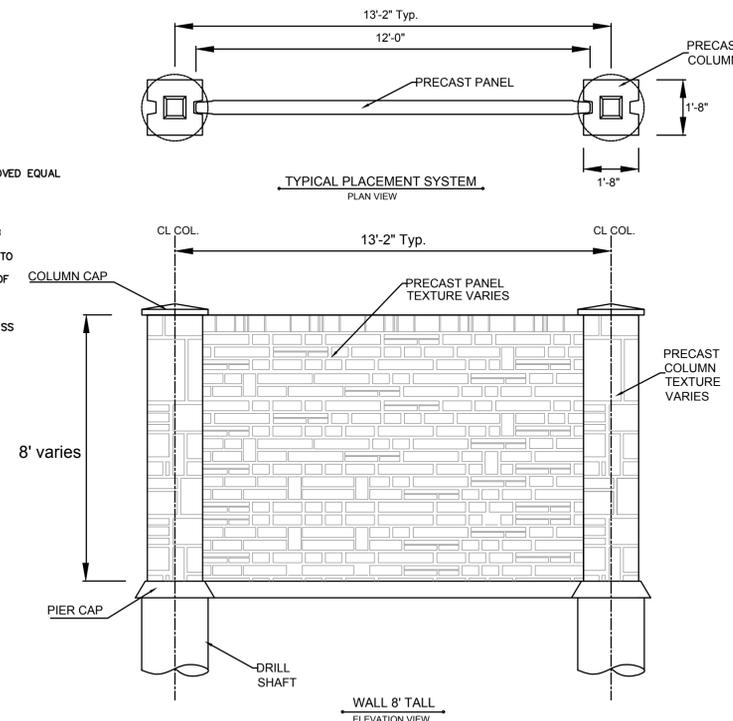
C-10 A PEDESTRIAN GATE DETAIL  
N.T.S.



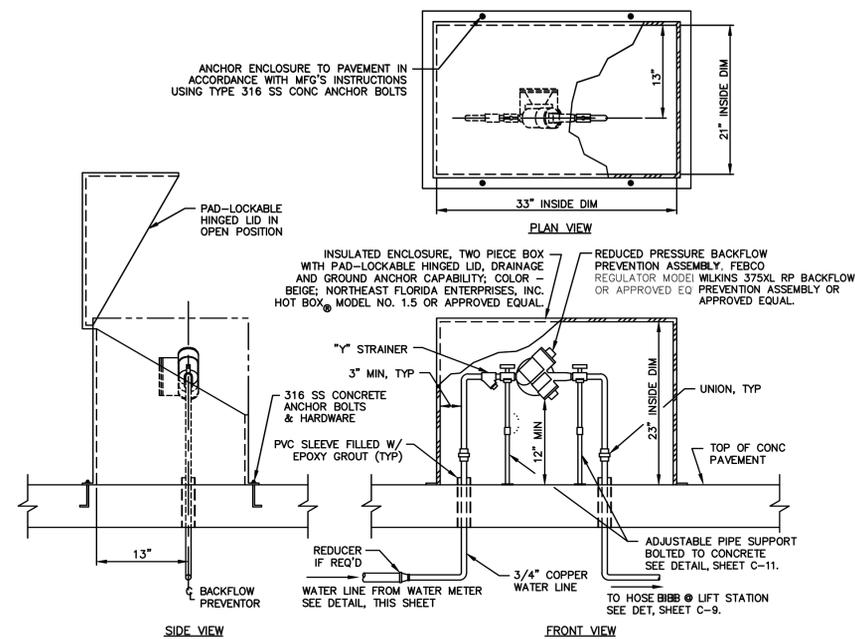
C-10 B BASE ACCESS ROAD DETAIL  
N.T.S.



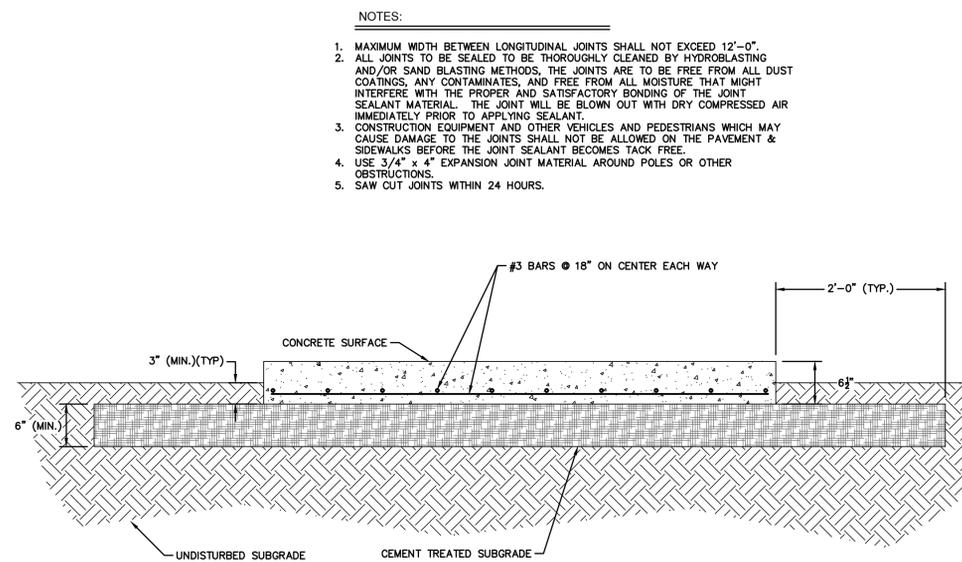
C-10 C DAVIT CRANE AND MANUAL HOIST DETAIL  
N.T.S.



C-10 D MASONRY WALL DETAIL  
N.T.S.

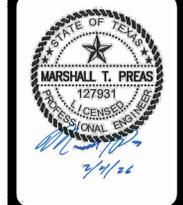


C-10 E REDUCED PRESSURE BACKFLOW PREVENTOR DETAIL  
N.T.S.



C-10 F CONCRETE PAVEMENT DETAIL  
N.T.S.

DATE	
NO.	REVISION

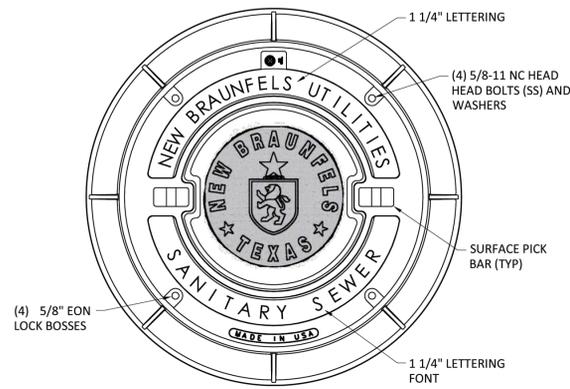


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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1028800

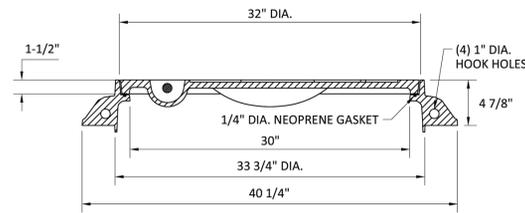
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
LIFT STATION CONSTRUCTION DETAILS (3 OF 4)

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-10

Date: September 9, 2025, 1:01 PM - User ID: jlling  
File: p:\300\02\74\03 CAD\01\_Civil\DT - 30002-74.dwg  
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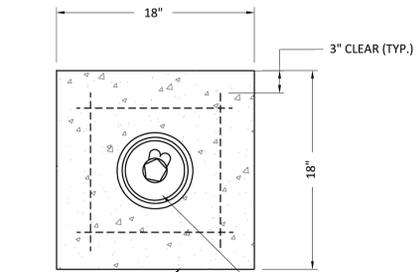
PLAN VIEW



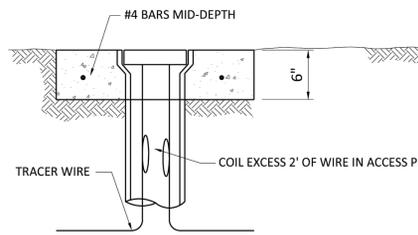
SECTION VIEW

MATERIAL: DUCTILE IRON ASTM A536 GRADE 70-50-05

<b>NBU</b> NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING:	SANITARY SEWER MANHOLE COVER	
	APPROVED BY: A. WILLARD	DATE: 8/17/21	SCALE: N.T.S.	SHEET: 1 OF 1
DRAWING NO. 331				



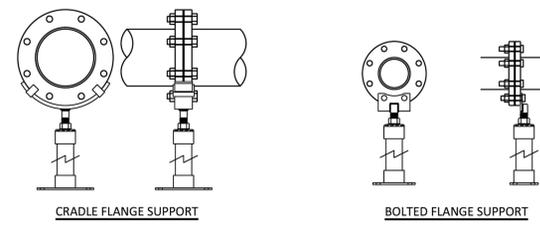
CLASS "A" CONCRETE



NOTES:

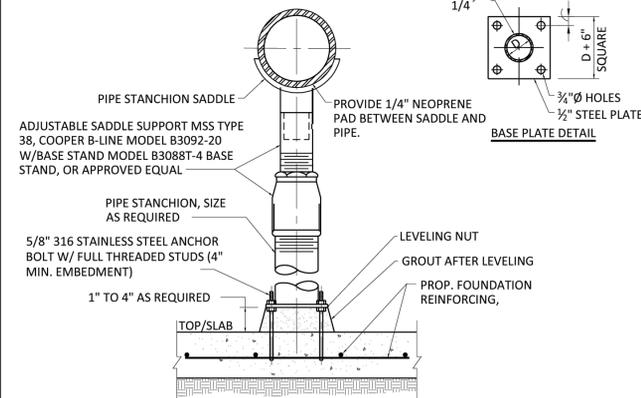
1. TRACER WIRE ACCESS POINTS SHALL BE INSTALLED PER SPECIFICATION ITEM NO. 512 "TRACER WIRE".
2. SEE DETAIL 240 FOR TYPICAL INSTALLATION.
3. TRACER WIRE ACCESS POINTS SHALL NOT BE INSTALLED IN SIDEWALKS, DRIVEWAYS, VALLEY GUTTERS, OR OTHER AREAS OF VEHICULAR TRAFFIC.

<b>NBU</b> NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING:	TRACER WIRE ACCESS POINT	
	APPROVED BY: A. WILLARD	DATE: 2/1/24	SCALE: N.T.S.	SHEET: 1 OF 1
DRAWING NO. 245				



CRADLE FLANGE SUPPORT

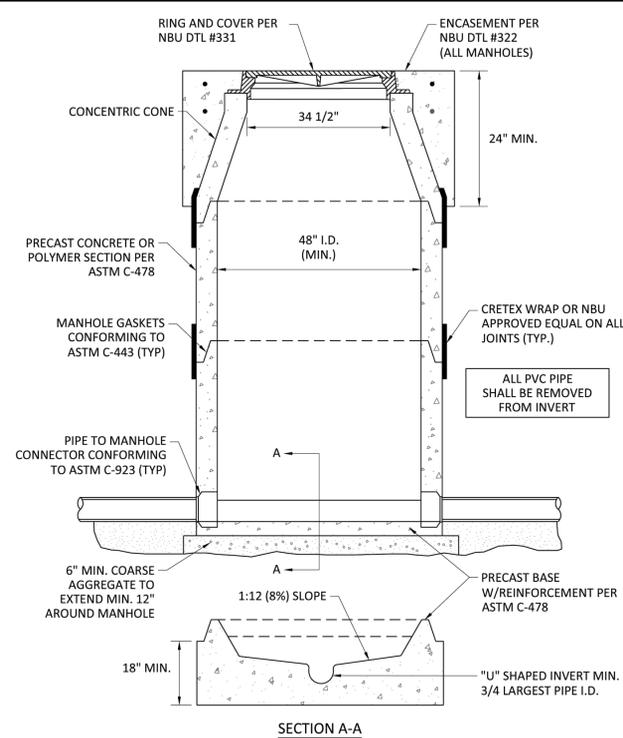
BOLTED FLANGE SUPPORT



NOTES:

1. PIPE SUPPORT SHALL BE GALVANIZED STEEL.

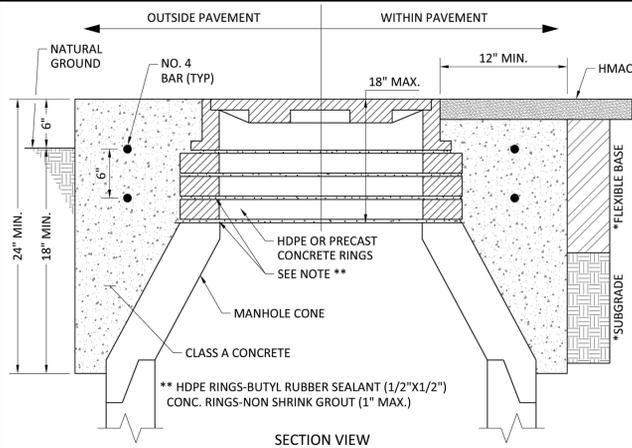
<b>NBU</b> NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING:	ADJUSTABLE PIPE SUPPORT	
	APPROVED BY: A. WILLARD	DATE: 2/1/24	SCALE: N.T.S.	SHEET: 1 OF 1
DRAWING NO. 246				



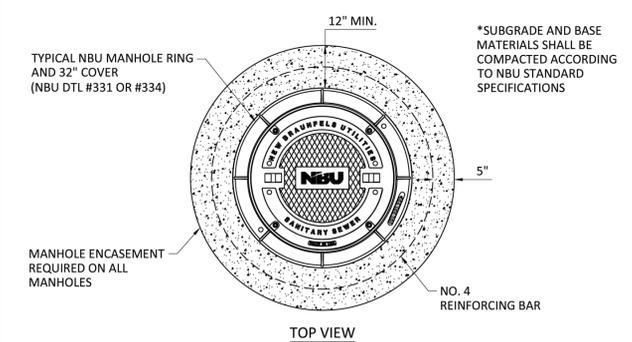
SECTION A-A

\*CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.

<b>NBU</b> NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING:	WASTEWATER MANHOLE ON PRECAST BASE	
	APPROVED BY: A. WILLARD	DATE: 2/1/24	SCALE: N.T.S.	SHEET: 1 OF 1
DRAWING NO. 328				

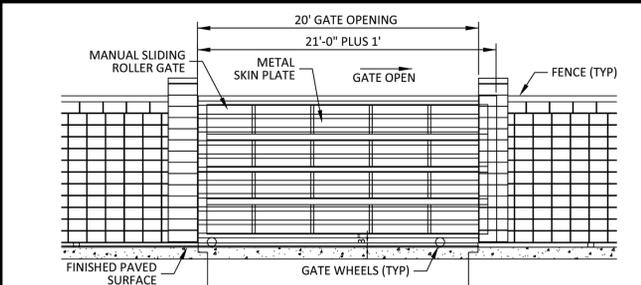


SECTION VIEW



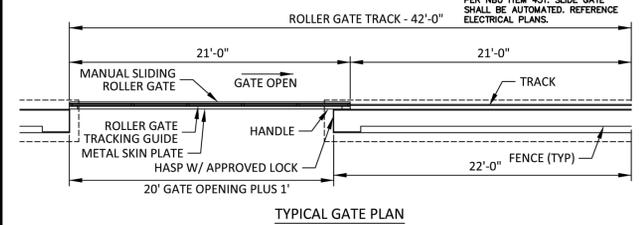
TOP VIEW

<b>NBU</b> NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: EWL	STANDARD DRAWING:	NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENT	
	APPROVED BY: A. WILLARD	DATE: 2/1/24	SCALE: N.T.S.	SHEET: 1 OF 1
DRAWING NO. 322				

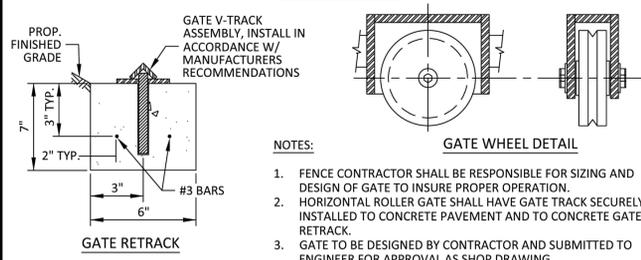


TYPICAL GATE ELEVATION

NOTE: SLIDE GATE STYLE TO BE PROVIDED PER NBU ITEM 431. SLIDE GATE SHALL BE AUTOMATED. REFERENCE ELECTRICAL PLANS.



TYPICAL GATE PLAN



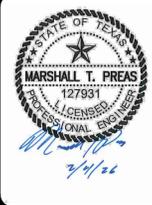
GATE WHEEL DETAIL

NOTES:

1. FENCE CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING AND DESIGN OF GATE TO INSURE PROPER OPERATION.
2. HORIZONTAL ROLLER GATE SHALL HAVE GATE TRACK SECURELY INSTALLED TO CONCRETE PAVEMENT AND TO CONCRETE GATE RETRACK.
3. GATE TO BE DESIGNED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR APPROVAL AS SHOP DRAWING.
4. GATE TO BE COATED PER NBU STANDARD SPECIFICATION 530.

<b>NBU</b> NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: AW	STANDARD DRAWING:	FACILITY GATE	
	APPROVED BY: A. WILLARD	DATE: 2/1/24	SCALE: N.T.S.	SHEET: 1 OF 1
DRAWING NO. 431				

DATE	
NO.	REVISION



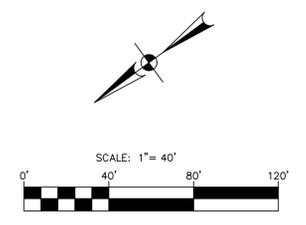
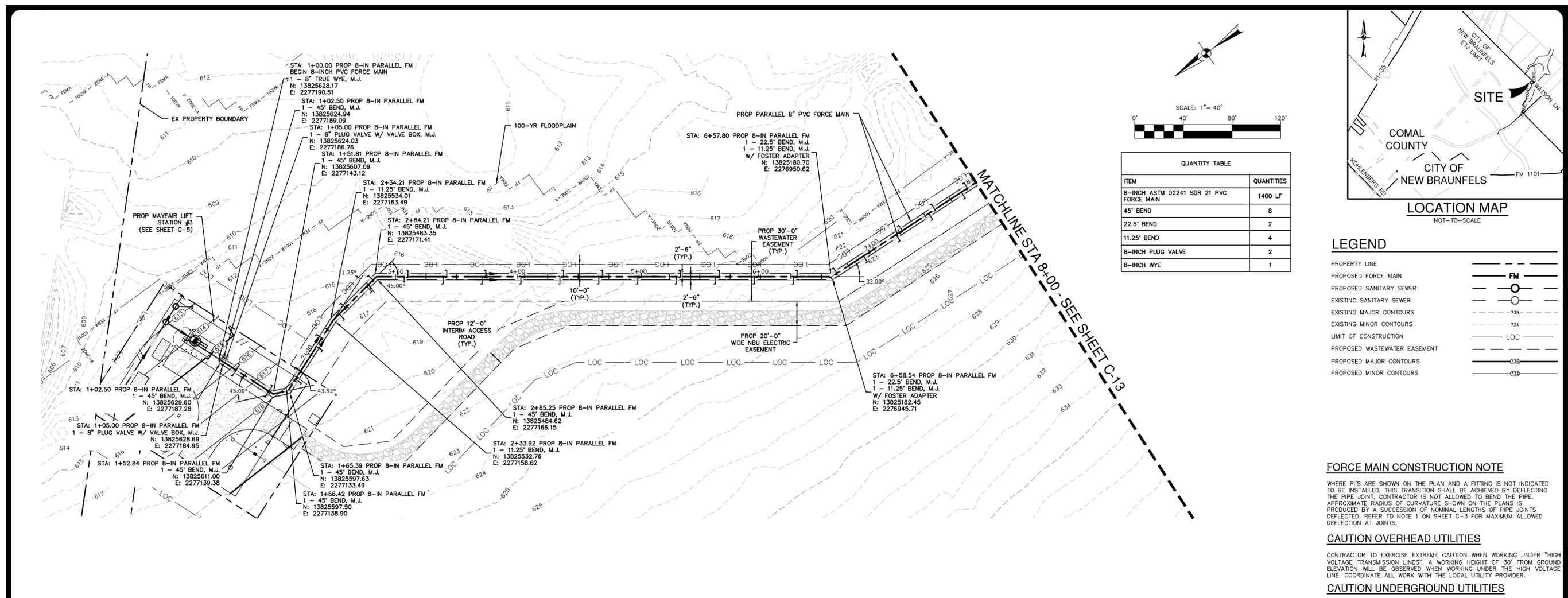
**PAPE-DAWSON**  
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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MAYFAIR LIFT STATION #3 AND FORCE MAIN  
NEW BRAUNFELS, TEXAS  
LIFT STATION CONSTRUCTION DETAILS (4 OF 4)

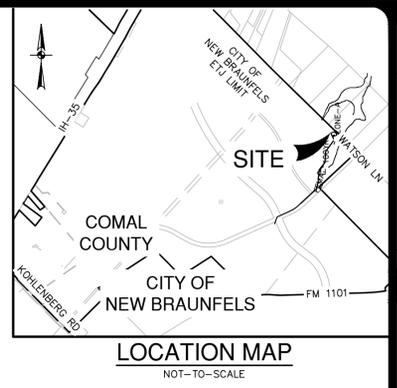
PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP, DRAWN JL
SHEET	C-11

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QUANTITY TABLE	
ITEM	QUANTITIES
8-INCH ASTM D2241 SDR 21 PVC FORCE MAIN	1400 LF
45° BEND	8
22.5° BEND	2
11.25° BEND	4
8-INCH PLUG VALVE	2
8-INCH WYE	1



**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	---
EXISTING SANITARY SEWER	---
EXISTING MAJOR CONTOURS	---
EXISTING MINOR CONTOURS	---
LIMIT OF CONSTRUCTION	---
PROPOSED WASTEWATER EASEMENT	---
PROPOSED MAJOR CONTOURS	---
PROPOSED MINOR CONTOURS	---

**FORCE MAIN CONSTRUCTION NOTE**

WHERE P'S ARE SHOWN ON THE PLAN AND A FITTING IS NOT INDICATED TO BE INSTALLED, THIS TRANSITION SHALL BE ACHIEVED BY DEFLECTING THE PIPE JOINT. CONTRACTOR IS NOT ALLOWED TO BEND THE PIPE. APPROXIMATE RADIUS OF CURVATURE SHOWN ON THE PLANS IS PRODUCED BY A SUCCESSION OF NOMINAL LENGTHS OF PIPE JOINTS DEFLECTED. REFER TO NOTE 1 ON SHEET G-3 FOR MAXIMUM ALLOWED DEFLECTION AT JOINTS.

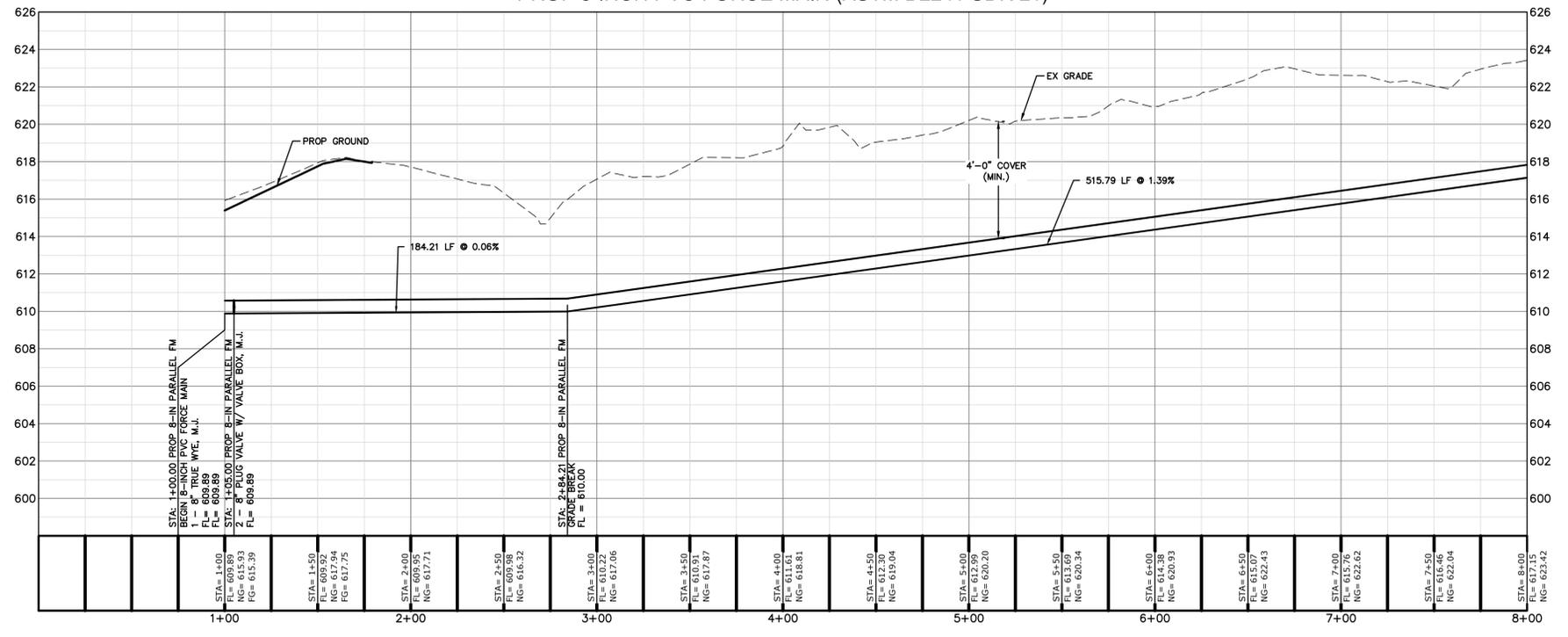
**CAUTION OVERHEAD UTILITIES**

CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING UNDER "HIGH VOLTAGE TRANSMISSION LINES". A WORKING HEIGHT OF 30' FROM GROUND ELEVATION WILL BE OBSERVED WHEN WORKING UNDER THE HIGH VOLTAGE LINE. COORDINATE ALL WORK WITH THE LOCAL UTILITY PROVIDER.

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THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, AND FIBER OPTIC LINES, SITE LIGHTING, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, IRRIGATION FACILITIES, AND GAS LINES. THE CONTRACTOR MUST CONTACT 1-800-DIG-TESS AND CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION AND/OR START OF CONSTRUCTION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES (WHETHER SHOWN ON PLANS OR NOT) WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

PROP 8-INCH PVC FORCE MAIN (ASTM D2241 SDR 21)



MATCHLINE STA 8+00 - SEE SHEET C-13

**CITY OF NEW BRAUNFELS NOTES:**

- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
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- THIS PROJECT INCLUDES UTILITY INSTALLATION GREATER THAN 5'-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
- UTILITY TRENCH COMPACTION - ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORMLY NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM DSE DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

**TRENCH EXCAVATION SAFETY PROTECTION**

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/ EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES 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.

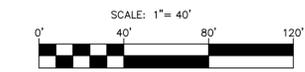
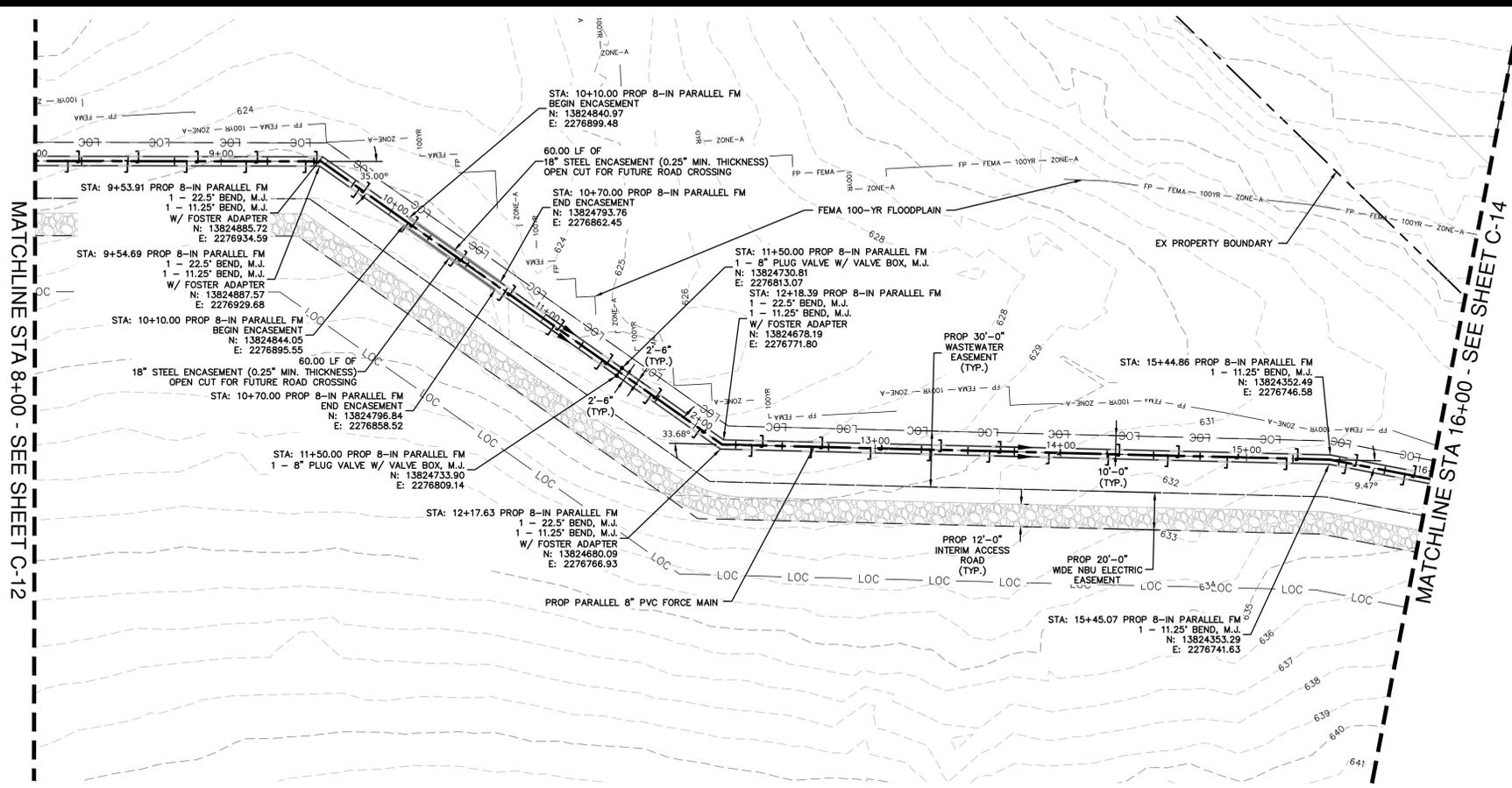
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NO.	REVISION

**PAPE-DAWSON**  
 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5653  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

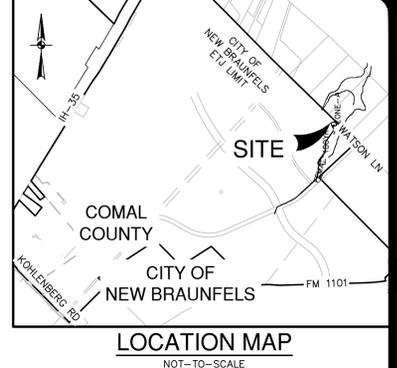
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 8-IN FM PLAN & PROFILE STA 0+00 - 8+00

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-12

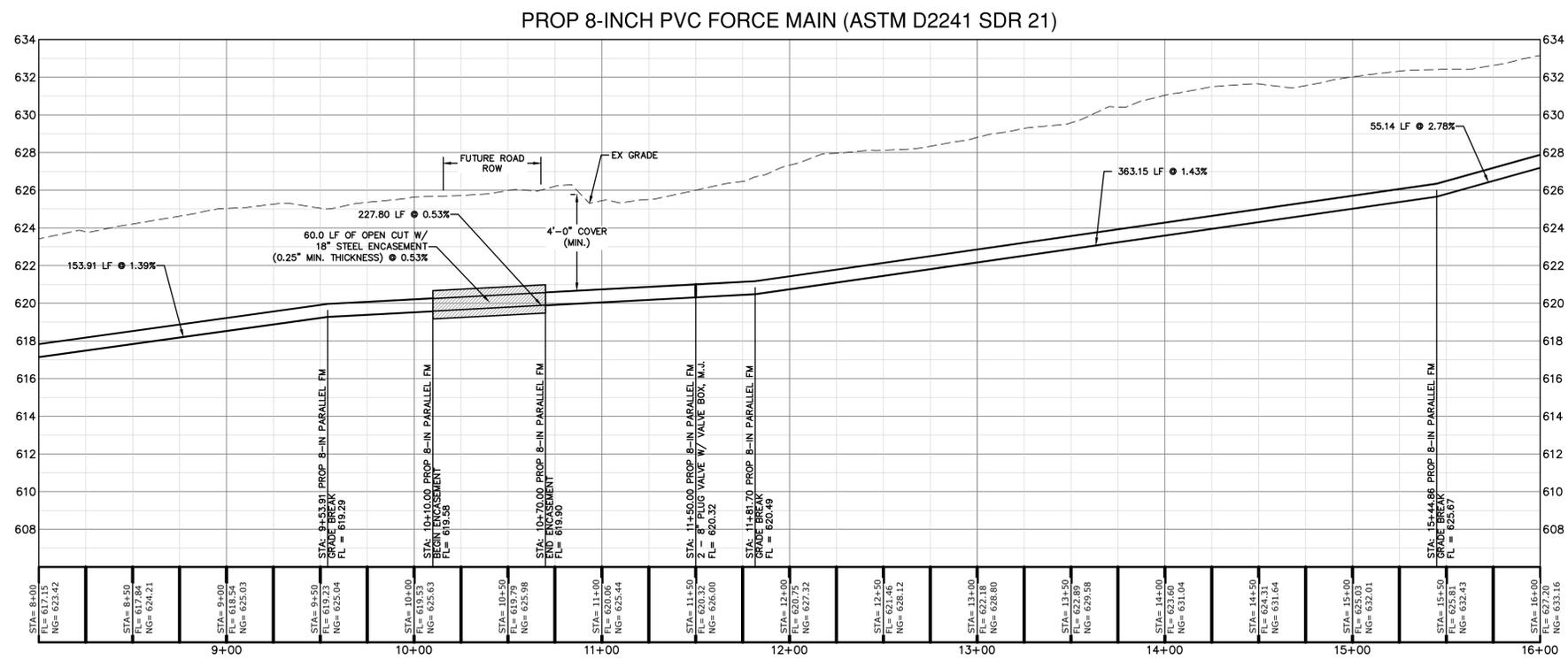
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QUANTITY TABLE	
ITEM	QUANTITIES
8-INCH ASTM D2241 SDR 21 PVC FORCE MAIN	1600 LF
18-INCH STEEL ENCASMENT (0.25" THICKNESS MIN.)	120 LF
22.5° BEND	4
11.25° BEND	6
8-INCH PLUG VALVE	2



DATE: \_\_\_\_\_  
 NO. REVISION: \_\_\_\_\_



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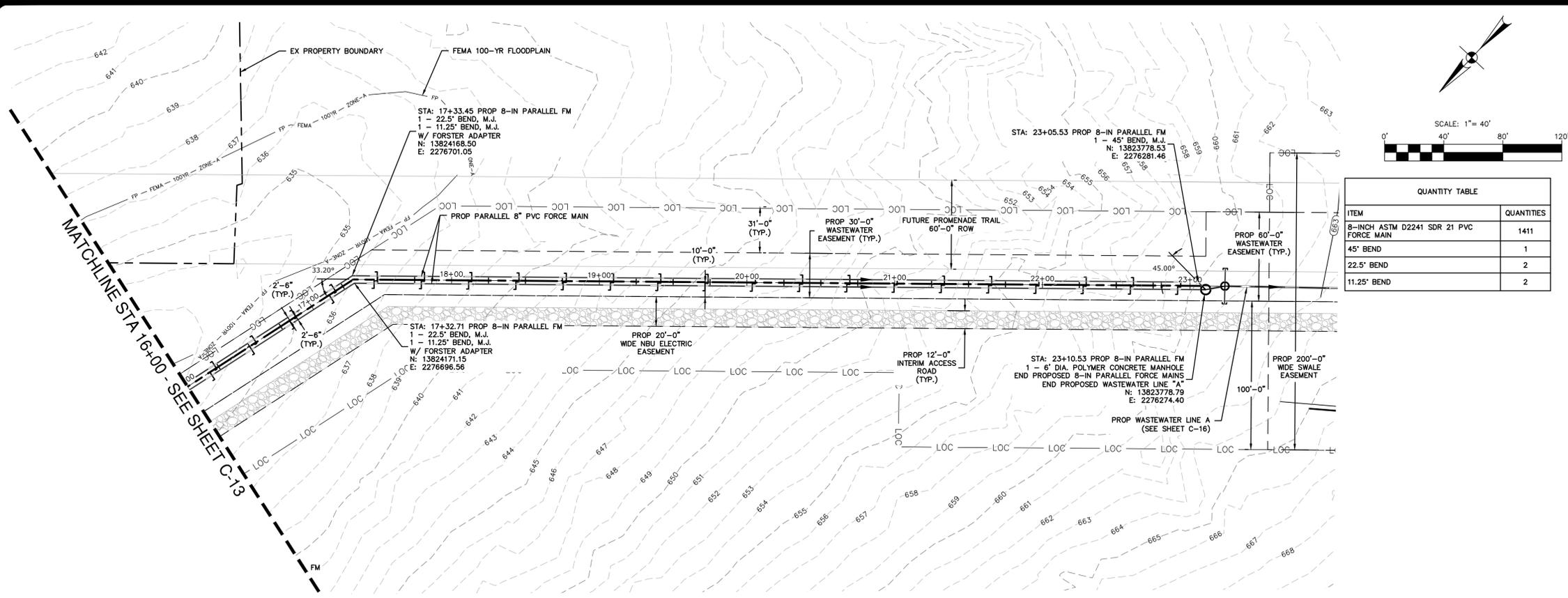
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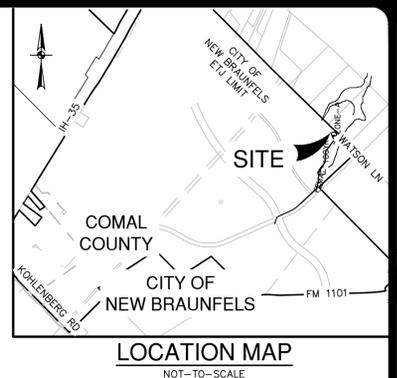
**PAPE-DAWSON**  
 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS SURVEYING FIRM # 10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 8-IN FM PLAN & PROFILE STA 8+00 - 16+00

PLAT NO. \_\_\_\_\_  
 JOB NO. 30002-74  
 DATE FEBRUARY 2026  
 DESIGNER LL  
 CHECKED MP DRAWN JL  
 SHEET C-13



QUANTITY TABLE	
ITEM	QUANTITIES
8-INCH ASTM D2241 SDR 21 PVC FORCE MAIN	1411
45' BEND	1
22.5' BEND	2
11.25' BEND	2



**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	SS
EXISTING SANITARY SEWER	SS
EXISTING MAJOR CONTOURS	735
EXISTING MINOR CONTOURS	734
LIMIT OF CONSTRUCTION	LOC
PROPOSED WASTEWATER EASEMENT	WWE
PROPOSED MAJOR CONTOURS	735
PROPOSED MINOR CONTOURS	734

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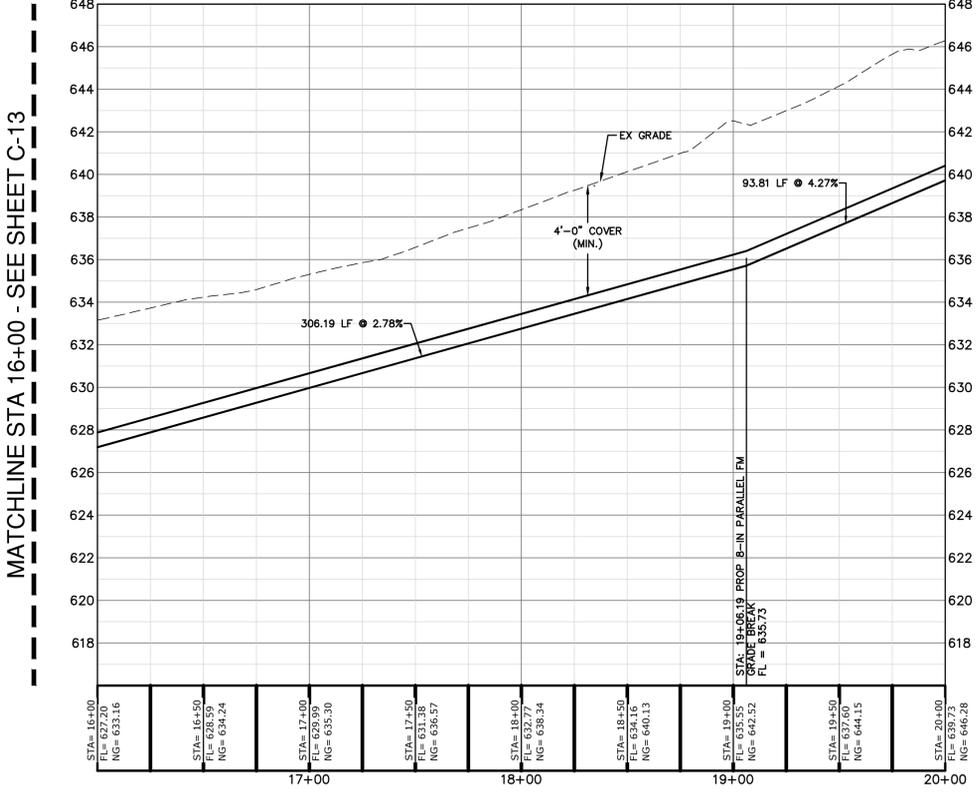
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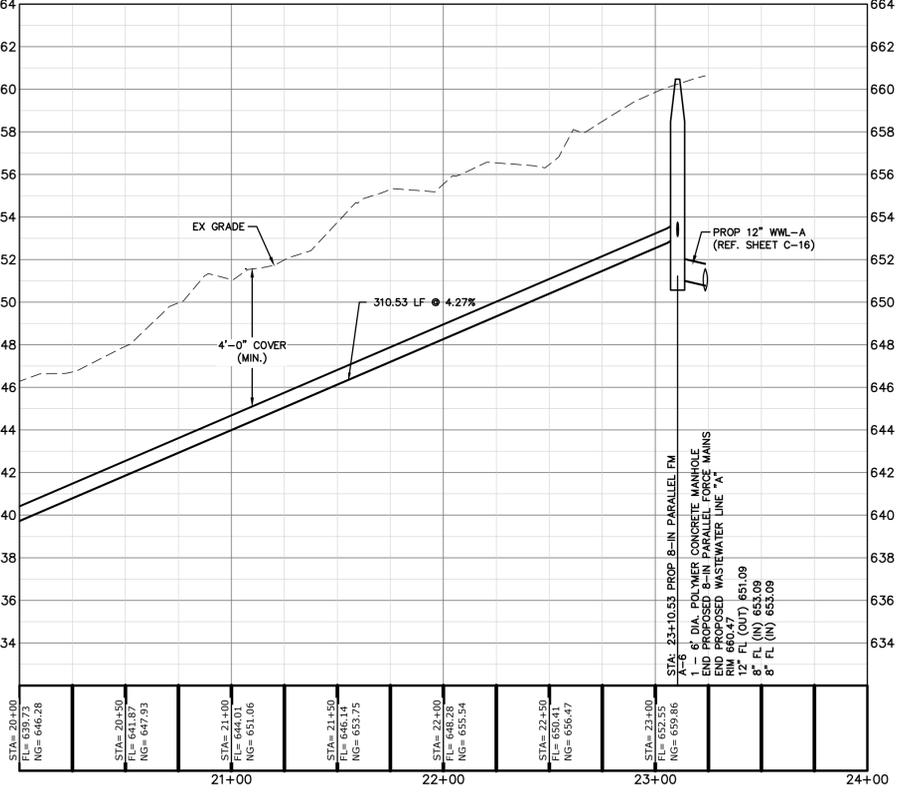
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PROP 8-INCH PVC FORCE MAIN (ASTM D2241 SDR 21)



PROP 8-INCH PVC FORCE MAIN (ASTM D2241 SDR 21)



DATE: \_\_\_\_\_

NO. REVISION: \_\_\_\_\_

**PAPE-DAWSON**

1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**

NEW BRAUNFELS, TEXAS

8-IN FM PLAN & PROFILE STA 16+00 - END

PLAT NO. \_\_\_\_\_

JOB NO. 30002-74

DATE FEBRUARY 2026

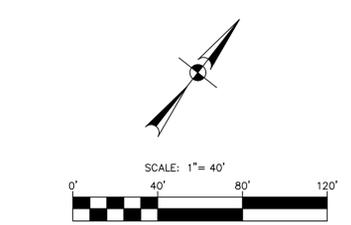
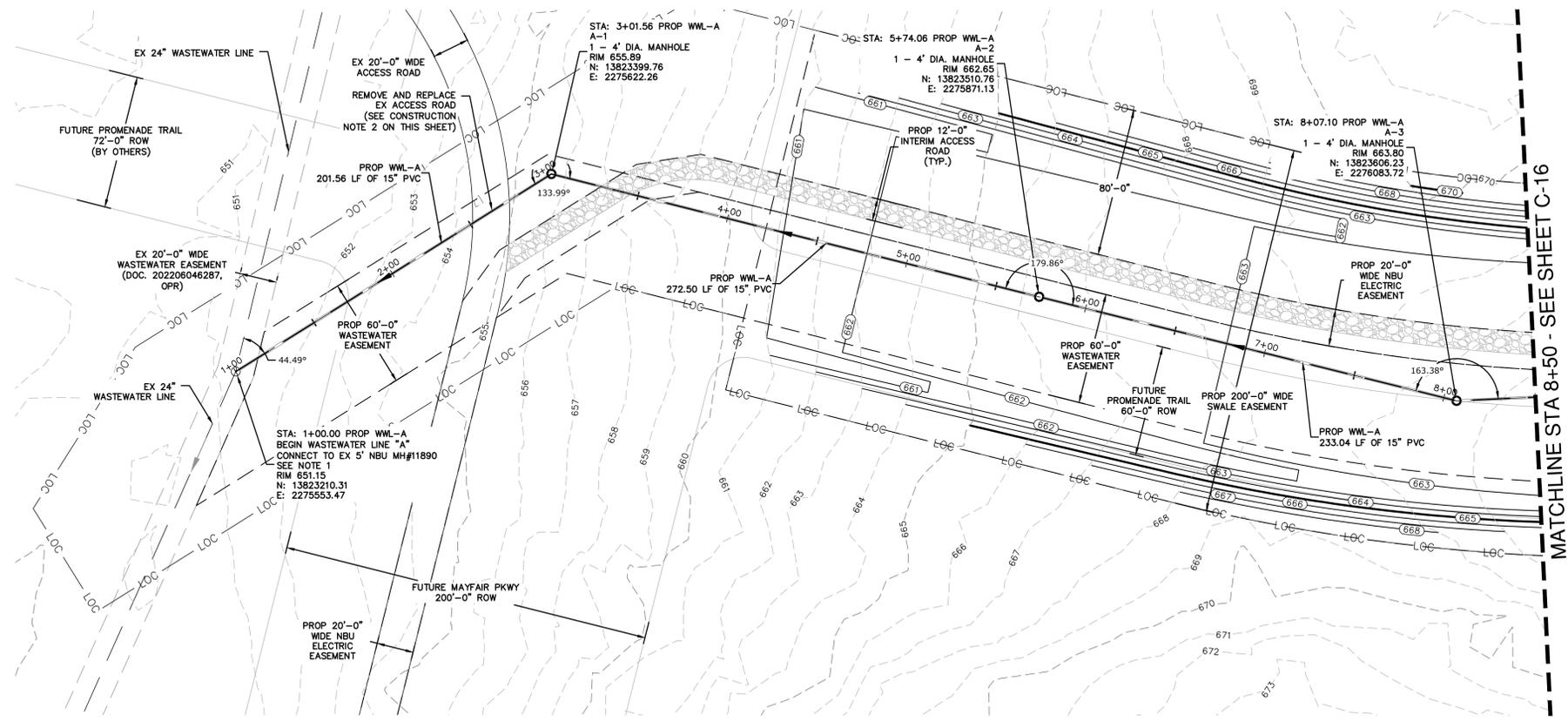
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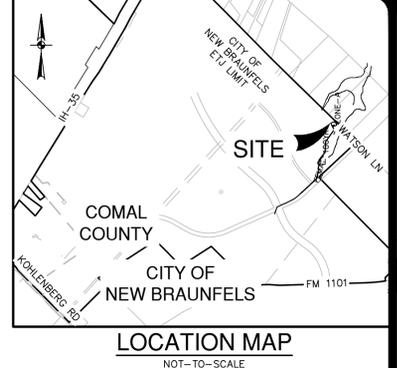
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QUANTITY TABLE	
ITEM	QUANTITIES
15-INCH ASTM D3034 PVC GRAVITY SEWER (115 PSI MIN.)	750 LF
4'-0" DIA. PRECAST CONCRETE MANHOLE	3 EA
BYPASS PUMPING FOR 24" WASTEWATER LINE	1 LS



**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	○
EXISTING SANITARY SEWER	○
EXISTING MAJOR CONTOURS	-735-
EXISTING MINOR CONTOURS	-734-
LIMIT OF CONSTRUCTION	LOC
PROPOSED WASTEWATER EASEMENT	---
PROPOSED MAJOR CONTOURS	-735-
PROPOSED MINOR CONTOURS	-734-

- CONSTRUCTION NOTE**
- CONTRACTOR TO SET UP TEMPORARY BYPASS PUMPING TO ACHIEVE THE -IN OF PROPOSED 15" PVC WWL AND MAINTAIN CONTINUOUS WASTEWATER SERVICE THROUGHOUT PROJECT. SEE BYPASS PUMPING NOTES ON SHEET G-3.
  - IF DISTURBED, CONTRACTOR TO RESTORE EXISTING ACCESS ROAD TO ITS ORIGINAL OR BETTER CONDITIONS AT NO SEPARATE COST.

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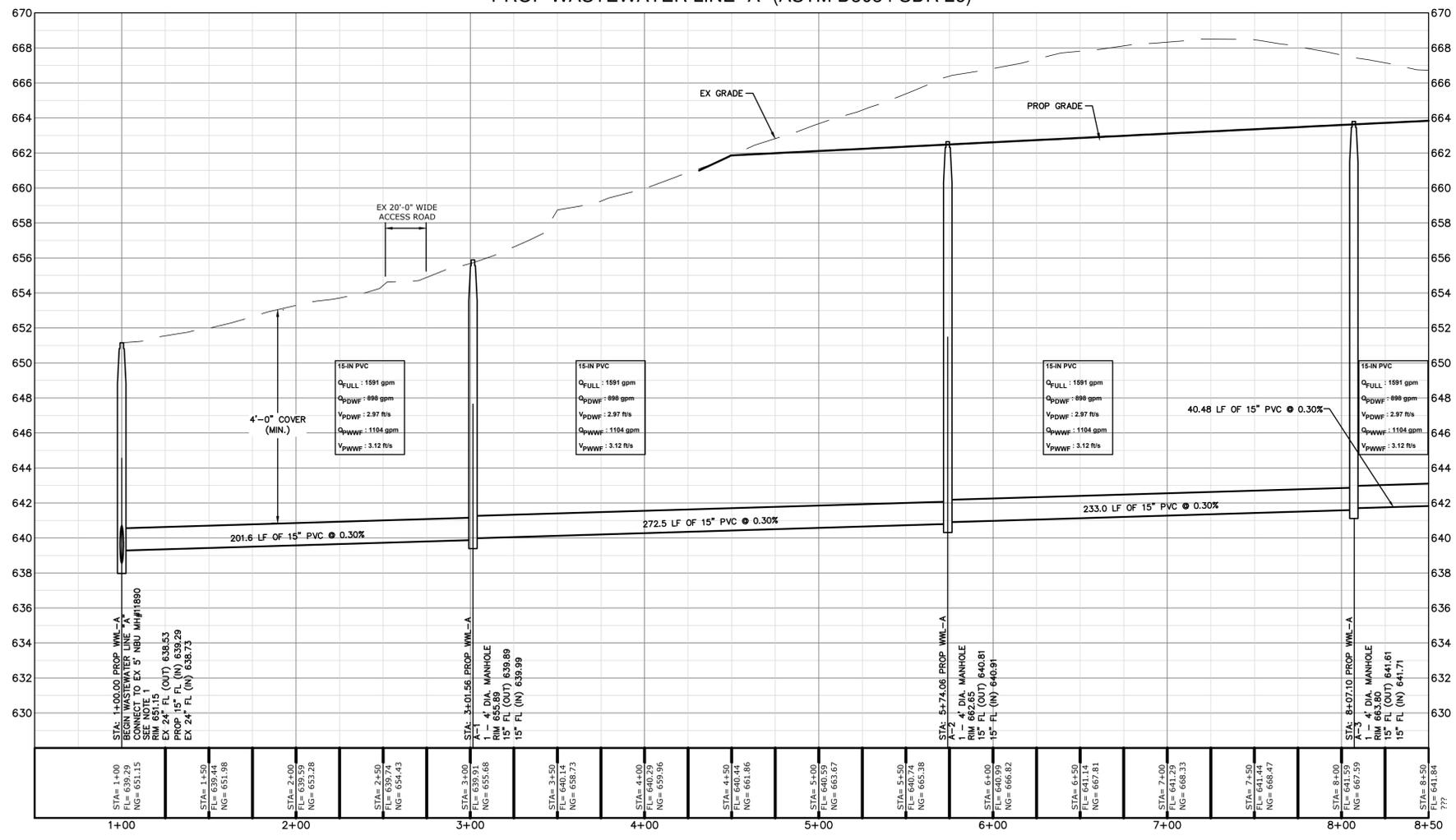
**CITY OF NEW BRAUNFELS NOTES:**

- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- THIS PROJECT INCLUDES UTILITY INSTALLATION GREATER THAN 5'-FEET IN DEPTH. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.
- UTILITY TRENCH COMPACTION - ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORMLY NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

**TRENCH EXCAVATION SAFETY PROTECTION**

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/ EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES 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.

PROP WASTEWATER LINE "A" (ASTM D3034 SDR 26)



MATCHLINE STA 8+50 - SEE SHEET C-16

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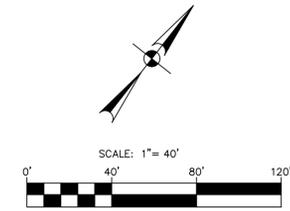
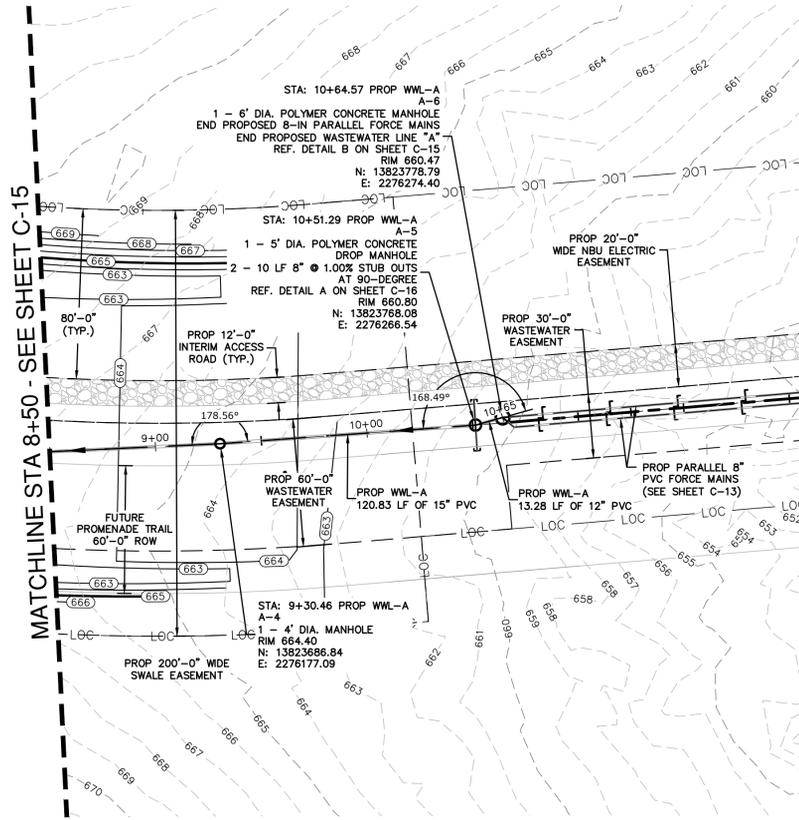
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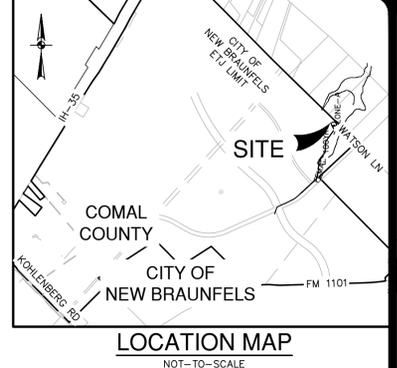
**PAPE-DAWSON**  
1677 INDEPENDENCE DR. STE 102 NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
WASTEWATER LINE A PLAN & PROFILE STA 0+00 - 8+50

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-15



QUANTITY TABLE	
ITEM	QUANTITIES
15-INCH ASTM D3034 PVC GRAVITY SEWER (115 PSI MIN.)	199 LF
12-INCH ASTM D3034 PVC GRAVITY SEWER (115 PSI MIN.)	13 LF
8-INCH ASTM D3034 PVC GRAVITY SEWER (115 PSI MIN.)	20 LF
4'-0" DIA. PRECAST CONCRETE MANHOLE	1 EA
5'-0" DIA. POLYMER CONCRETE DROP MANHOLE	1 EA
6'-0" DIA. POLYMER CONCRETE MANHOLE	1 EA



**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	SS
EXISTING SANITARY SEWER	SS
EXISTING MAJOR CONTOURS	735
EXISTING MINOR CONTOURS	734
LIMIT OF CONSTRUCTION	LOC
PROPOSED WASTEWATER EASEMENT	---
PROPOSED MAJOR CONTOURS	735
PROPOSED MINOR CONTOURS	734

DATE: \_\_\_\_\_

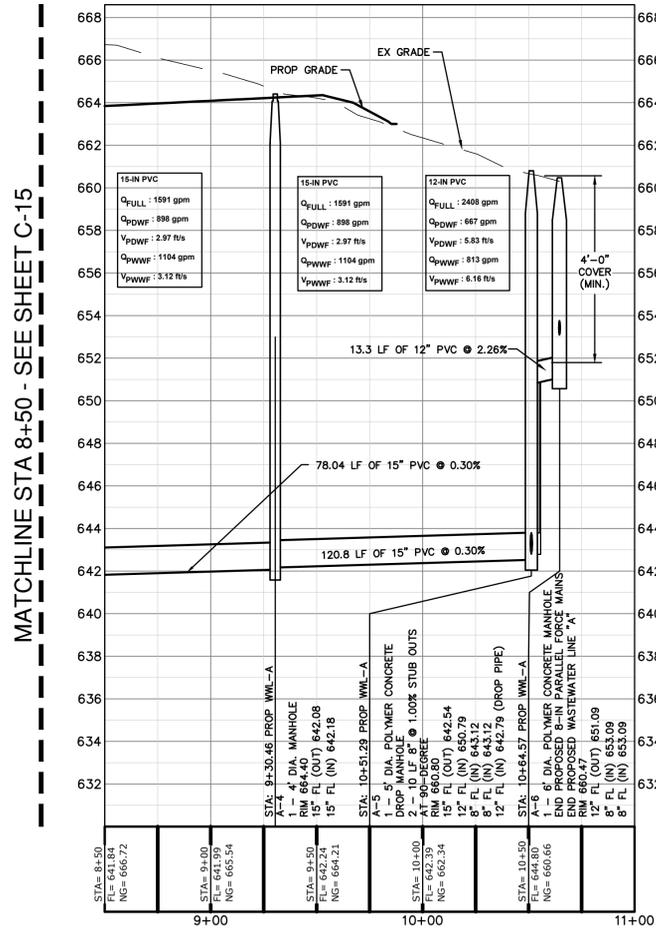
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**PAPE-DAWSON**

1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10028800

PROP WASTEWATER LINE "A" (ASTM D3034 SDR 26)



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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**

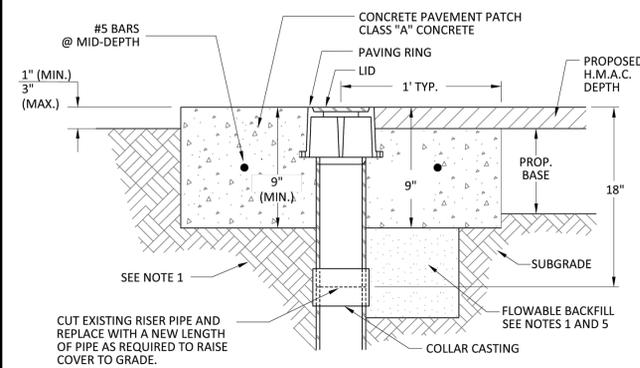
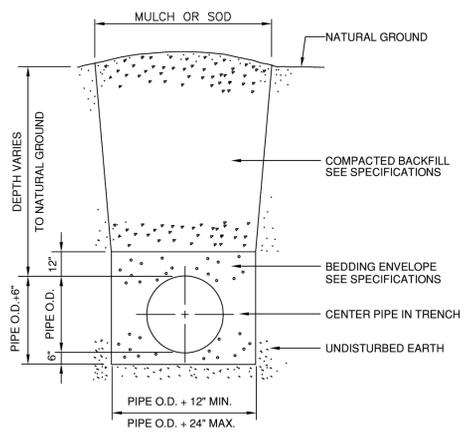
NEW BRAUNFELS, TEXAS

WASTEWATER LINE A PLAN & PROFILE STA 8+50 - END

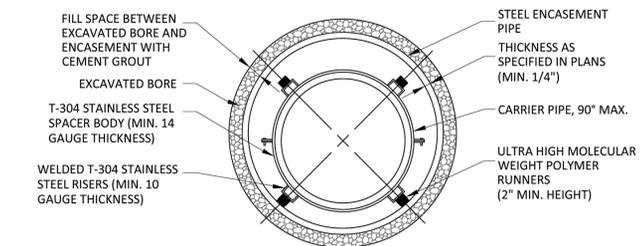
PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-16

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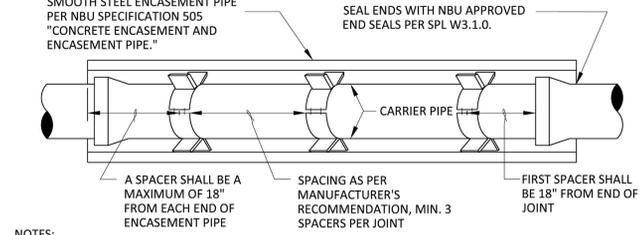




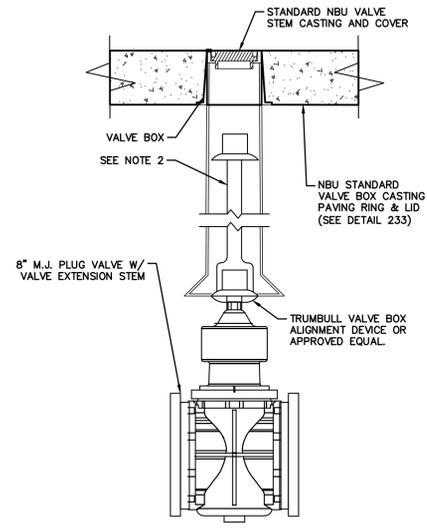
- NOTES:**
- SUBGRADE SHALL BE COMPACTED AS PER SPECIFICATIONS.
  - VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
  - CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE BASE OF THE VALVE.
  - REMOVE EXISTING RISER PIPE DOWN 18" AND REPLACE TO THE NEW ELEVATION USING NEW PIPE AND A COLLAR CASTING.
  - WHERE CAST IRON CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH.
  - REINFORCING STEEL SHALL MEET SPECIFICATIONS.
  - WHERE VALVE IS INSTALLED IN UNPAVED AREA, CONTRACTOR MAY USE CIRCULAR FORM WITH REINFORCING STEEL.



CARRIER PIPE (DIAMETER)	ENCASEMENT PIPE MIN. DIAMETER	MINIMUM ENCASEMENT PIPE THICKNESS (INCHES)
6"	16"	1/4 0.2500
8"	18"	1/4 0.2500
12"	24"	3/8 0.3750
16"	30"	7/16 0.4375
20"	36"	1/2 0.5000
24"	42"	1/2 0.5000
30"	48"	1/2 0.5000



- NOTES:**
- CASING SPACER CONFIGURATION AND SPACING SHALL BE AS SHOWN ON MANUFACTURER'S DRAWINGS FOR SPECIFIC WORK; THESE MUST BE ACCEPTABLE TO NEW BRAUNFELS UTILITIES.
  - CASING SPACERS SHALL BE AS APPROVED ON NBU STANDARD PRODUCTS LIST ITEM W17.0.0.
  - ALL WATER MAIN AND FORCE MAIN CARRIER PIPE JOINTS INSIDE ENCASEMENT MUST BE RESTRAINED WITH APPROVED JOINT RESTRAINTS PER NBU SPL W9.2.0.
  - PROPOSED ENCASEMENT DIAMETERS SHALL BE AS SHOWN ON THE CONSTRUCTION PLANS, BUT IN NO CASE SHALL THE ENCASEMENT DIAMETER BE LESS THAN SHOWN IN THE TABLE ABOVE. CASING PIPE SHALL BE SIZED PER PROJECT CONDITIONS, CARRIER PIPE MATERIAL, AND JOINT RESTRAINT SYSTEM.



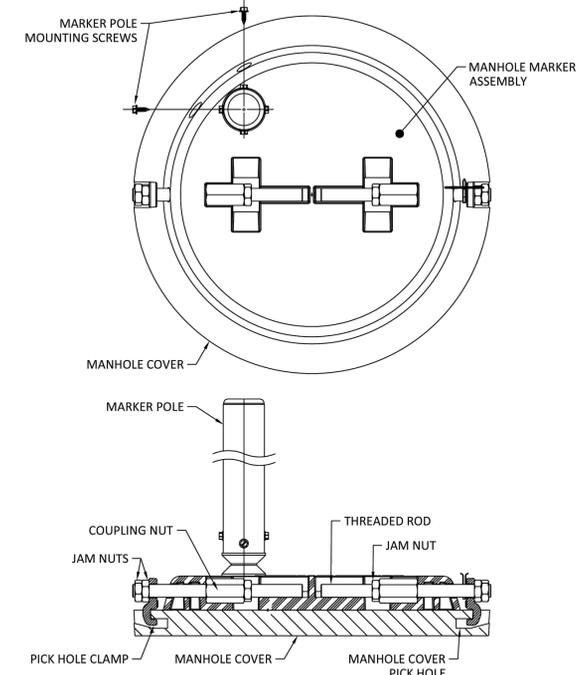
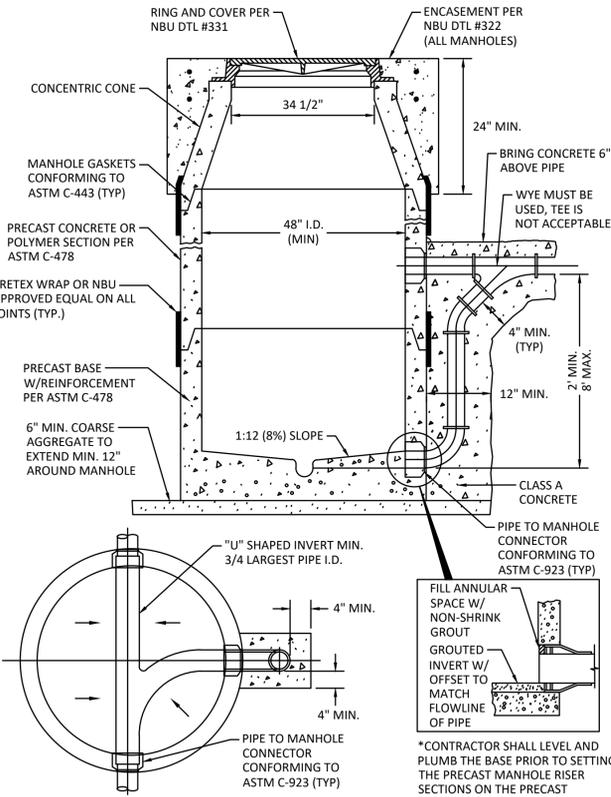
- NOTES:**
- INSTALL PLUG VALVE ASSEMBLY IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - VALVE EXTENSION SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.
  - WELD SOCKET TO 1" SCH. 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT. SQUARE SOCKET SIZED TO FIT VALVE OPERATOR NUT.
  - NUT AT TOP OF VALVE EXTENSION ROD SHALL BE 2" SQUARE, 2" LONG WELDED TO THE TOP OF THE ROD.
  - VALVE CASTING SHALL BE 6" IRON PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
  - VALVE BOX SHALL REST ON BEDDING ROCK NOT ON VALVE OR PIPE AND SHALL BE CENTERED ON THE OPERATING NUT.

C-18 PLUG VALVE W/ VALVE EXTENSION STEM AND VALVE BOX DETAIL  
A N.T.S.

**NBU** NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING  
 DRAWN BY: H. SHADROCK  
 APPROVED BY: A. WILLARD  
 STANDARD DRAWING: TYPICAL TRENCH WITH UNFINISHED SURFACE  
 DATE: 4/30/03  
 SCALE: N.T.S.  
 SHEET: 1 OF 1  
 DRAWING NO.: 422

**NBU** NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING  
 DRAWN BY: EWL  
 APPROVED BY: A. WILLARD  
 STANDARD DRAWING: WATER VALVE BOX ADJUSTMENT TO GRADE FOR NEW STREETS AND UNPAVED AREAS  
 DATE: 2/1/24  
 SCALE: N.T.S.  
 SHEET: 1 OF 1  
 DRAWING NO.: 233

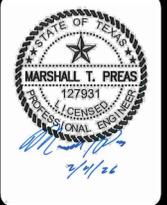
**NBU** NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING  
 DRAWN BY: EWL  
 APPROVED BY: A. WILLARD  
 STANDARD DRAWING: ENCASEMENT DETAIL WITH CASING SPACERS  
 DATE: 2/1/24  
 SCALE: N.T.S.  
 SHEET: 1 OF 1  
 DRAWING NO.: 420



**NBU** NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING  
 DRAWN BY: EWL  
 APPROVED BY: A. WILLARD  
 STANDARD DRAWING: WASTEWATER MANHOLE W/DROP INLET ON PRECAST BASE  
 DATE: 2/1/24  
 SCALE: N.T.S.  
 SHEET: 1 OF 1  
 DRAWING NO.: 325

**NBU** NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING  
 DRAWN BY: EWL  
 APPROVED BY: A. WILLARD  
 STANDARD DRAWING: MANHOLE MARKER ASSEMBLY  
 DATE: 2/1/24  
 SCALE: N.T.S.  
 SHEET: 1 OF 1  
 DRAWING NO.: 361

DATE	
NO.	REVISION



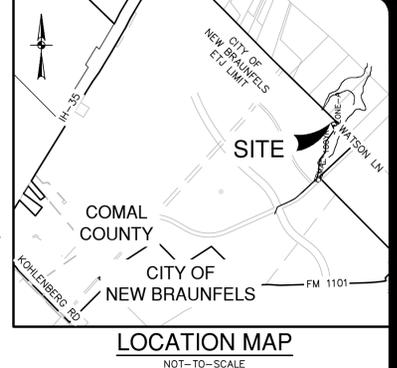
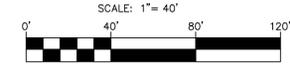
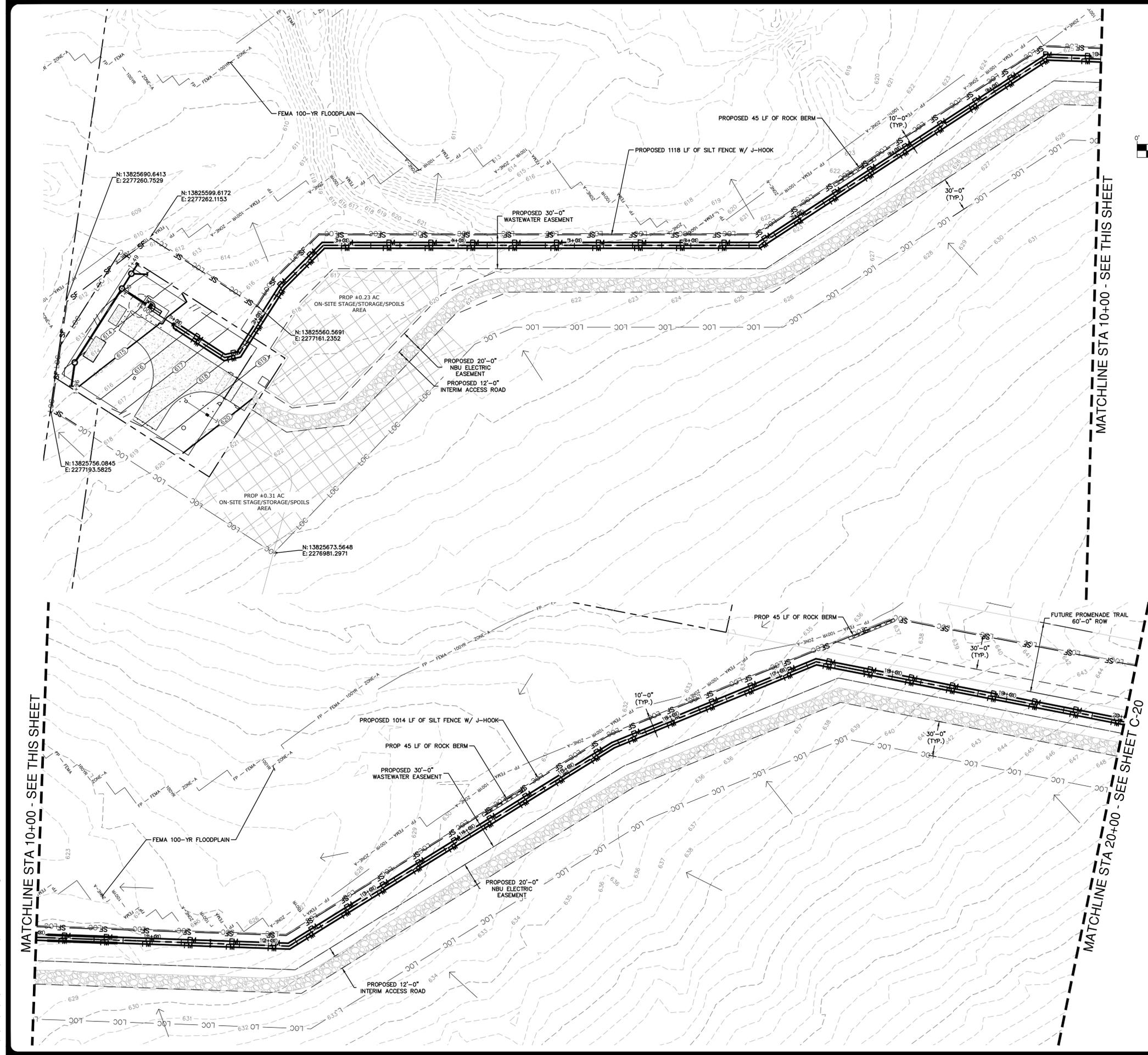
**PAPE-DAWSON**  
 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 832.652.6633  
 TEXAS SURVEYING FIRM #479 | TEXAS ENGINEERING FIRM #10028860

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 CONSTRUCTION DETAILS

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP DRAWN JL
SHEET	C-18

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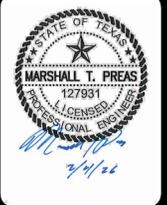


**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	○
EXISTING SANITARY SEWER	○
EXISTING MAJOR CONTOURS	735
EXISTING MINOR CONTOURS	734
PROPOSED MAJOR CONTOURS	735
PROPOSED MINOR CONTOURS	734
LIMIT OF CONSTRUCTION	LOC
PROPOSED WASTEWATER EASEMENT	---
PROPOSED SILT FENCE	SF
PROPOSED ROCK BERM	---
FLOW ARROW	→

- NOTES**
- CONTRACTOR TO USE HULLED BERMUDA SEED HYDROMULCHING WITHIN LIFT STATION LOT DISTURBED AREA OUTSIDE LIFT STATION WALL AT A RATE EQUAL TO 45 LBS/ACRE PER NEW BRAUNFELS UTILITIES LIFT STATION DESIGN CRITERIA 3.04.
  - ALL SOIL AREAS DISTURBED BY CONSTRUCTION WITHIN EASEMENTS SHALL BE COVERED WITH TOP SOIL AND SEEDED CONFORMING TO TxDOT ITEM NO. 164, "SEEDING FOR EROSION CONTROL" PER NEW BRAUNFELS UTILITIES STANDARD SPECIFICATIONS ITEM 120.H.5. PER TPOES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

DATE	
NO.	REVISION



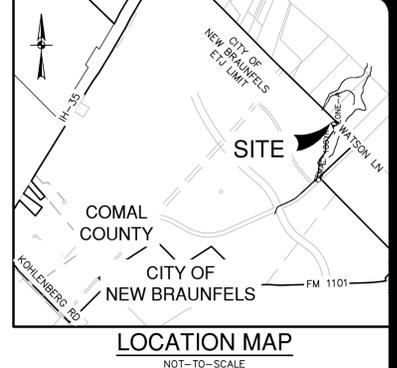
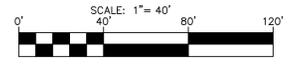
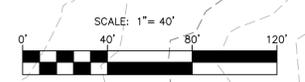
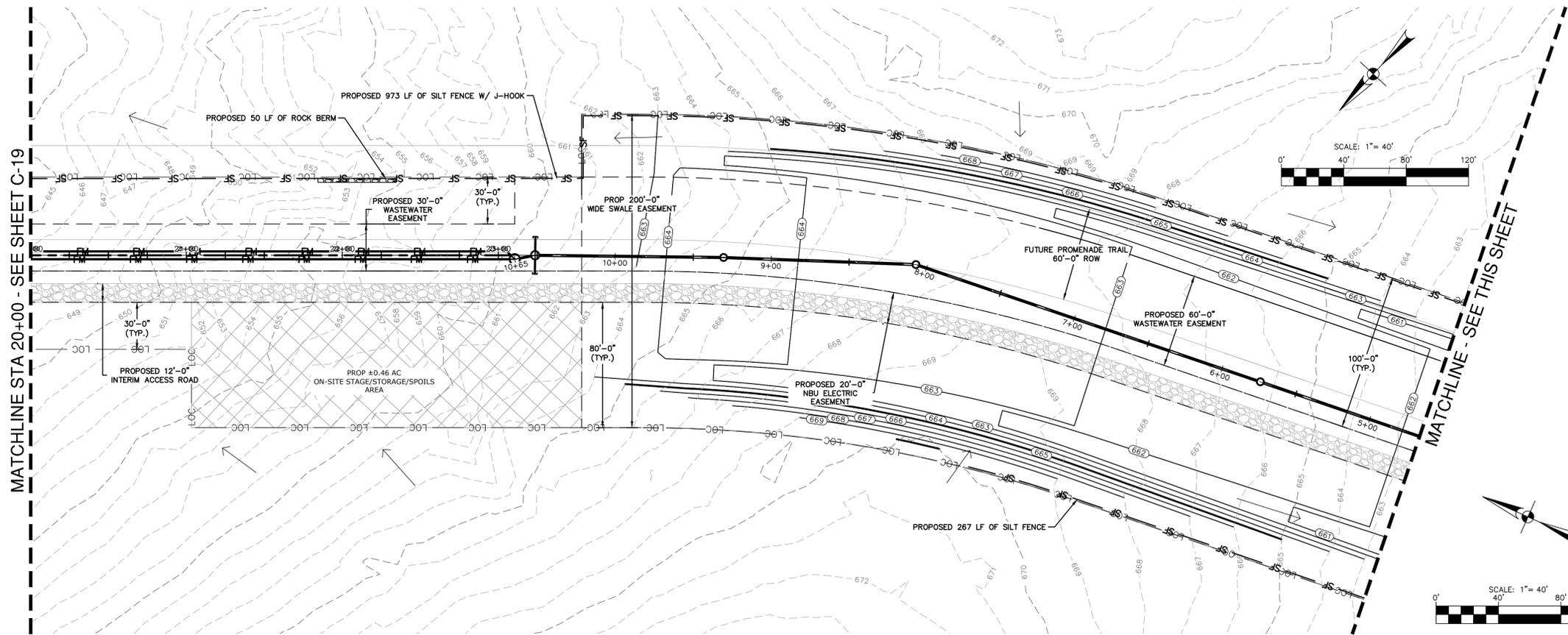
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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 EROSION AND SEDIMENTATION CONTROL STA 0+00 - 20+00

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
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CHECKED	MP DRAWN JL
SHEET	C-19

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MATCHLINE STA 20+00 - SEE SHEET C-19



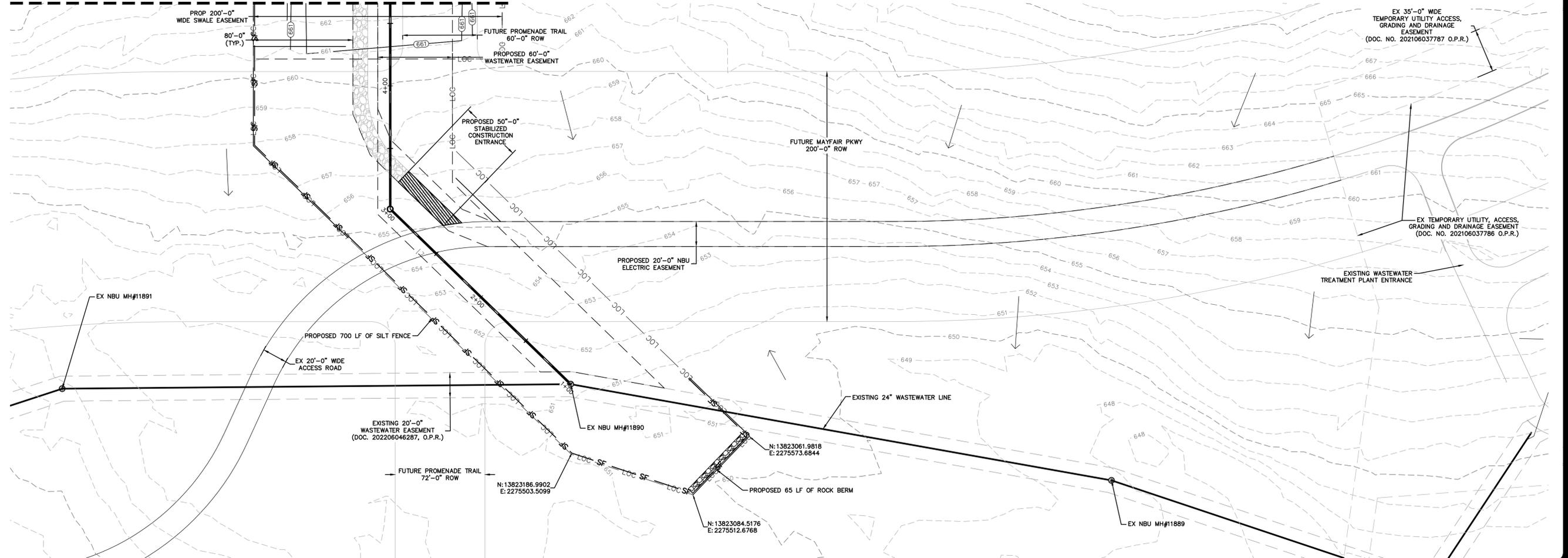
**LEGEND**

PROPERTY LINE	---
PROPOSED FORCE MAIN	FM
PROPOSED SANITARY SEWER	○
EXISTING SANITARY SEWER	○
EXISTING MAJOR CONTOURS	735
EXISTING MINOR CONTOURS	734
PROPOSED MAJOR CONTOURS	735
PROPOSED MINOR CONTOURS	734
LIMIT OF CONSTRUCTION	LOC
PROPOSED WASTEWATER EASEMENT	---
PROPOSED SILT FENCE	SF
PROPOSED ROCK BERM	---
FLOW ARROW	→

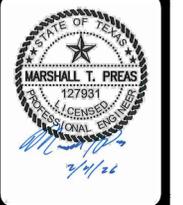
**NOTES**

- CONTRACTOR TO USE HULLED BERMUDA SEED HYDROMULCHING WITHIN LIFT STATION LOT DISTURBED AREA OUTSIDE LIFT STATION WALL AT A RATE EQUAL TO 45 LBS/ACRE PER NEW BRAUNFELS UTILITIES LIFT STATION DESIGN CRITERIA 3.04.
- ALL SOIL AREAS DISTURBED BY CONSTRUCTION WITHIN EASEMENTS SHALL BE COVERED WITH TOP SOIL AND SEEDED CONFORMING TO TxDOT ITEM NO. 164, "SEEDING FOR EROSION CONTROL" PER NEW BRAUNFELS UTILITIES STANDARD SPECIFICATIONS ITEM 120.H.5. PER TPOES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

MATCHLINE - SEE THIS SHEET



DATE	
NO.	REVISION



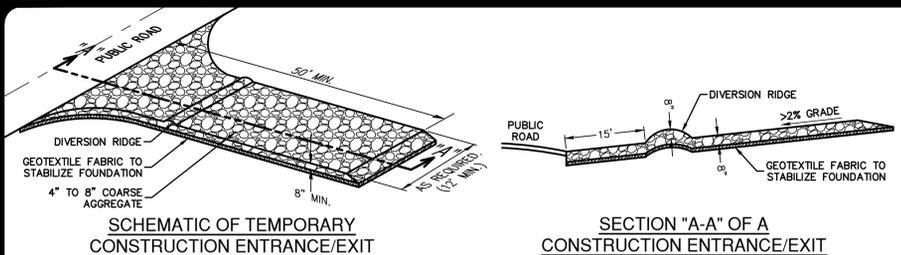
**PAPE-DAWSON**  
 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.622.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 EROSION AND SEDIMENTATION CONTROL STA 20+00 - END

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP
DRAWN	JL
SHEET	C-20

Date: September 9, 2025, 1:07 PM - User ID: jlling  
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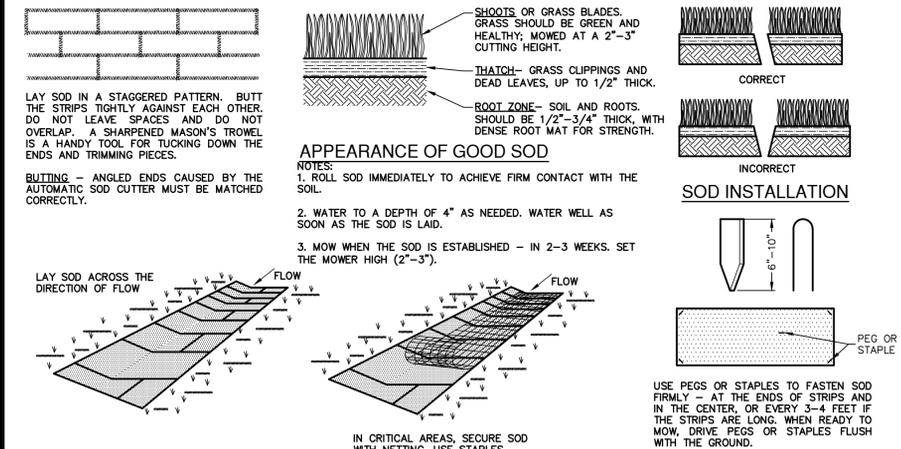
**MATERIALS**

1. THE AGGREGATE SHOULD CONSIST OF 4-INCH TO 8-INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.
2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8-INCHES.
3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD<sup>2</sup>, A MULLEN BURST RATING OF 140 LB/IN<sup>2</sup>, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SEIVE.
4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4-INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

**INSTALLATION**

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBSTRUCTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6-INCHES TO 8-INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.
8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

**C-21 STABILIZED CONSTRUCTION ENTRANCE DETAIL**  
A N.T.S.



**MATERIALS**

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.
2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5% TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.
3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.
4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

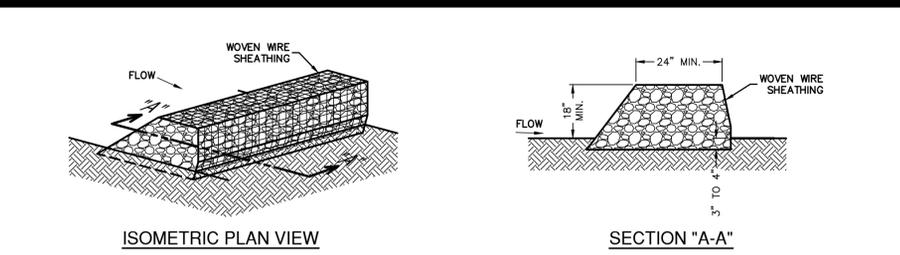
**SITE PREPARATION**

1. PRIOR TO SOD PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.
2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.
3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

**INSTALLATION IN CHANNELS**

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).
2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE USED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

**C-21 SOD INSTALLATION DETAIL**  
E N.T.S.



**ROCK BERMS**

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FURTHER UP THE WATERSHED.

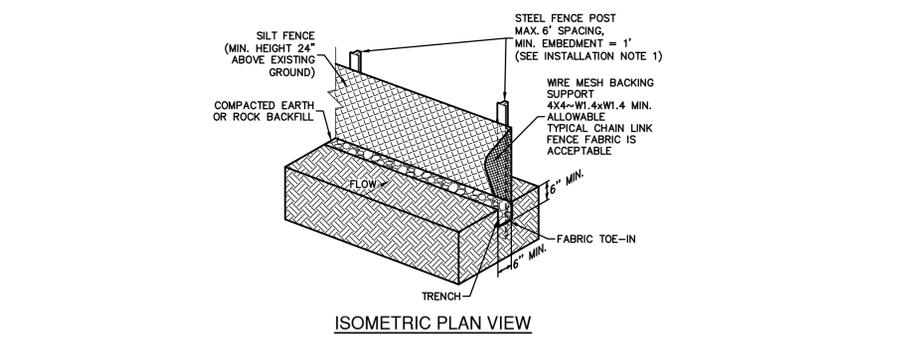
**INSTALLATION**

1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.
2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".
4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH THE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

**COMMON TROUBLE POINTS**

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

**C-21 ROCK BERM DETAIL**  
B N.T.S.



**SILT FENCE**

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

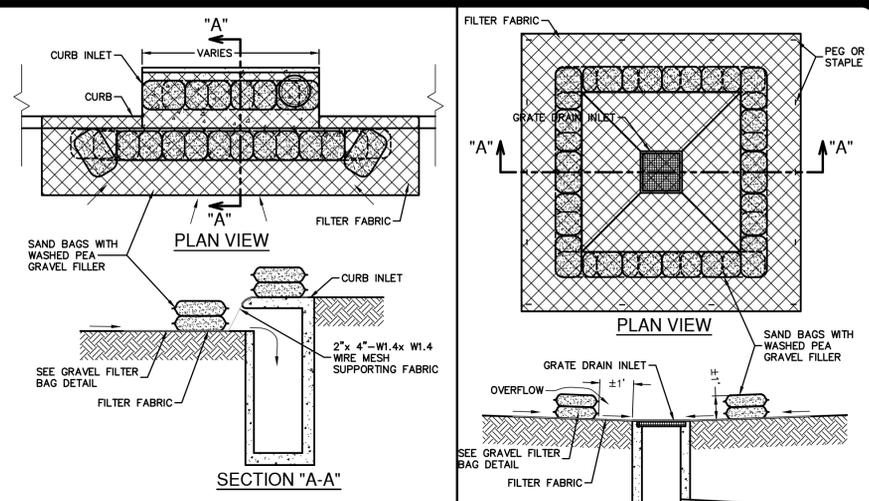
**MATERIALS**

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN<sup>2</sup>, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. Sieve NUMBER 30.
2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDLE HARDNESS EXCEEDING 140.
3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

**INSTALLATION**

1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1-FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.
2. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS 1/4 ACRE/100 FEET OF FENCE.

**C-21 SILT FENCE DETAIL**  
F N.T.S.



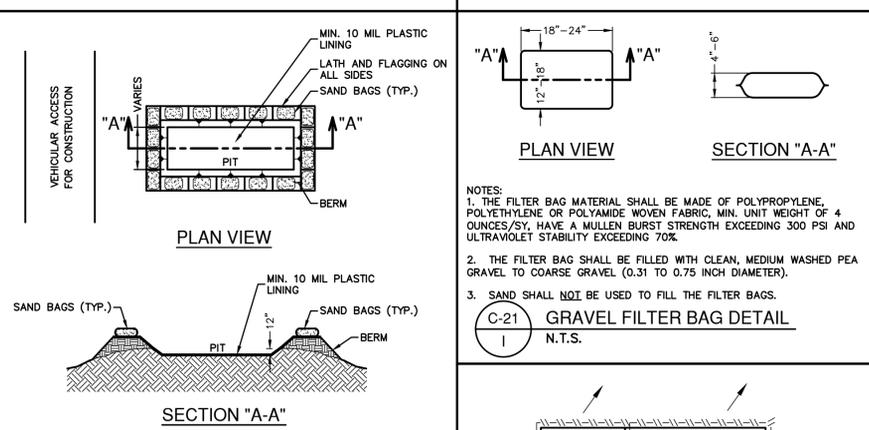
**GENERAL NOTES**

1. CONTRACTOR TO INSTALL 2"x4"-W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE CUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.
2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

**INSPECTION AND MAINTENANCE GUIDELINES**

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.
5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

**C-21 BAGGED GRAVEL CURB INLET PROTECTION DETAIL**  
C N.T.S.



**GENERAL NOTES**

1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.
2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).
3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

**CONSTRUCTION STAGING AREA**

Labels: CONSTRUCTION EQUIPMENT & VEHICLE STORAGE AND MAINTENANCE AREA, FIELD OFFICE, CONSTRUCTION AND WASTE MATERIAL STORAGE AREA, ENTRANCE/EXIT, LEGEND, CONSTRUCTION STAGING AREA, SILT FENCE, FLOW ARROWS.

**MATERIALS**

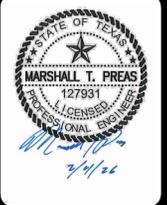
PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

**MAINTENANCE**

1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.
2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.
3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

**C-21 CONCRETE TRUCK WASHOUT PIT DETAIL**  
G N.T.S.

DATE	
NO.	
REVISION	



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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS

**EROSION AND SEDIMENTATION CONTROL DETAIL**

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	LL
CHECKED	MP_DRAWN_JL
SHEET	C-21

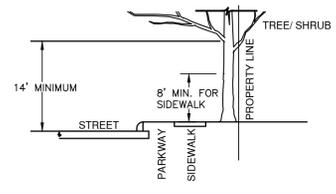
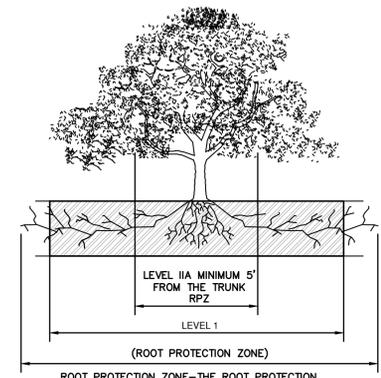


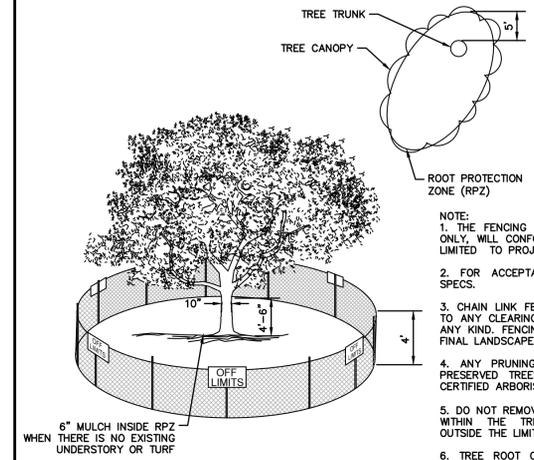
FIGURE NO. 2  
A MINIMUM BRANCH CLEARANCE OF 14 FEET ABOVE STREET ELEVATION MUST BE MAINTAINED FROM THE PROPERTY LINE TO THE CURB LINE AS PRESCRIBED BY PROJECT MANAGER.

C-22  
A  
BRANCH CLEARANCE DETAIL  
N.T.S.



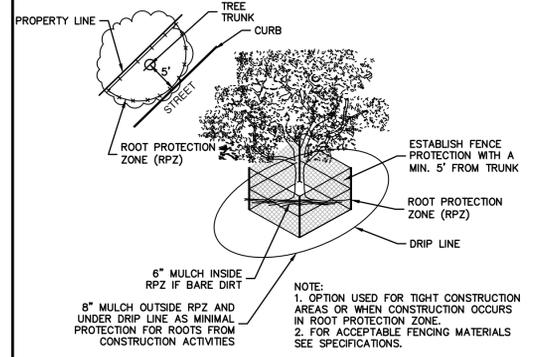
ROOT PROTECTION ZONE—THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.

ELEVATION  
NOT TO SCALE



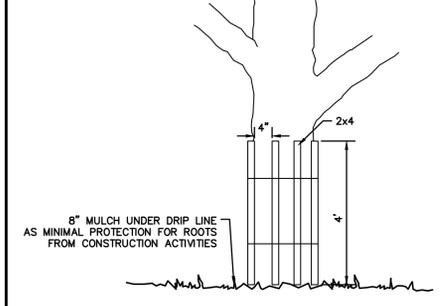
- NOTE:
1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY. WILL CONFORM TO THE DRIP LINE AND IS LIMITED TO PROJECT BOUNDARY.
  2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECS.
  3. CHAIN LINK FENCE SHALL BE ERECTED PRIOR TO ANY CLEARING, GRUBBING OR SITE WORK OF ANY KIND. FENCING SHALL STAY ERECTED UNTIL FINAL LANDSCAPE OPERATIONS COMMENCE.
  4. ANY PRUNING TO PROVIDE CLEARANCE TO PRESERVED TREES MUST BE APPROVED BY A CERTIFIED ARBORIST.
  5. DO NOT REMOVE ANY TREES OVER 1" CALIPER WITHIN THE TREE PROTECTION FENCING OR OUTSIDE THE LIMITS OF CONSTRUCTION.
  6. TREE ROOT CUTS SHALL BE MECHANICALLY CUT AT THE DIRECTION OF A CERTIFIED ARBORIST. CUTS SHALL BE CLEAN CUTS, WITHOUT PULLING OR TEARING.

TREE PROTECTION ZONE  
NOT TO SCALE



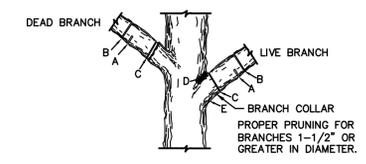
- NOTE:
1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
  2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

LEVEL II A FENCE PROTECTION  
NOT TO SCALE



NOTE:  
WRAP TREE TRUNK WITH 2"x4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

LEVEL II B FENCE PROTECTION  
NOT TO SCALE

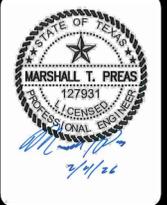


- NOTE:  
DO NOT CUT FROM D TO E.
- FIRST CUT — TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
  - SECOND CUT — TO REDUCE THE WEIGHT OF BRANCH.
  - FINAL CUT — ALLOW FOR HEALING COLLAR BUT NO STUBS

FOR OAKS ONLY:  
PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN TO PREVENT THE SPREAD OF OAK MILK.

BRANCH PRUNING  
NOT TO SCALE

DATE	
NO.	REVISION



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MAYFAIR LIFT STATION #3 AND FORCE MAIN  
NEW BRAUNFELS, TEXAS  
TREE PROTECTION DETAILS

PLAT NO.	
JOB NO.	30002-74
DATE	FEBRUARY 2026
DESIGNER	JL
CHECKED	MP DRAWN JL
SHEET	C-22

Date: September 9, 2025, 1:08 PM - User ID: jlling  
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**DESIGN CRITERIA**

LOCATION: NEW BRAUNFELS, TEXAS.

**BUILDING CODE:**

- IBC 2021
- AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-19)
- AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR ENVIRONMENTAL CONCRETE STRUCTURES (ACI 350-20)
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL 15TH EDITION
- STRUCTURAL WELDING CODE – STEEL: AWS D1.1
- STRUCTURAL WELDING CODE – ALUMINUM: AWS D1.6
- STRUCTURAL WELDING CODE – STAINLESS STEEL: AWS D1.6

**DESIGN LOADS:**

- DEAD LOAD = EQUIPMENT WEIGHT + SELF WEIGHT
- LIVE LOAD = 300 PSF EQUIPMENT WEIGHT + TOP SLAB  
250 PSF OTHER AREAS
- GROUND SNOW LOAD = 5 PSF
- STRUCTURE RISK CATEGORY: III

**GEOTECHNICAL CONDITIONS:**

- FOUNDATION DESIGN AND EXISTING SOIL CONDITIONS ARE BASED ON THE SUBSURFACE EXPLORATION AND FOUNDATION ANALYSIS – PROPOSED NEW LIFT STATION #3 ,MAYFAIR SUBDIVISION, NEW BRAUNFELS, TEXAS PREPARED BY INTEC. INTEC PROJECT NO. S251705, DATED APRIL 22, 2025
- GROUNDWATER IS EXPECTED. DEWATERING REQUIRED FOR DEEP EXCAVATIONS IS THE RESPONSIBILITY OF THE CONTRACTOR
- PROVIDE MINIMUM 6-INCH GRAVEL WORKING SURFACE UNDER FOUNDATIONS ON SOIL AND EXTENDING A MINIMUM OF 1'-0" BEYOND FOUNDATION EDGES.
- SELECT STRUCTURAL FILL SHALL HAVE A MAXIMUM LIQUID LIMIT OF 40 AND A PLASTICITY INDEX BETWEEN 5 AND 20 WITH A MAXIMUM OF 30 PERCENT PASSING THE No. 200 SIEVE. SEE GEOTECHNICAL REPORT FOR SELECT FILL OPTIONS.

**WIND DESIGN LOAD:**

- BASIC WIND SPEED: 116 MPH
- WIND EXPOSURE: B
- INTERNAL PRESSURE COEFFICIENT, GCpi = ±0.18
- COMPONENTS AND CLADDING: ASCE 7

**SEISMIC DESIGN LOADS:**

- SEISMIC SITE CLASS: D
- Ss = 0.051
- S1 = 0.028
- Sds = 0.055
- Sd1 = 0.044
- DESIGN CATEGORY: A
- IMPORTANCE FACTOR, I: 1.25
- RESPONSE COEFFICIENT, Cs = 0.0172
- DESIGN BASE SHEAR = 0.0172W
- ANALYSIS PROCEDURE: NOT APPLICABLE

**GENERAL NOTES**

1. THESE PLANS ARE INTENDED TO DESCRIBE THE GENERAL REQUIREMENTS FOR THIS PROJECT. NOT ALL CONDITIONS ARE SPECIFICALLY DETAILED. CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL ITEMS REQUIRED FOR A COMPLETE AND FINISHED PRODUCT.
2. THE NOTES CONTAINED HERewith CORRESPOND TO THE STRUCTURAL WORK CONTAINED IN THIS PROJECT. CONSTRUCTION NOTES PROVIDED IN OTHER SHEETS RELATE TO THE PORTION OF THE WORK ON THOSE SHEETS.
3. CONTRACTOR SHALL VERIFY EQUIPMENT AND MEMBER SIZES AND ACTUAL DIMENSIONS AND ACCOMMODATE THE CONSTRUCTION WORK TO ALLOW A PROPER FIT OF SAID COMPONENTS WITH THE PROPOSED STRUCTURES FOR WHICH SAID COMPONENTS WILL BE INSTALLED.
4. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES AND/OR POTENTIAL CONFLICTS WITH OTHER COMPONENTS OF THE CONSTRUCTION WORK, SUPPORTS, OR EQUIPMENT.
5. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING EXCAVATION, TRENCHING AND SHORING.
6. ALL MATERIAL & EQUIPMENT SHALL BE APPROVED THROUGH THE SHOP DRAWING SUBMITTAL PROCESS.
7. SEE ELECTRICAL DRAWINGS AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.

**CONCRETE NOTES**

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE PROJECT SPECIFICATIONS AND ACI 318 BUILDING CODE FOR REINFORCED CONCRETE. WHERE THE PROJECT SPECIFICATIONS CONFLICTS WITH ACI 318, THE STRICTER SPECIFICATION SHALL GOVERN.
2. CONCRETE PLACEMENT IN HOT OR COLD WEATHER SHALL CONFORM TO THE PROVISIONS OF ACI 305R OR 306R, RESPECTIVELY.
3. ALL REINFORCING STEEL SHALL BE GRADE 60 STEEL AS PER ASTM A615. ALL LAP SPLICES FOR CONTINUOUS REINFORCING STEEL SHALL BE 50 BAR DIAMETERS UNLESS OTHERWISE SPECIFIED. ALL REINFORCING SHOWN TO BE HOOKED SHALL HAVE STANDARD HOOKS AS PER ACI 315.
4. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION PLANS, ALL CAST-IN-PLACE STRUCTURAL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI @ 28 DAYS. MUD MAT/SEAL SLAB SHALL HAVE A MINIMUM STRENGTH OF 1,500 PSI @ 28 DAYS.
5. COVER (CLR) IS THE LEAST DISTANCE BETWEEN THE SURFACE OF THE EMBEDDED REINFORCEMENT AND THE SURFACE OF THE CONCRETE. COVER IS A MINIMUM CLEAR DISTANCE BUT IS ALSO A MAXIMUM DISTANCE, SPECIFYING THE LOCATION OF THE REINFORCEMENT. THROUGH ACI 117-10 SPECIFICATIONS FOR TOLERANCES FOR CONCRETE, THE MAXIMUM DISTANCE BETWEEN THE SURFACE OF THE CONCRETE AND THE SURFACE OF THE REINFORCEMENT IS THE CLR DISTANCE PLUS THE REINFORCEMENT PLACEMENT TOLERANCE. BASED ON ACI 117, FOR CONCRETE MEMBERS 12 INCHES THICK OR LESS, THE TOLERANCE IS 3/8 INCH, AND FOR CONCRETE MEMBERS GREATER THAN 12 INCHES THICK, THE TOLERANCE IS 1/2 INCH. SEE CONCRETE PROTECTION TABLE DETAIL 3 SHEET S2 FOR COVER REQUIREMENTS.
6. REINFORCEMENT ACROSS CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH LAP SCHEDULE. TERMINATE IN STANDARD HOOKS WHERE CONCRETE DIMENSIONS DO NOT ALLOW FULL DEVELOPMENT OF REINFORCEMENT USING LAP SPLICES.
7. CONSTRUCTION JOINTS AND/OR SAW CUT JOINTS SHALL BE AT SPACING LESS THAN 40 TIMES SLAB THICKNESS IN EACH DIRECTION IN SLABS ON GRADE UNLESS OTHERWISE NOTED AND ARE NOT ALLOWED IN MAT FOUNDATIONS OR SLABS WITH THICKNESS 18 INCHES OR GREATER.
8. COORDINATE ALL LOCATIONS OF PENETRATIONS IN SLAB AS NEEDED FOR PIPING, WIRING, AND CONTROLS WITH REINFORCING. PENETRATIONS FOR ELECTRICAL CONDUITS OR PIPING SHALL MAINTAIN 2 INCHES CLEAR FROM REINFORCEMENT. REINFORCEMENT MAY NOT BE MOVED OR OMITTED TO ALLOW PENETRATION OF CONDUITS THROUGH CONCRETE WALLS AND FOUNDATIONS WITHOUT PERMISSION OF ENGINEER OF RECORD.
9. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.

**FOUNDATION NOTES**

1. ALL EXCAVATIONS SHALL BE CONDUCTED IN THE DRY, AND PROVISIONS MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING.
2. GROUNDWATER CONTROL MAY BE REQUIRED FOR INSTALLATION OF THE LIFT STATION. CONTRACTOR SHALL PROVIDE POSITIVE METHODS OF GROUNDWATER MANAGEMENT PRIOR TO STARTING EXCAVATION OPERATIONS. IF REQUIRED, GROUNDWATER SHALL BE LOWERED AT LEAST 3 FEET BELOW THE BOTTOM OF THE EXCAVATION TO PROVIDE A FIRM WORKING SURFACE. IF REQUIRED, DEWATERING SHALL CONTINUE UNTIL THE UTILITY INSTALLATION HAS BEEN COMPLETED AND THAT THE DEWATERING SYSTEM BE TURNED OFF IN STAGES TO ALLOW GROUNDWATER TO RECOVER TO ITS ORIGINAL LEVEL GRADUALLY, OVER A PERIOD OF 3 DAYS MINIMUM.
3. ALL STRUCTURAL FILL SHALL BE COMPACTED IN 8-INCH LIFTS TO 95% ASTM D698 WITHIN -2% TO +2% OF OPTIMUM MOISTURE. BACKFILL PLACED WITHIN 5 FEET OF THE WALLS SHALL BE HAND COMPACTED.
4. THE AREA AROUND THE ENTIRE STRUCTURE SHALL BE WELL GRADED TO DRAIN AWAY FROM THE STRUCTURE WITHOUT DRAINING TO ADJACENT PROPERTIES. FINISH GRADE ELEVATIONS SHOWN ARE APPROXIMATE. SEE GRADING AND DRAINAGE PLANS FOR TRUE F.G. ELEVATIONS.

**MISCELLANEOUS NOTES**

1. EPOXY GROUT SHALL BE POR-ROK EPOXY GROUT, OR APPROVED EQUAL.
2. PROVIDE CONTINUOUS WATER STOPS IN ALL CONSTRUCTION JOINTS.
3. ALL DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

**STRUCTURAL STEEL NOTES**

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". STEEL PIPE & HSS SHALL CONFORM TO ASTM A500 GR B. WIDE FLANGES SHALL CONFORM TO ASTM A992. ALL OTHER STRUCTURAL STEEL SHALL PROVIDE A MINIMUM YIELD STRENGTH OF 36 KSI.
2. ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4-INCH DIAMETER ASTM F593 STAINLESS STEEL BOLTS EXCEPT AS OTHERWISE SHOWN OR NOTED.
3. FIELD CONNECTIONS SHALL BE BOLTED, EXCEPT AS OTHERWISE SHOWN OR NOTED.
4. ALL WELDING SHALL CONFORM TO THE LATEST SPECIFICATION OF THE AMERICAN WELDING SOCIETY. ALL WELDED CONNECTIONS SHALL BE MADE WITH AWS A5.1 OR A5.5 E70 XX ELECTRODE.
5. ANCHOR BOLTS – ASTM F593.
6. ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ENVIRONMENT: SS 304 OR SS 316.
7. ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.
8. ALL STRUCTURAL STEEL SECTIONS, PLATES, BOLTS, NUTS, & ANCHORS SHALL BE HOT-DIP GALVANIZED UNLESS OTHERWISE NOTED.
9. ALL HOLES TO BE STANDARD HOLES. UNLESS OTHERWISE NOTED.
10. GRIND ALL SHARP EDGES SMOOTH AS REQUIRED. HOT-DIP GALVANIZE AFTER FABRICATION.
11. ALL JOINTS ARE TO BE WELDED USING A 3/8" MIN. CONT. FILLET WELD, UNLESS OTHERWISE NOTED.
12. USE STAINLESS STEEL TYPE 304L OR TYPE 316L WHERE STAINLESS STEEL IS TO BE WELDED.

BAR SIZE	CONDITION 1		CONDITION 2		CONDITION 3	HOOKS
	CLEAR COVER >= 2 DIA AND C-TO-C SPA >= 5 DIA		CLEAR COVER >= 2 DIA AND C-TO-C SPA >= 3 DIA		ALL BARS	
	TOP	OTHER	TOP	OTHER		
#3	1'-4"	1'-4"	2'-0"	1'-6"	SEE NOTE 3	0'-6"
#4	1'-7"	1'-4"	2'-8"	2'-1"		0'-8"
#5	2'-0"	1'-6"	3'-4"	2'-8"		0'-10"
#6	2'-6"	1'-10"	4'-0"	3'-1"		1'-0"
#7	3'-6"	2'-9"	5'-10"	4'-7"		1'-2"
#8	4'-0"	3'-1"	6'-8"	5'-2"		1'-4"
#9	4'-6"	3'-6"	7'-7"	5'-10"		1'-7"
#10	5'-1"	3'-11"	8'-6"	6'-6"		1'-10"
#11	5'-8"	4'-4"	9'-5"	7'-4"		2'-0"

**DETAIL NOTES:**

1. LAP ALL BARS PER THIS SCHEDULE UNLESS NOTED OTHERWISE.
2. BAR COVER AND SPACING MUST BOTH MEET THE CRITERIA OF CONDITION 1 OR 2 IN ORDER TO USE THAT PARTICULAR LAP LENGTH.
3. TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.
4. FOR BARS THAT DO NOT SATISFY EITHER CONDITION, LAP LENGTH SHALL BE THE LENGTH FROM THE APPROPRIATE CATEGORY ("TOP" OR "OTHER") OF CONDITION 2 MULTIPLIED BY 1.5.
5. NONCONTACT LAP SPLICE LENGTH IS THE LAP SPLICE PLUS THE SEPARATION OF BARS BEING LAPPED. BARS BEING LAPPED CANNOT BE FURTHER APART THAN 1/2" OF THE LAP SPLICE LENGTH OR 6 INCHES, WHICHEVER IS SMALLER.
6. CLEAR COVER IS DISTANCE FROM THE FACE OF CONCRETE TO FACE OF BAR.

1 CONCRETE REINFORCING LAP SPLICE TABLE  
SCALE: NONE

DATE	
NO.	
REVISION	



**PAPE-DAWSON**  
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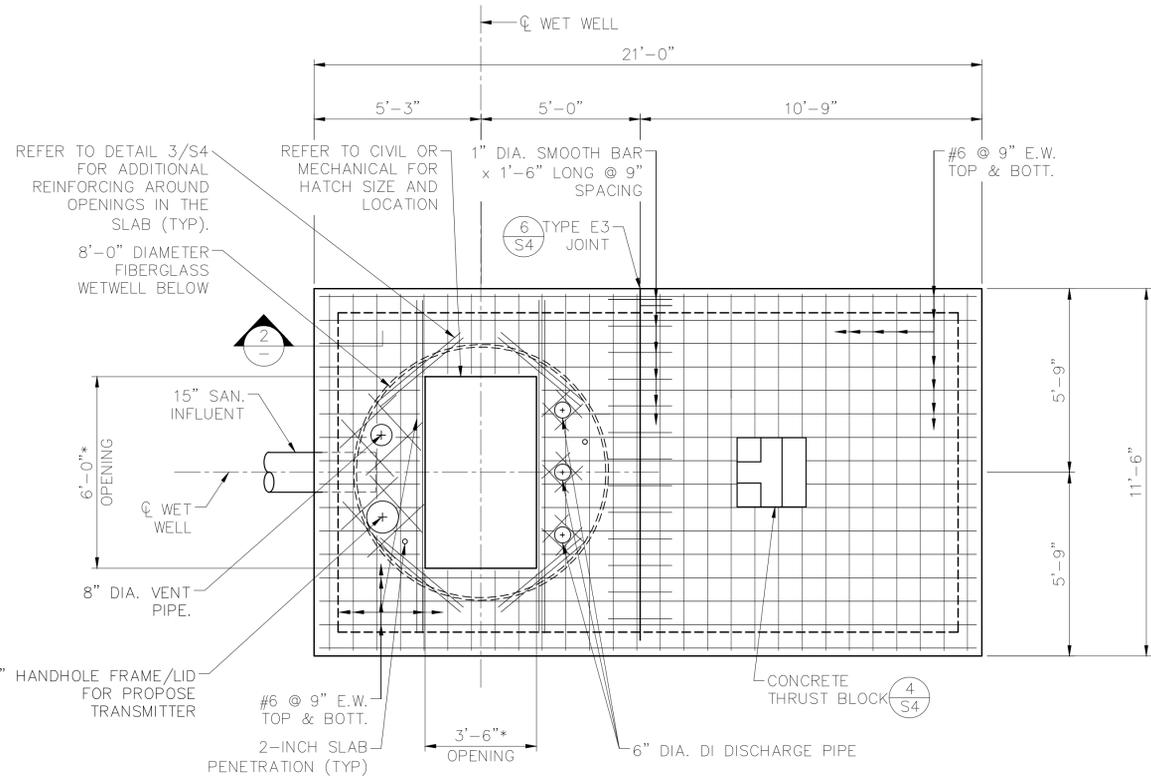
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 STRUCTURAL  
 GENERAL NOTES

PLAT NO.	
JOB NO.	30002-74
DATE	MAY 2025
DESIGNER	MGF
CHECKED	MAW DRAWN JRT
SHEET	S1

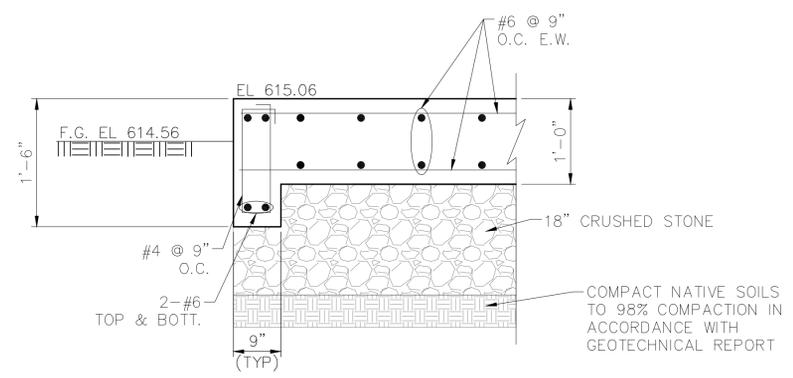
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Date: 05/20/2025, 1:48pm, User: M. A. Wortley, File: F:\Coastal\30002-74\_Mayfair\_Lift\_Station\_No.3\_S3\_LS\_Plan & Profile.dwg

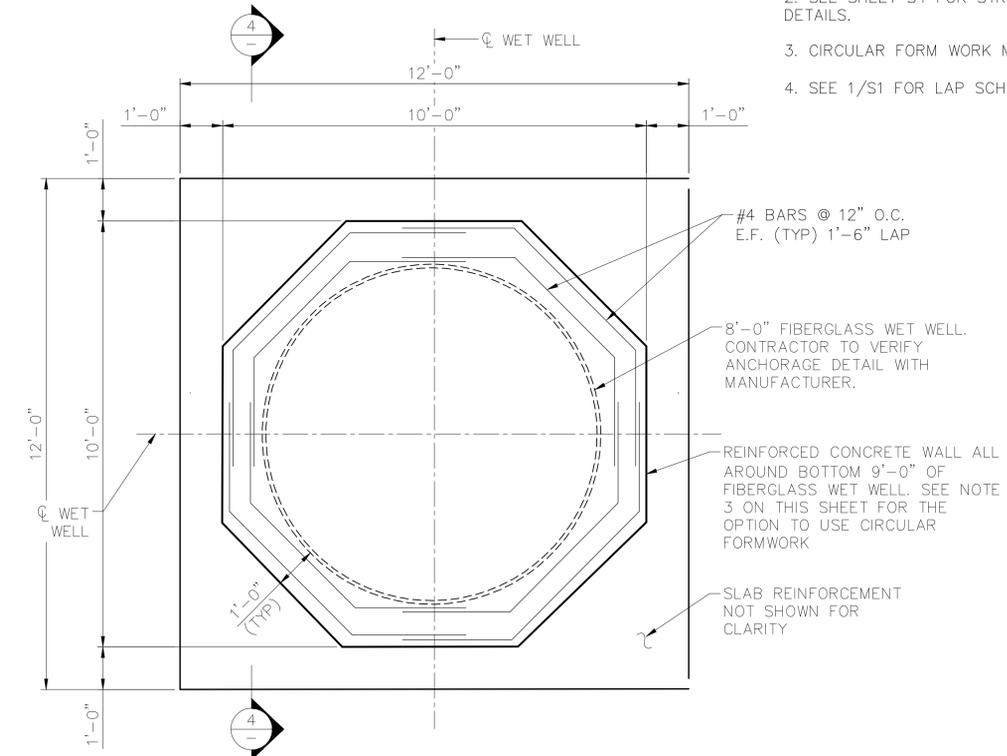


**1 PLAN VIEW - TOP SLAB**  
SCALE: 3/8"=1'-0"

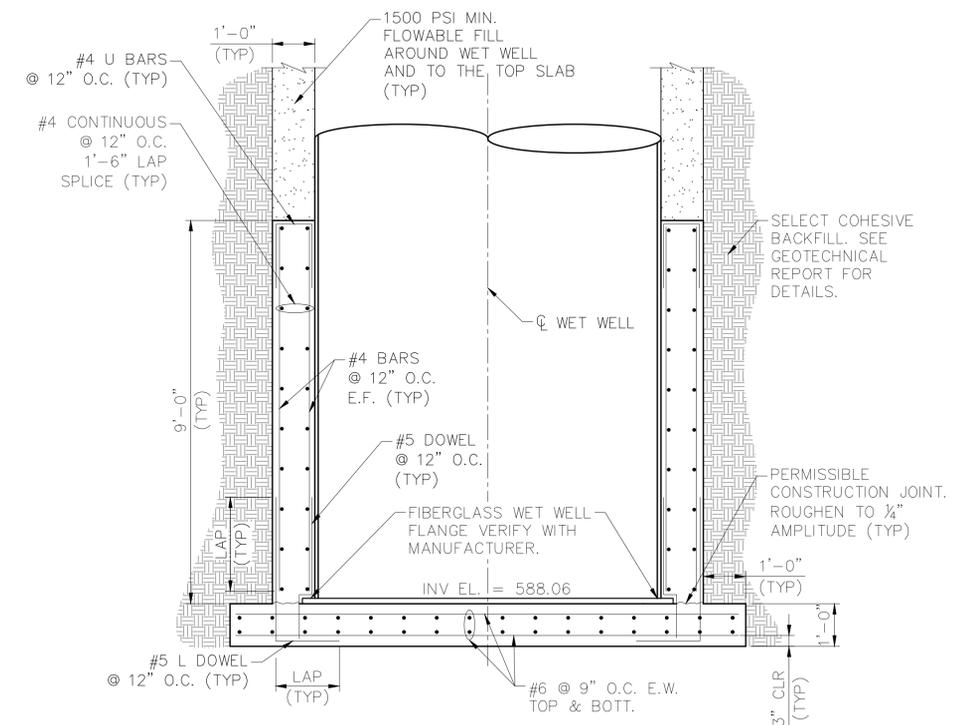


**2 TOP SLAB SECTION**  
SCALE: 3/4"=1'-0"

\*SEE CIVIL TO CONFIRM TOP SLAB ELEVATION AND FINISH GRADE ELEVATION



**3 ANTI-FLOTATION BOTTOM SLAB PLAN**  
SCALE: 1/2"=1'-0"



**4 BOTTOM SLAB SECTION**  
SCALE: 1/2"=1'-0"

- NOTES:
1. SEE SHEET S1 FOR STRUCTURAL NOTES.
  2. SEE SHEET S4 FOR STRUCTURAL DETAILS.
  3. CIRCULAR FORM WORK MAY BE USED.
  4. SEE 1/S1 FOR LAP SCHEDULE

DATE	
NO.	REVISION



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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
STRUCTURAL  
LIFT STATION PLAN & PROFILE

PLAT NO.	
JOB NO.	30002-74
DATE	MAY 2025
DESIGNER	MGF
CHECKED	MAW DRAWN
SHEET	S3



**ELECTRICAL SYMBOL LEGEND**

NOT ALL SYMBOLS SHOWN MAY BE USED

**PLAN LEGEND**

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

**GROUNDING LEGEND**

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

SYMBOL	MODIFIERS
EX	EXISTING
WP	WEATHERPROOF
EP	EXPLOSION PROOF
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
F	FIRE ALARM
VT	VAPORTIGHT
WT	WATERTIGHT
P	PRIMARY
O	OVERHEAD
U	UNDERGROUND
S	SECONDARY
FT	FIXED TEMPERATURE
R	RECESSED
G	GROUNDING
UNG	UNGROUNDING

**ONE LINE AND CONTROL SCHEMATIC LEGEND**

SYMBOL	DESCRIPTION
⊕	GROUNDING CONNECTION, WHEN USED WITH TRANSFORMER SYMBOL IT DENOTES A NEUTRAL GROUNDING CONNECTION
⊕	GROUNDING WYE WINDING CONNECTION
Δ	DELTA WINDING CONNECTION
—	RELAY OR CONTACTOR CONTACTS
→	SEPARABLE CONNECTOR OR CONNECTION FOR DRAWOUT ASSEMBLIES
•	CONDUCTOR CONNECTION
⊕	CIRCUIT BREAKER, MOLDED CASE, TRIP CURRENT AND QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL
⊕	SWITCH, DISCONNECT, NON-FUSED, LOAD BREAK, CONTINUOUS CURRENT RATING AND QUANTITY OF POLES SHOWN NEXT TO SYMBOL
⊕	SWITCH, DISCONNECT, FUSED, LOAD BREAK, FUSED AMPERE RATING AND FUSE TYPE SHOWN NEXT TO SYMBOL
⊕	FUSE, AMPERE RATING AND FUSE TYPE SHOWN NEXT TO SYMBOL
⊕	MOTOR THERMAL OVERLOAD PROTECTOR
⊕	MOTOR STARTER MAIN CONTACTOR
⊕	CONTACTOR OR RELAY COIL, LETTER(S) INSIDE OF SYMBOL MATCH CONTACTS CONTROLLED
⊕	PRESSURE TRANSMITTER
⊕	EQUIPMENT ENCLOSURE
⊕	CURRENT TRANSFORMER WITH RATIO SHOWN
⊕	MOTOR, 10 HORSEPOWER SHOWN
⊕	LIMIT SWITCH NORMALLY CLOSED
⊕	LIMIT SWITCH NORMALLY OPEN
⊕	MOTOR OPERATED VALVE GEARED LIMIT SWITCH
⊕	PRESSURE SWITCH NORMALLY CLOSED OPENS ON INCREASING PRESSURE
⊕	PRESSURE SWITCH NORMALLY OPEN CLOSING ON INCREASING PRESSURE
⊕	LEVEL SWITCH NORMALLY CLOSED OPENS ON INCREASING LEVEL
⊕	LEVEL SWITCH NORMALLY OPEN CLOSING ON INCREASING LEVEL
⊕	FLOW SWITCH NORMALLY CLOSED OPENS WITH FLOW
⊕	FLOW SWITCH NORMALLY OPEN CLOSING ON LOSS OF FLOW
⊕	SPACE HEATER
⊕	PHASE FAILURE RELAY
⊕	DRAW-OUT CIRCUIT BREAKER
⊕	INSTANTANEOUS/TIME OVERCURRENT RELAY
⊕	NEUTRAL TIME OVERCURRENT RELAY
⊕	CABLE TERMINATOR
⊕	UNDERVOLTAGE/PHASE-SEQUENCE RELAY
⊕	LOCKOUT RELAY
⊕	DESOLVED OXYGEN SENSOR
⊕	FLOW SWITCH
⊕	ANALYTIC INDICATOR
⊕	LEVEL TRANSDUCER
⊕	FLOWMETER
⊕	PULLBOX

**ONE LINE AND CONTROL SCHEMATIC LEGEND (CONT'D)**

SYMBOL	DESCRIPTION
⊕	INSTRUMENT TRANSFORMER PT-POTENTIAL TRANSFORMER
⊕	CONTROL POWER TRANSFORMER. VOLTAGE AS SHOWN
⊕	LIGHTNING ARRESTOR
⊕	SWITCH
⊕	NORMALLY OPEN CONTACT
⊕	NORMALLY CLOSED CONTACT
⊕	MOMENTARY PUSHBUTTON
⊕	THREE POSITION MAINTAINED CONTACT SWITCH
⊕	MOTOR OPERATED VALVE
⊕	SOLENOID VALVE
⊕	ELAPSED TIME METER
⊕	TIME DELAY RELAY. TIMES OUT AFTER ENERGIZATION
⊕	TIME DELAY RELAY. TIMES OUT AFTER DENERGIZATION
⊕	PILOT LIGHT R=RED B=BLUE G=GREEN A=AMBER Y=YELLOW
⊕	HIGH LEVEL FLOAT SWITCH
⊕	LOW LEVEL CUTOFF FLOAT SWITCH
⊕	MOTOR STARTER FVNR=FULL VOLTAGE NON-REVERSING VFD=VARIABLE FREQUENCY DRIVE WITH BYPASS SOFT START=ELECTRONIC SOFT START FVNR=REDUCED VOLTAGE NON-REVERSING FVR=FULL VOLTAGE REVERSING MCP=MOTOR CIRCUIT PROTECTOR SIZE=NEMA STARTER SIZE
⊕	LEVEL SENSOR TERMINATION ENCLOSURE
⊕	TEMPERATURE SWITCH
⊕	MOISTURE PROBE
⊕	SOLENOID VALVE
⊕	LIMIT SWITCH
⊕	AMMETER SWITCH
⊕	VOLTMETER SWITCH
⊕	PRESSURE SWITCH
⊕	LIGHTING CONTACTOR

**ELECTRICAL DRAWING INDEX**

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E1.4	SCADA SPECIFICATIONS
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E3.0	ONE-LINE DIAGRAM
E4.0	ELECTRICAL SCHEDULES
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E6.0	SCADA DETAILS
E6.1	SCADA DETAILS



CONDUIT AND WIRING LEGEND	
—	NEW
---	EXISTING TO BE REMOVED
—	EXISTING TO REMAIN
— UE —	UNDERGROUND ELECTRICAL
— UF —	UNDERGROUND FIBER OPTIC
— UT —	UNDERGROUND TELEPHONE
— UG —	UNDERGROUND GROUNDING
— OE —	OVERHEAD ELECTRICAL

**ABBREVIATIONS**

A	AMPERES OR TRIP AMPERES
AC	ALTERNATING CURRENT
ACT	ABOVE COUNTER TOP
A/C	AIR CONDITIONING
AF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	ASYMMETRICAL AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAGE
BD	BOARD
BLDG	BUILDING
C	CONDUIT
CAB	CABINET
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CURRENT LIMITING
CONN	CONNECT OR CONNECTION
CONT'D	CONTINUED
CONTR	CONTRACTOR
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DBL	DOUBLE
DIM	DIMENSION
DISC SW	DISCONNECT SWITCH
DC	DIRECT CURRENT
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRICAL
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONDUIT
FIX	FIXTURE
GC	GENERAL CONTRACTOR
GALV	GALVANIZED
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HT	HEIGHT
HTR	HEATER
HZ	HERTZ
JB	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOURS
LA	LIGHTNING ARRESTOR
L-L	LINE TO LINE
L-N	LINE TO NEUTRAL
LTG	LIGHT OR LIGHTING
MC	MECHANICAL CONTRACTOR

**ABBREVIATIONS (CONT'D)**

MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MTD	MOUNTED
MTG	MOUNTING
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT	NEUTRAL
NIC	NOT IN THIS CONTRACT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OH	OVERHEAD
OL	OVERLOAD
Ø	PHASE
P	POLE
PC	PHOTOELECTRIC
PEN	PENDANT
PNL	PANELBOARD
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
R	RELOCATED
RECP	RECEPTACLE
REQ'D	REQUIRED
REQ' MTS	REQUIREMENTS
RM	ROOM
SCH	SCHEDULE
SE	SERVICE ENTRANCE
SM	SURFACE MOUNT
SN	SOLID NEUTRAL
SOV	SOLENOID OPERATED VALVE
SPACE	SPACE(S) ONLY (NO BREAKER OR DEVICE)
SPARE	SPARE BREAKER OR DEVICE
SPD	SURGE PROTECTIVE DEVICE
SPECS	CONTRACT SPECIFICATIONS
SS	STAINLESS STEEL HARDWARE
SWBD	SWITCHBOARD
SW	SWITCH
SWGR	SWITCH GEAR
TB	TELEPHONE BACKBOARD
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UT	UNDERGROUND TELEPHONE
VA	VOLT AMPERES
W	WATTS
W/	WITH
WH	WATER HEATER
WP	WEATHER PROOF
XFMR	TRANSFORMER
XMT	TRANSMITTER

**GENERAL NOTES: (APPLICABLE TO ALL ELECTRICAL SHEETS)**

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



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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS

PLAT NO.	
JOB NO.	30002-74
DATE	SEPTEMBER 2025
DESIGNER	PD
CHECKED_SK_DRAWN_PD	
SHEET	<b>E1.0</b>

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. ELECTRICAL SYSTEMS

1.02 RELATED WORK

- A. THE WORK COVERED BY THIS SPECIFICATION CONSISTS OF FURNISHING ALL LABOR, SUPPLIES AND MATERIALS, SHOP DRAWINGS AND A LIST OF MAKE AND CATALOG NUMBERS OF ALL EQUIPMENT AND MATERIALS TO BE INSTALLED AND PERFORMING ALL OPERATIONS, INCLUDING INSTALLATION OF LIGHTING FIXTURES, ELECTRICAL EQUIPMENT, CUTTING AND PATCHING, COORDINATION WITH OTHER TRADES ON THE JOB, ETC., NECESSARY FOR THE INSTALLATION OF COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED. THESE SPECIFICATIONS SUPPLEMENT THE GENERAL CONDITIONS AND SPECIFICATIONS.
B. EXAMINATION OF SITE: THE CONTRACTOR SHALL THOROUGHLY EXAMINE SITE AND SATISFY HIMSELF AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE CONTRACTOR SHALL VERIFY AT THE SITE ALL MEASUREMENTS AFFECTING HIS WORK AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF THE SAME. NO EXTRA COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR EXPENSES DUE TO HIS NEGLIGENCE TO EXAMINE OR FAILURE TO DISCOVER CONDITIONS WHICH AFFECT HIS WORK. NO EXTRA COMPENSATION WILL BE ALLOWED ON ACCOUNT OF DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THOSE INDICATED ON THE DRAWINGS.
C. THE AGREEMENT FORMS, GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS OF THE SPECIFICATIONS SHALL APPLY TO THE WORK SPECIFIED IN DIVISION 26.

1.03 DEFINITION

- A. "WIRING": WIRE OR CABLE, INSTALLED IN RACEWAY WITH ALL REQUIRED BOXES, FITTINGS, CONNECTORS AND ACCESSORIES, COMPLETELY INSTALLED.
B. "FEEDER": WIRING TO ANY DEVICE OR EQUIPMENT IN WHICH NUMBER SIX AWG COPPER (#6 CU) OR LARGER CONDUCTORS ARE USED.
C. "POWER WIRING": WIRING TO ANY DEVICE OR EQUIPMENT SERVED BY A MULTI-POLE BREAKER.

1.04 QUALITY ASSURANCE

- A. CODES: COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ANY OTHER AUTHORITIES HAVING JURISDICTION OVER THE WORK.
B. PERMITS AND INSPECTIONS: PROVIDE ALL PERMITS REQUIRED AND OBTAIN FINAL INSPECTION AND APPROVAL FROM THE INSPECTION DEPARTMENT HAVING JURISDICTION.
C. WHERE DIFFERENT SECTIONS OF ANY APPLICABLE CODES SPECIFY DIFFERENT MATERIALS, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE SHALL GOVERN.
D. STANDARDS FOR MATERIAL AND WORKMANSHIP: USE MATERIALS THAT ARE NEW AND LISTED AND LABELED BY UNDERWRITERS LABORATORIES (UL) AS CONFORMING TO ITS STANDARDS. WHERE SUCH A STANDARD HAS BEEN ESTABLISHED FOR THE PARTICULAR TYPE OF MATERIAL IN QUESTION, EXECUTE WORK IN A WORKMAN LIKE MANNER, TO PRESENT A NEAT AND MECHANICAL APPEARANCE WHEN COMPLETED.

1.05 SUBSTITUTION OF MATERIALS

- A. NO SUBSTITUTION OF MATERIAL IS ALLOWED WITHOUT WRITTEN PRIOR AUTHORIZATION FROM THE ENGINEER AND OWNER. DETERMINATION OF WHAT IS CONSIDERED EQUAL IS AT THE SOLE DISCRETION OF THE ENGINEER AND OWNER.
B. INCLUDE SUFFICIENT DESCRIPTIVE INFORMATION, INCLUDING MANUFACTURER'S PUBLISHED DATA TO ESTABLISH CONTRACT COMPLIANCE. SUBMIT SAMPLES IF REQUESTED BY ARCHITECT/ENGINEER.

1.06 DRAWINGS AND SPECIFICATIONS

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

1.07 AS-BUILT DRAWINGS

- A. AS WORK PROGRESSES, RECORD ON ONE (1) SET OF ELECTRICAL PRINTS ALL CHANGES AND DEVIATIONS FROM THE CONTRACT DOCUMENTS IN SIZE, LOCATIONS AND TYPES OF ALL MATERIALS AND EQUIPMENT. RECORD FINAL LOCATION OF OUTLETS, SWITCHES, STARTERS, UNDERGROUND AND EXPOSED CONDUITS, ETC. TO INDICATE THE FINAL INSTALLATION. MAKE SUFFICIENT MEASUREMENTS TO LOCATE ALL EQUIPMENT AND CONDUITS. PROVIDE AS-BUILT DRAWINGS.
B. THE CONTRACTOR SHALL PREPARE A TYPED PANEL DIRECTORY FOR EACH PANEL UTILIZED FOR THIS PROJECT. THIS DIRECTORY SHALL IDENTIFY THE CIRCUIT NUMBER, DEVICES SERVED, AND LOCATION OF DEVICES BY ROOM NUMBER. HE SHALL FILE THEM WITH THE BUILDING MANAGER WHEN THE WORK IS COMPLETE.

1.08 MAINTENANCE DATA

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

1.09 PENETRATIONS, CUTTING, AND PATCHING

- A. PERFORM CUTTING AND PATCHING IN ACCORDANCE WITH THE GENERAL AND SUPPLEMENTARY CONDITIONS OF THE CONTRACT.
B. PROVIDE ALL SLEEVES REQUIRED FOR PROPER INSTALLATION OF WORK INCLUDED IN THIS SECTION.
C. MAKE ALL PENETRATIONS THROUGH WALLS AT 90 DEGREE ANGLES. SEAL ALL PENETRATIONS AT FIRE AND SMOKE PARTITIONS WITH FIRE SAFING MATERIAL. SEAL ALL PENETRATIONS AT SOUND WALLS WITH SOUNDPROOFING MATERIAL.

1.10 SUBMITTALS

- A. SHOP DRAWINGS AND MATERIAL BROCHURES: FURNISH AN ELECTRONIC SET OF SHOP DRAWINGS AND PRODUCT DATA IN PDF FORMAT TO THE ARCHITECT/ENGINEER ON THE FOLLOWING MATERIALS:
1. LIGHTING FIXTURES
2. DISCONNECT SWITCHES
3. TRANSFORMERS
4. RACEWAYS
5. CONDUCTORS
6. MOTOR CONTROLLERS
7. PANELBOARDS
8. CONTROL PANELS
9. INSTRUMENTATION
10. GENERATOR & ATS
11. SCADA

1.11 COOPERATION

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

1.12 WIRING WORKMANSHIP

- A. RUN WIRING IN ALL BRANCH CIRCUIT PANELBOARDS AND TERMINAL CABINETS PARALLEL OR AT RIGHT ANGLES TO THE SIDES OR TOP OF THE EQUIPMENT HOUSING.
B. GROUP AND HARNESS CONDUCTORS TOGETHER USING LOCKING TYPE CABLE TIES. CABLE TIES: AS MANUFACTURED BY THE PANUIT CORPORATION OR THOMAS AND BETTS.

1.13 STORAGE MATERIALS

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

1.14 ORDERING OF MATERIALS

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

1.15 SAFETY PRECAUTIONS AND PROGRAMS

- A. IT SHALL BE THE DUTY AND RESPONSIBILITY OF THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS TO BE FAMILIAR AND COMPLY WITH ALL REQUIREMENTS OF PUBLIC LAW 91-503, 29 U.S.C., SECS. 651 ET. SEQ., THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (OSHA), AND ALL AMENDMENTS THERE TO AND TO ENFORCE AND COMPLY WITH ALL OF THE PROVISIONS OF THIS ACT. IN ADDITION, ON PROJECTS IN WHICH TRENCH EXCAVATION WILL EXCEED A DEPTH OF FIVE FEET (5') THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS SHALL COMPLY WITH ALL REQUIREMENTS OF 29 C.F.R., SECS. 1926.652 AND 1926.653, OSHA SAFETY AND HEALTH STANDARDS.

1.16 WARRANTY

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

PART 2 - PRODUCTS AND EXECUTION

2.01 CONDUIT

- A. EXCEPT AS OTHERWISE NOTED, SPECIFIED OR REQUIRED, INSTALL ALL WIRES USED IN THIS PROJECT IN CONDUIT AS HEREINAFTER SPECIFIED:
BELOW GRADE: SCHEDULE 40 PVC
ABOVE GRADE (OUTSIDE): ALUMINUM RIGID
ABOVE GRADE (INSIDE): ALUMINUM RIGID
ELBOWS: PVC COATED RIGID STEEL
B. INSTALL CONDUITS CONTINUOUS FROM OUTLET TO OUTLET, FROM OUTLET TO CABINET, JUNCTION BOX AND PULL BOX. SECURE CONDUITS TO ALL BOXES, ETC., IN SUCH A MANNER THAT EACH SYSTEM WILL BE ELECTRICALLY CONTINUOUS FROM SERVICE TO ALL OUTLETS. TERMINATE ALL CONDUIT RUNS FROM CABINETS AND JUNCTION BOXES IN APPROVED OUTLET BOXES. INSTALL CONDUITS AS HIGH AS POSSIBLE UP AGAINST STRUCTURE ABOVE. AVOID ROUTING CONFLICTS WITH HVAC EQUIPMENT/DUCTWORK, SANITARY WASTE, VENT PIPING, AND DOMESTIC WATER PIPING.
C. INSTALL A NYLON PULL WIRE (200 LB. TEST) AND TIE ENDS IN ALL CONDUIT LINES LEFT EMPTY FOR FUTURE USE.
D. TRAPPED OR INACCESSIBLE JUNCTION BOXES, OUTLETS, ETC. ARE NOT ALLOWED.
E. GENERALLY, CONCEAL ALL CONDUITS UNLESS OTHERWISE DIRECTED OR INDICATED ON THE DRAWINGS.
F. NO BENDS PERMITTED WITH A RADIUS LESS THAN SIX (6) TIMES THE DIAMETER OF THE CONDUIT OR MORE THAN 90°.
G. PROVIDE JUNCTION BOXES OR PULL BOXES TO AVOID EXCESSIVE RUNS OR TOO MANY BENDS BETWEEN OUTLETS.
H. INCREASE CONDUIT SIZES SHOWN ON THE PLANS AS REQUIRED FACILITATING PULLING OF CONDUCTORS.
I. RUN ALL CONDUITS PARALLEL TO OR AT RIGHT ANGLES TO THE BUILDING WALLS AND SUPPORT FROM WALLS OR CEILINGS AT INTERVALS REQUIRED BY CODE WITH APPROVED CLAMPS OR HANGERS.
J. INSTALL APPROVED APPLETON, CROUSE HINDS, OR O.Z. MANUFACTURING CO. EXPANSION FITTINGS IN ALL EMT RUNS WHICH PASS THROUGH EXPANSION JOINTS IN THE BUILDING. OTHER METHODS TO PROVIDE FOR THIS EXPANSION MUST BE APPROVED BY THE ARCHITECT/ENGINEER.

2.02 WIRING

- A. INSTALL WIRING AS FOLLOWS:
1. FEEDERS AND POWER WIRING: CONDUCTORS IN RIGID ALUMINUM RIGID CONDUIT WHEN INSTALLED IN DRY LOCATION ABOVE GRADE. SCHEDULE 40 PVC WHEN INSTALLED BELOW GRADE. USE PVC COATED RIGID ELBOWS.
2. BRANCH CIRCUITS: INSTALL CONDUCTORS IN ALUMINUM RIGID CONDUIT.
3. INSTALL ALL WIRING IN CONDUIT. USE ONLY UL LISTED LUBRICANTS IN PULLING THE CONDUCTORS.
4. INSTALL CONDUCTORS CONTINUOUS FROM OUTLET TO OUTLET AND FROM OUTLET TO JUNCTION BOX OR PULL BOX. INSTALL SPLICES AND JOINTS CAREFULLY AND SECURELY TO BE MECHANICALLY AND ELECTRICALLY SOLID WITH PRESSURE TYPE CONNECTORS. USE 3M "SCOTCHLOCK" OR IDEAL "WING NUT" OR EQUAL TWIST-ON CONNECTORS FOR #10 AND SMALLER CONDUCTORS.
5. CONNECT CONDUCTORS FOR LIGHTING AND RECEPTACLE CIRCUITS TO THE PANEL AS DETAILED WITH COLOR CODED JACKET. COLOR CODE ALL WIRES WITH THE TYPE, SIZE, MAKE AND VOLTAGE MARKED ON IT. COLOR CODE WIRING WITH THE SAME COLOR BEING USED WITH ITS RESPECTIVE PHASE AS FOLLOWS, UNLESS OTHERWISE REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
120/240 VOLT DELTA 120/208 VOLT WYE 480/277 VOLT WYE
PHASE A RED RED BROWN
PHASE B ORANGE BLACK YELLOW
PHASE C BLACK BLUE PURPLE
NEUTRAL WHITE WHITE GRAY
GROUND GREEN GREEN GREEN GREEN
6. BRANCH CIRCUIT CONDUCTORS SHALL NOT BE SMALLER THAN NO. 12 AWG. INCREASE THE WIRE SIZES UP ONE (1) SIZE WHEREVER THE RUN DISTANCE EXCEEDS 200 FEET.
7. ALL WIRING AND CABLE INCLUDING FIBER OPTIC, ELECTRICAL, DATA, TELECOMMUNICATIONS, TEMPERATURE CONTROLS, SECURITY, FIRE PROTECTION, ETC. SHALL BE RUN IN CONDUIT.
8. ELECTRICAL CONTRACTOR MAY GROUP WIRES WITH SAME VOLTAGE FOR FIELD DEVICES IN CONDUIT AS HE DEEMS BEST APPROPRIATE.
9. ANALOG AND LOW VOLTAGE SIGNALS SHALL NOT RUN IN SAME CONDUIT AS 120VAC AND 480VAC CIRCUITS.

2.03 CONDUCTORS

- A. COPPER OF 98% CONDUCTIVITY.
B. NO. 10 AND SMALLER: SOLID TYPE SIMPULL XHHW-2, EXCEPT AS OTHERWISE NOTED.
C. NO. 8 AND LARGER: STRANDED, TYPE SIMPULL XHHW-2, EXCEPT AS OTHERWISE NOTED.
D. MINIMUM SIZE CONDUCTORS USED SHALL BE NO. 12 AWG FOR ALL APPLICATIONS EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE (A.C. CONTROLS, ETC.).
E. USE WIRE AND CABLE FROM ONE (1) MANUFACTURER. DELIVER IN THE ORIGINAL WRAPPING BEARING THE UNDERWRITERS LABORATORIES (UL) LABEL.

2.04 OUTLETS

- A. USE GALVANIZED STEEL OR CAST TYPE BOXES AT ALL OUTLETS FOR LIGHTING FIXTURES, WALL SWITCHES, WALL RECEPTACLES, ETC.
B. SECURELY ATTACH OUTLET BOXES FOR FIXTURES AND DEVICES TO THE BUILDING CONSTRUCTION WITH EXPANSION BOLTS.
C. FLUSH MOUNT ALL OUTLET BOXES, REGARDLESS OF WALL OR CEILING CONSTRUCTION, UNLESS THEY ARE SPECIFICALLY SHOWN AS BEING USED WITH EXPOSED CONDUIT. IF SURFACE MOUNTED, USE CAST TYPE AS SPECIFIED ABOVE. UTILITY BOXES ARE NOT ALLOWED.

2.05 INSTALLATION

- A. INSTALL RACEWAYS EXPOSED. SUPPORT EXPOSED RACEWAYS AT INTERVALS NOT EXCEEDING TEN FEET (10') WITH MACHINE SCREWS FOR METAL CONSTRUCTION AND EXPANSION BOLTS FOR CONCRETE CONSTRUCTION.
B. INSTALL THE EDGES OF ALL OUTLET BOXES FLUSH WITH THE SURFACE IN WHICH THEY ARE RECESSED. SCREW ATTACH INTERNAL DEVICES BEFORE ATTACHING COVERPLATE. DO NOT USE COVERPLATES AS A MEANS OF TIGHTENING THE DEVICES IN PLACE.

2.06 DISCONNECT AND FEEDER SWITCHES

- A. FEEDER SWITCHES AND DISCONNECT SWITCHES: HEAVY DUTY, EXCEPT AS OTHERWISE NOTED. IN DAMP LOCATIONS OR EXPOSED TO THE WEATHER, USE NEMA 3R, RAINIGHT.
B. DISCONNECT SWITCHES: FACTORY INSTALLED PROVISION FOR PADLOCKING IN EITHER THE "ON" OR "OFF" POSITION.

2.07 FUSES

- A. FUSES: BUSSMANN OR APPROVED EQUAL.

2.08 LABELING

- A. LABEL ALL PANELS, CONTROL POINTS, SWITCHES, AND MOTORS, AS DIRECTED. IDENTIFY PANELS BY PANEL NUMBER. LABEL SWITCHES, INDICATING THE EQUIPMENT WHICH THEY CONTROL. ALL LABELS SHALL BE ENGRAVED. PANEL DIRECTORIES TO BE TYPED. COORDINATE ALL EQUIPMENT NUMBERING WITH MECHANICAL CONTRACTOR.
B. INSTALL ARC FLASH HAZARD LABELS ON ALL NEW SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES AND MOTOR CONTROL CENTERS PER NEC 110.16. PANUIT #PPS0305W2100 OR EQUAL.

2.09 GROUNDING

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

2.10 COVERPLATES

- A. WHERE WIRING DEVICES ARE FLUSH MOUNTED, INSTALL STAINLESS STEEL COVERPLATES.
B. WHERE WIRING DEVICES ARE SURFACE MOUNTED, INSTALL FORMED STEEL COVERPLATES WITH CADMIUM PLATING.
C. WHERE WEATHERPROOF COVERPLATES ARE REQUIRED, MEET UL "WET LOCATION COVER CLOSED" REQUIREMENTS. USE COVERPLATES THAT ARE HINGED AND GASKETED WITH SPRING LOADED CLOSER.
D. INSTALL FINISHED COVERPLATES ON ALL JUNCTION BOXES, OUTLET BOXES, SECTIONAL SWITCH BOXES, UTILITY BOXES, ETC.
E. WHERE MORE THAN ONE (1) DEVICE IS INDICATED AT A LOCATION, MOUNT DEVICES IN COMBINED SECTION GANG BOXES, COVERED BY A COMMON PLATE.

2.11 RECEPTACLES

- A. DUPLEX RECEPTACLES: 20 AMPERE, 125 VOLT, SELF OR AUTOMATIC GROUNDING, GFCI.
B. SPECIAL MOUNTING HEIGHTS ARE NOTED ON THE ARCHITECTURAL DRAWINGS. UNLESS OTHERWISE INDICATED ON THE ELECTRICAL DRAWINGS, MOUNT DEVICES AT THE FOLLOWING HEIGHTS ABOVE FINISHED FLOOR:
1. DUPLEX RECEPTACLE 18"
2. WALL SWITCHES 48"
3. VOICE & VOICE/DATA OUTLETS 18"
4. WALL TELEPHONE OUTLETS 48"

2.12 SWITCHES

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

2.13 LIGHTING FIXTURES

- A. PROVIDE ALL LIGHTING FIXTURES, AS SCHEDULED ON DRAWINGS, COMPLETE WITH LAMPS AND HARDWARE. INSTALL COMPLETELY WIRED, CONNECTED AND IN OPERATING ORDER.
B. CONFIRM ALL CEILING CONDITIONS, CLEARANCES AND OPERATING VOLTAGES BEFORE ORDERING LIGHTING FIXTURES.
C. SUBMIT SHOP DRAWINGS.

2.13.1 FIXTURES

- A. PROVIDE LIGHTING FIXTURES WHICH HAVE BEEN TESTED AND CERTIFIED FOR PROPER OPERATION BY THE FIXTURE'S MANUFACTURER.
B. PROVIDE LIGHTING FIXTURES WITH TRIM COMPATIBLE WITH CEILING OR SURFACE ON OR IN WHICH INSTALLED.
C. EACH LUMINAIRE SHALL HAVE TWO SUPPORT WIRES INSTALLED, ONE ON EACH END, AT DIAGONAL CORNERS. LUMINAIRES IN FIRE RATED CEILINGS SHALL BE SUPPORTED ON ALL FOUR CORNERS.
D. SUPPORT AND SECURELY ATTACH WITH GALVANIZED FASTENERS IN A LEVEL POSITION.
E. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
F. FIRE RATED ASSEMBLIES, COMPLY WITH DETAILS OF LISTED ASSEMBLY.

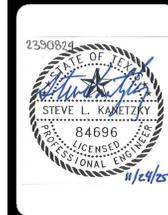
2.14 TEMPORARY POWER

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

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THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

Table with columns for DATE, NO., and REVISION.



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MAYFAIR LIFT STATION #3 AND FORCE MAIN
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ELECTRICAL SPECIFICATIONS



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PACKAGE DIESEL GENERATOR 80 KW

1 GENERAL

1.1 REFERENCES AND STANDARDS

THE GENERATOR SET COVERED BY THESE SPECIFICATIONS SHALL BE DESIGNED, TESTED, RATED, ASSEMBLED AND INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE STANDARDS BELOW:

1.2 RELATED SECTIONS

1.2.1 DIVISION 3 - STRUCTURAL CONCRETE

1.2.2 DIVISION 15 - MECHANICAL

1.3 WORK INCLUDED

1.3.1 INSTALLATION

THE WORK INCLUDES SUPPLYING AND INSTALLING A COMPLETE INTEGRATED GENERATOR SYSTEM. THE SYSTEM CONSISTS OF A DIESEL GENERATOR SET WITH RELATED COMPONENT ACCESSORIES AND AUTOMATIC TRANSFER SWITCH(ES) SPECIFIED UNDER A SEPARATE SECTION.

1.3.2 FUEL SYSTEM

THE CONTRACTOR SHALL PROVIDE A FULL TANK OF DIESEL FUEL AFTER THE COMPLETION OF ALL TESTING.

1.3.3 SYSTEM TEST

A COMPLETE SYSTEM LOAD TEST SHALL BE PERFORMED AFTER ALL EQUIPMENT IS INSTALLED. GUIDELINES IN THE START-UP SECTION.

1.3.4 REQUIREMENTS, CODES AND REGULATIONS

THE EQUIPMENT SUPPLIED AND INSTALLED SHALL MEET THE REQUIREMENTS OF THE NEC AND ALL APPLICABLE LOCAL CODES AND REGULATIONS. ALL EQUIPMENT SHALL BE OF NEW AND CURRENT PRODUCTION BY A MANUFACTURER WHO HAS 25 YEARS OF EXPERIENCE BUILDING THIS TYPE OF EQUIPMENT. MANUFACTURER SHALL BE ISO9001 CERTIFIED.

1.3.5 APPROVED MANUFACTURERS

THE STANDBY DIESEL GENERATOR SHALL BE SUPPLIED BY:

- SOUTHERN PLAINS - CUMMINS®
HOLT - CAT®
LOFTIN - KOHLER POWER SYSTEMS®

OR BY ALTERNATE MANUFACTURERS WHO SHALL SUBMIT A REQUEST TWO WEEKS PRIOR TO BID AND INCLUDE A WRITTEN LIST OF DEVIATIONS FROM THIS SPECIFICATION TO BE CONSIDERED FOR APPROVAL.

1.4 SUBSTITUTION

PROPOSED DEVIATIONS FROM THE SPECIFICATIONS SHALL BE TREATED AS FOLLOWS:

1.4.1 SUBSTITUTION TIME REQUIREMENT

REQUESTS FOR SUBSTITUTIONS SHALL BE MADE A MINIMUM OF TWO WEEKS PRIOR TO BID DATE. MANUFACTURERS CATALOG DATA SHALL ACCOMPANY EACH REQUEST AND AUTHORIZED ACCEPTANCE SHALL BE ADDENDA ONLY.

1.4.2 SUBSTITUTION RESPONSIBILITY

THE POWER SYSTEM HAS BEEN DESIGNED TO SOUTHERN PLAINS/CUMMINS ELECTRICAL AND PHYSICAL CHARACTERISTICS. THE EQUIPMENT SIZING, SPACING, AMOUNTS, ELECTRICAL WIRING, VENTILATION EQUIPMENT, FUEL AND EXHAUST COMPONENTS HAVE ALL BEEN SIZED AND DESIGNED AROUND SOUTHERN PLAINS/CUMMINS SUPPLIED EQUIPMENT. SHOULD ANY OF THE OTHER APPROVED MANUFACTURER SUBSTITUTIONS BE MADE, THE CONTRACTOR SHALL BEAR RESPONSIBILITY FOR THE INSTALLATION, COORDINATION AND OPERATION OF THE SYSTEM AS WELL AS ANY ENGINEERING AND REDESIGN COSTS, WHICH MAY RESULT FROM SUCH SUBSTITUTIONS.

1.5 SUBMITTALS

ENGINE-GENERATOR SUBMITTALS SHALL INCLUDE THE FOLLOWING INFORMATION:

- FACTORY PUBLISHED SPECIFICATION SHEET.
MANUFACTURER'S CATALOG CUT SHEETS OF ALL AUXILIARY COMPONENTS SUCH AS BATTERY CHARGER, CONTROL PANEL, ENCLOSURE, ETC.
DIMENSIONAL ELEVATION AND LAYOUT DRAWINGS OF THE GENERATOR SET, ENCLOSURE AND TRANSFER SWITCHGEAR AND RELATED ACCESSORIES.
WEIGHTS OF ALL EQUIPMENT.
CONCRETE PAD RECOMMENDATION, LAYOUT AND STUB-UP LOCATIONS OF ELECTRICAL AND FUEL SYSTEMS.
INTERCONNECT WIRING DIAGRAM OF COMPLETE EMERGENCY SYSTEM, INCLUDING GENERATOR, SWITCHGEAR, DAY TANK, REMOTE PUMPS, BATTERY CHARGER, CONTROL PANEL, AND REMOTE ALARM INDICATIONS.
ENGINE MECHANICAL DATA, INCLUDING HEAT REJECTION, EXHAUST GAS FLOWS, COMBUSTION AIR AND VENTILATION AIR FLOWS, FUEL CONSUMPTION, ETC.
GENERATOR ELECTRICAL DATA INCLUDING TEMPERATURE AND INSULATION DATA, COOLING REQUIREMENTS, EXCITATION RATINGS, VOLTAGE REGULATION, VOLTAGE REGULATOR, EFFICIENCIES, WAVEFORM DISTORTION AND TELEPHONE INFLUENCE FACTOR.
GENERATOR RESISTANCES, REACTANCES AND TIME CONSTANTS.
GENERATOR LOCKED ROTOR MOTOR STARTING CURVES.
MANUFACTURER'S DOCUMENTATION SHOWING MAXIMUM EXPECTED TRANSIENT VOLTAGE AND FREQUENCY DIPS, AND RECOVERY TIME DURING OPERATION OF THE GENERATOR SET AT THE SPECIFIED SITE CONDITIONS WITH THE SPECIFIED LOADS.
MANUFACTURER'S AND DEALER'S WRITTEN WARRANTY.

1.7 SYSTEM RESPONSIBILITY

1.7.1 GENERATOR SET DISTRIBUTOR

THE COMPLETED ENGINE GENERATOR SET SHALL BE SUPPLIED BY THE MANUFACTURER'S AUTHORIZED DISTRIBUTOR ONLY.

- SOUTHERN PLAINS - CUMMINS®
HOLT - CAT®
LOFTIN - KOHLER POWER SYSTEMS®

1.7.2 REQUIREMENTS, CODES AND REGULATIONS

THE EQUIPMENT SUPPLIED AND INSTALLED SHALL MEET THE REQUIREMENTS OF NEC AND ALL-APPLICABLE LOCAL CODES AND REGULATIONS. ALL EQUIPMENT SHALL BE NEW, OF CURRENT PRODUCTION. THERE SHALL BE ONE SOURCE RESPONSIBILITY FOR WARRANTY; PARTS AND SERVICE THROUGH A LOCAL REPRESENTATIVE WITH FACTORY TRAINED SERVICE PERSONNEL.

1.7.3 AUTOMATIC TRANSFER SWITCH(ES)

THE AUTOMATIC TRANSFER SWITCH(ES) SPECIFIED IN ANOTHER SECTION SHALL BE SUPPLIED BY THE GENERATOR SET MANUFACTURER IN ORDER TO ESTABLISH AND MAINTAIN A SINGLE SOURCE OF SYSTEM RESPONSIBILITY AND COORDINATION.

1.8 WARRANTY

1.8.1 TWO YEAR STANDBY (ISO 8528-1: FSP) GENERATOR SET WARRANTY

THE MANUFACTURER'S STANDARD WARRANTY SHALL IN NO EVENT BE FOR A PERIOD OF LESS THAN TWO (2) YEARS FROM DATE OF INITIAL START-UP OF THE SYSTEM AND SHALL INCLUDE REPAIR PARTS, LABOR, REASONABLE TRAVEL EXPENSE NECESSARY FOR REPAIRS AT THE JOB SITE, AND EXPENDABLES (LUBRICATING OIL, FILTERS, ANTIFREEZE, AND OTHER SERVICE ITEMS MADE UNUSABLE BY THE DEFECT) USED DURING THE COURSE OF REPAIR. RUNNING HOURS SHALL BE LIMITED TO 500 HOURS ANNUALLY FOR THE SYSTEM WARRANTY BY BOTH THE MANUFACTURER AND SERVICING DISTRIBUTOR. SUBMITTALS RECEIVED WITHOUT WRITTEN WARRANTIES AS SPECIFIED WILL BE REJECTED IN THEIR ENTIRETY.

1.9 PARTS AND SERVICE QUALIFICATIONS

1.9.1 SERVICE FACILITY

THE ENGINE-GENERATOR SUPPLIER SHALL MAINTAIN 24 HOUR PARTS AND SERVICE CAPABILITY WITHIN 100 MILES OF THE PROJECT SITE. THE DISTRIBUTOR SHALL STOCK PARTS AS NEEDED TO SUPPORT THE GENERATOR SET PACKAGE FOR THIS SPECIFIC PROJECT. THE SUPPLIER MUST CARRY SUFFICIENT INVENTORY TO COVER NO LESS THAN 80% PARTS SERVICE WITHIN 24 HOURS AND 95% WITHIN 48 HOURS.

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

1.9.2 SERVICE PERSONNEL

THE DEALER SHALL MAINTAIN QUALIFIED FACTORY TRAINED SERVICE PERSONNEL.

2 PRODUCT SPECIFICATIONS

2.1 GENERAL REQUIREMENTS

2.1.1 GENSET REQUIREMENTS

THE GENERATOR SET SHALL BE STANDBY DUTY RATED AT 80 KW, 100 KVA, 1800 RPM, 0.8 POWER FACTOR, 480/277 V, 3-PHASE, 60 HERTZ, INCLUDING RADIATOR FAN AND ALL PARASITIC LOADS. GENERATOR SET SHALL BE SIZED TO OPERATE AT THE SPECIFIED LOAD AT A MAXIMUM AMBIENT OF 115F (46.1C) AND ALTITUDE OF 1,000.0 FEET (304.8 M).

STANDBY RATING AS DEFINED BY THE FOLLOWING:
TYPICAL LOAD FACTOR = 70% OR LESS WITH VARIABLE LOAD
TYPICAL HOURS PER YEAR = 200 HOURS
MAXIMUM EXPECTED USAGE = 500 HOURS/YEAR
TYPICAL APPLICATION = STANDBY
TYPICAL PEAK DEMAND = 80% OF ESP RATED KW WITH 100% OF RATING AVAILABLE FOR THE DURATION OF AN EMERGENCY OUTAGE

2.1.2 MATERIAL AND PARTS

ALL MATERIALS AND PARTS COMPRISING THE UNIT SHALL BE NEW AND UNUSED.

2.1.3 ENGINE

THE ENGINE SHALL BE DIESEL FUELED, FOUR (4) CYCLE, WATER-COOLED, WHILE OPERATING WITH NOMINAL SPEED NOT EXCEEDING 1800 RPM. THE ENGINE WILL UTILIZE IN-CYLINDER COMBUSTION TECHNOLOGY, AS REQUIRED, TO MEET APPLICABLE EPA NON-ROAD MOBILE REGULATIONS AND/OR THE EPA NSPS RULE FOR STATIONARY RECIPROCATING COMPRESSION IGNITION ENGINES. ADDITIONALLY, THE ENGINE SHALL COMPLY WITH THE STATE EMISSION REGULATIONS AT THE TIME OF INSTALLATION/COMMISSIONING. ACTUAL ENGINE EMISSIONS VALUES MUST BE IN COMPLIANCE WITH APPLICABLE EPA EMISSIONS STANDARDS PER ISO 8178 - D2 EMISSIONS CYCLE AT SPECIFIED EKW / BHP RATING. UTILIZATION OF THE "TRANSITION PROGRAM FOR EQUIPMENT MANUFACTURERS" (ALSO KNOWN AS "FLEX CREDITS") TO ACHIEVE EPA CERTIFICATION IS NOT ACCEPTABLE. THE IN-CYLINDER ENGINE TECHNOLOGY MUST NOT PERMIT UNFILTERED EXHAUST GAS TO BE INTRODUCED INTO THE COMBUSTION CYLINDER. EMISSIONS REQUIREMENTS / CERTIFICATIONS OF THIS PACKAGE: EPA TIER 3

2.1.3.1 ENGINE GOVERNING

THE ENGINE WILL BE EQUIPPED WITH AN ISOCRONOUS ELECTRONIC GOVERNOR TO MAINTAIN +/- 0.25% STEADY STATE FREQUENCY VARIATION FROM STEADY STATE NO LOAD TO STEADY STATE FULL LOAD.

2.2 GENERATOR

2.2.1 GENERATOR SPECIFICATIONS

THE SYNCHRONOUS THREE PHASE GENERATOR SHALL BE A SINGLE BEARING, SELF-VENTILATED, DRIP-PROOF DESIGN IN ACCORDANCE WITH NEMA MG 1 AND DIRECTLY CONNECTED TO THE ENGINE FLYWHEEL HOUSING WITH A FLEX COUPLING. THE GENERATOR SHALL MEET PERFORMANCE CLASS G2 OF ISO 8528. THE EXCITATION SYSTEM SHALL ENABLE THE ALTERNATOR TO SUSTAIN 300% (250% FOR 50HZ) OF RATED CURRENT BASED ON THE 125C (CLASS H) OR 105C (CLASS F) RISE RATING FOR TEN SECONDS DURING A FAULT CONDITION AND SHALL IMPROVE THE IMMUNITY OF THE VOLTAGE REGULATOR TO NON-LINEAR DISTORTING LOADS. THE EXCITATION SYSTEM SHALL BE OF BRUSHLESS CONSTRUCTION AND BE INDEPENDENT OF MAIN STATOR WINDINGS, PERMANENT MAGNET.

2.2.2 VOLTAGE REGULATOR

2.2.2.1 AUTOMATIC VOLTAGE REGULATOR

THE AUTOMATIC VOLTAGE REGULATOR (AVR) SHALL MAINTAIN GENERATOR OUTPUT VOLTAGE WITHIN +/- 0.5% FOR ANY CONSTANT LOAD BETWEEN NO LOAD AND FULL LOAD. THE REGULATOR SHALL BE A TOTALLY SOLID STATE DESIGN, WHICH INCLUDES ELECTRONIC VOLTAGE BUILDUP, VOLTS PER HERTZ REGULATION, OVER-EXCITATION PROTECTION, SHALL LIMIT VOLTAGE OVERSHOOT ON STARTUP, AND SHALL BE ENVIRONMENTALLY SEALED.

2.2.3 MOTOR STARTING

PROVIDE LOCKED ROTOR MOTOR STARTING CAPABILITY OF 306 SKVA AT 20% INSTANTANEOUS VOLTAGE DIP AS DEFINED PER NEMA MG 1. SUSTAINED VOLTAGE DIP DATA IS NOT ACCEPTABLE.

2.3 CIRCUIT BREAKER

2.3.1 CIRCUIT BREAKER SPECIFICATIONS

PROVIDE A GENERATOR MOUNTED 100% CIRCUIT BREAKER, MOLDED CASE, QTY. (1) 125 AMP TRIP, 3 POLE, NEMA 1/P22. BREAKER SHALL UTILIZE A SOLID STATE TRIP UNIT. THE BREAKER SHALL BE UL/CSA LISTED OF IEC CONSTRUCTION AND CONNECTED TO ENGINE/GENERATOR SAFETY SHUTDOWNS. BREAKER SHALL BE HOUSED IN AN EXTENSION TERMINAL BOX WHICH IS ISOLATED FROM VIBRATIONS INDUCED BY THE GENERATOR SET. MECHANICAL TYPE LUGS, SIZED FOR THE CIRCUIT BREAKER FEEDERS SHOWN ON DRAWING, SHALL BE SUPPLIED ON THE LOAD SIDE OF BREAKER.

2.4 CONTROLS - GENERATOR SET MOUNTED

PROVIDE A FULLY SOLID-STATE, MICROPROCESSOR BASED, GENERATOR SET CONTROL. THE CONTROL PANEL SHALL BE DESIGNED AND BUILT BY THE ENGINE MANUFACTURER. THE CONTROL SHALL PROVIDE ALL OPERATING, MONITORING, AND CONTROL FUNCTIONS FOR THE GENERATOR SET. THE CONTROL PANEL SHALL PROVIDE REAL TIME DIGITAL COMMUNICATIONS TO ALL ENGINE AND REGULATOR CONTROLS.

2.4.1 ENVIRONMENTAL

- THE GENERATOR SET CONTROL SHALL BE TESTED AND CERTIFIED TO THE FOLLOWING ENVIRONMENTAL CONDITIONS.
-40C TO +70C OPERATING RANGE
95% HUMIDITY NON-CONDENSING, 30C TO 60C
IP22 PROTECTION FOR REAR OF CONTROLLER; IP55 WHEN INSTALLED IN CONTROL PANEL
5% SALT SPRAY, 48 HOURS, +38C, 36.8V SYSTEM VOLTAGE
SINUSOIDAL VIBRATION 4.3G'S RMS, 24-1000HZ
ELECTROMAGNETIC CAPABILITY (89/336/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, BS EN 50081-2, 50082-2)
SHOCK: WITHSTAND 15G

2.4.2 FUNCTIONAL REQUIREMENTS

THE FOLLOWING FUNCTIONALITY SHALL BE INTEGRAL TO THE CONTROL PANEL.

- THE CONTROL SHALL INCLUDE A 33 X 132 PIXEL, 24MM X 95MM, POSITIVE IMAGE, TRANSLUCENT LCD DISPLAY WITH TEXT BASED ALARM/EVENT DESCRIPTIONS.
AUDIBLE HORN FOR ALARM AND SHUTDOWN WITH HORN SILENCE SWITCH
STANDARD ISO LABELING
MULTIPLE LANGUAGE CAPABILITY
REMOTE START/STOP CONTROL
LOCAL RUN/OFF/AUTO CONTROL INTEGRAL TO SYSTEM MICROPROCESSOR
COOLDOWN TIMER
SPEED ADJUST
LAMP TEST
PUSH BUTTON EMERGENCY STOP BUTTON
PASSWORD PROTECTED SYSTEM PROGRAMMING

2.4.3 DIGITAL MONITORING CAPABILITY

THE CONTROLS SHALL PROVIDE THE FOLLOWING DIGITAL READOUTS FOR THE ENGINE AND GENERATOR. ALL READINGS SHALL BE INDICATED IN EITHER METRIC OR ENGLISH UNITS

ENGINE

- ENGINE OIL PRESSURE
ENGINE OIL TEMPERATURE
ENGINE COOLANT TEMPERATURE
ENGINE RPM
BATTERY VOLTS

GENERATOR

- GENERATOR AC VOLTS (LINE TO LINE, LINE TO NEUTRAL AND AVERAGE)
GENERATOR AC CURRENT (AVG AND PER PHASE)
GENERATOR AC FREQUENCY
GENERATOR KW (TOTAL AND PER PHASE)
GENERATOR KVA (TOTAL AND PER PHASE)
GENERATOR KVAR (TOTAL AND PER PHASE)
POWER FACTOR (AVG AND PER PHASE)
TOTAL KW-HR
TOTAL KVAR-HR
% KW
% KVA
% KVAR

2.4.4 ALARMS AND SHUTDOWNS

THE CONTROL SHALL MONITOR AND PROVIDE ALARM INDICATION AND SUBSEQUENT SHUTDOWN FOR THE FOLLOWING CONDITIONS. ALL ALARMS AND SHUTDOWNS ARE ACCOMPANIED BY A TIME, DATE, AND ENGINE HOUR STAMP THAT ARE STORED BY THE CONTROL PANEL FOR FIRST AND LAST OCCURRENCE:

ENGINE ALARM/SHUTDOWN

- LOW OIL PRESSURE ALARM/SHUTDOWN
HIGH COOLANT TEMPERATURE ALARM/SHUTDOWN

- LOSS OF COOLANT SHUTDOWN
OVERSPEED SHUTDOWN
OVERCRANK SHUTDOWN
LOW COOLANT LEVEL ALARM
LOW FUEL LEVEL ALARM
EMERGENCY STOP DEPRESSURE SHUTDOWN
LOW COOLANT TEMPERATURE ALARM
LOW BATTERY VOLTAGE ALARM
HIGH BATTERY VOLTAGE ALARM
CONTROL SWITCH NOT IN AUTO POSITION ALARM
BATTERY CHARGER FAILURE ALARM

GENERATOR ALARM/SHUTDOWN

- GENERATOR OVER VOLTAGE
GENERATOR UNDER VOLTAGE
GENERATOR OVER FREQUENCY
GENERATOR UNDER FREQUENCY
GENERATOR REVERSE POWER
GENERATOR OVERCURRENT

2.4.5 INPUTS AND OUTPUTS

PROGRAMMABLE DIGITAL INPUTS
THE CONTROLLER SHALL INCLUDE THE ABILITY TO ACCEPT SIX (6) DIGITAL INPUT SIGNALS. THE SIGNALS MAY BE PROGRAMMED FOR EITHER HIGH OR LOW ACTIVATION USING PROGRAMMABLE NORMALLY OPEN OR NORMALLY CLOSED CONTACTS.

DIGITAL OUTPUTS

THE CONTROL SHALL INCLUDE THE ABILITY TO OPERATE SIX (6) PROGRAMMABLE RELAY OUTPUT SIGNALS, INTEGRAL TO THE CONTROLLER. THE OUTPUT RELAYS SHALL BE RATED FOR 2A @ 30VDC.

DISCRETE OUTPUTS

THE CONTROL SHALL INCLUDE THE ABILITY TO OPERATE ONE (1) DISCRETE OUTPUTS, INTEGRAL TO THE CONTROLLER, WHICH ARE CAPABLE OF SINKING UP TO 300MA.

2.4.6 MAINTENANCE

ALL ENGINE, VOLTAGE REGULATOR, CONTROL PANEL AND ACCESSORY UNITS SHALL BE ACCESSIBLE THROUGH A SINGLE ELECTRONIC SERVICE TOOL. THE FOLLOWING MAINTENANCE FUNCTIONALITY SHALL BE INTEGRAL TO THE GENERATOR SET CONTROL:

- ENGINE RUNNING HOURS DISPLAY
SERVICE MAINTENANCE INTERVAL (RUNNING HOURS OR CALENDAR DAYS)
ENGINE CRANK ATTEMPT COUNTER
ENGINE SUCCESSFUL STARTS COUNTER
20 EVENTS ARE STORED IN CONTROL PANEL MEMORY
PROGRAMMABLE CYCLE TIMER THAT STARTS AND RUNS THE GENERATOR FOR A PREDETERMINED TIME. THE TIMER SHALL USE 14 USER-PROGRAMMABLE SEQUENCES THAT ARE REPEATED IN A 7-DAY CYCLE. EACH SEQUENCE SHALL HAVE THE FOLLOWING PROGRAMMABLE SET POINTS:
A. DAY OF WEEK
B. TIME OF DAY TO START
C. DURATION OF CYCLE

2.4.7 REMOTE COMMUNICATIONS

REMOTE COMMUNICATIONS

THE CONTROL SHALL INCLUDE MODBUS RTU COMMUNICATIONS AS STANDARD VIA RS-485 HALF DUPLEX WITH CONFIGURABLE BAUD RATES FROM 2.4K TO 57.6K.

REMOTE ANNUNCIATOR (NFPA 99/110, CSA 282)

- PROVIDE A REMOTE ANNUNCIATOR TO MEET THE REQUIREMENTS OF NFPA 110, LEVEL 1.
THE ANNUNCIATOR SHALL PROVIDE REMOTE ANNUNCIATION OF ALL POINTS STATED ABOVE AND SHALL INCORPORATE RING-BACK CAPABILITY SO THAT AFTER SILENCING THE INITIAL ALARM, ANY SUBSEQUENT ALARMS WILL SOUND THE HORN.
ABILITY TO BE LOCATED UP TO 800 FT FROM THE GENERATOR SET

REMOTE MONITORING SOFTWARE

THE CONTROL SHALL PROVIDE REMOTE MONITORING SOFTWARE WITH THE FOLLOWING FUNCTIONALITY:

- PROVIDE ACCESS TO ALL DATE AND EVENTS ON GENERATOR SET COMMUNICATIONS NETWORK
PROVIDE REMOTE CONTROL CAPABILITY FOR THE GENERATOR SET
ABILITY TO MONITOR UP TO 12 GENERATOR SETS
ABILITY TO COMMUNICATE VIA MODBUS RTU OR REMOTE MODEM

ETHERNET/IP COMMUNICATION:

- GENERATOR PERCENT LOAD
GENERATOR ENGINE SPEED
GENERATOR ENGINE HOURS
GENERATOR COOLANT TEMPERATURE
GENERATOR OIL PRESSURE
GENERATOR L1-L2 VOLTAGE
GENERATOR L2-L3 VOLTAGE
GENERATOR L3-L1 VOLTAGE
GENERATOR L1-N VOLTAGE
GENERATOR L2-N VOLTAGE
GENERATOR L3-N VOLTAGE
GENERATOR L1 CURRENT
GENERATOR L2 CURRENT
GENERATOR L3 CURRENT

2.5 COOLING SYSTEM

THE GENERATOR SET SHALL BE EQUIPPED WITH A RAIL-MOUNTED, ENGINE-DRIVEN RADIATOR WITH BLOWER FAN AND ALL ACCESSORIES. THE COOLING SYSTEM SHALL BE SIZED TO OPERATE AT FULL LOAD CONDITIONS AND 110 F+ AMBIENT AIR ENTERING THE ROOM OR ENCLOSURE (IF AN ENCLOSURE IS SPECIFIED). THE GENERATOR SET SUPPLIER IS RESPONSIBLE FOR PROVIDING A PROPERLY SIZED COOLING SYSTEM BASED ON THE ENCLOSURE STATIC PRESSURE RESTRICTION.

2.6 FUEL SYSTEM

2.6.1 FUEL SYSTEM SPECIFICATIONS

THE FUEL SYSTEM SHALL BE INTEGRAL WITH THE ENGINE. IN ADDITION TO THE STANDARD FUEL FILTERS PROVIDED BY THE ENGINE MANUFACTURER, THERE SHALL ALSO BE INSTALLED A PRIMARY FUEL FILTER/WATER SEPARATOR IN THE FUEL INLET LINE TO THE ENGINE. ALL FUEL PIPING SHALL BE BLACK IRON OR FLEXIBLE FUEL HOSE RATED FOR THIS SERVICE. NO GALVANIZED PIPING WILL BE PERMITTED. FLEXIBLE FUEL LINES SHALL BE MINIMALLY RATED FOR 300 DEGREES F AND 100 PSI.

2.6.2 FUEL SUB BASE TANK

PROVIDE A DOUBLE WALL SUB-BASE TANK CONSTRUCTED TO MEET ALL LOCAL CODES AND REQUIREMENTS. A FUEL TANK BASE OF 48 HOUR CAPACITY SHALL BE PROVIDED AS AN INTEGRAL PART OF THE ENCLOSURE. IT SHALL BE CONTAINED IN A RUPTURE BASIN WITH 110% CAPACITY. THE TANK SHALL MEET UL142 STANDARDS. A LOCKING FILL CAP, A MECHANICAL READING FUEL LEVEL GAUGE, LOW FUEL LEVEL ALARM CONTACT, AND FUEL TANK RUPTURE ALARM CONTACT SHALL BE PROVIDED.

2.7 EXHAUST SYSTEM

2.7.1 SILENCER

A CRITICAL GRADE SILENCER, COMPANION FLANGES, AND FLEXIBLE EXHAUST FITTING PROPERLY SIZED SHALL BE FURNISHED AND INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION. MOUNTING SHALL BE PROVIDED BY THE CONTRACTOR AS SHOWN ON THE DRAWINGS (INDOOR INSTALLATIONS ONLY). THE SILENCER SHALL BE MOUNTED SO THAT ITS WEIGHT IS NOT SUPPORTED BY THE ENGINE NOR WILL EXHAUST SYSTEM GROWTH DUE TO THERMAL EXPANSION BE IMPOSED ON THE ENGINE. EXHAUST PIPE SIZE SHALL BE SUFFICIENT TO ENSURE THAT EXHAUST BACKPRESSURE DOES NOT EXCEED THE MAXIMUM LIMITATIONS SPECIFIED BY THE ENGINE MANUFACTURER.

2.8 STARTING SYSTEM

2.8.1 STARTING MOTOR

A DC ELECTRIC STARTING SYSTEM WITH POSITIVE ENGAGEMENT SHALL BE FURNISHED. THE MOTOR VOLTAGE SHALL BE AS RECOMMENDED BY THE ENGINE MANUFACTURER.

2.8.2 JACKET WATER HEATER

JACKET WATER HEATER SHALL BE PROVIDED AND SHALL BE SIZED TO INSURE THAT GENSET WILL START WITHIN THE SPECIFIED TIME PERIOD AND AMBIENT CONDITIONS.

2.8.3 BATTERIES

BATTERIES - A LEAD-ACID STORAGE BATTERY SET OF THE HEAVY-DUTY STARTING TYPE SHALL BE PROVIDED. BATTERY VOLTAGE SHALL BE COMPATIBLE WITH THE STARTING SYSTEM. THE BATTERIES SUPPLIED SHALL MEET NFPA 110 CRANKING REQUIREMENTS OF 90 SECONDS MINIMUM OF TOTAL CRANKING TIME. BATTERY SPECIFICATIONS (TYPE, AMP-HOUR RATING, COLD CRANKING AMPS) TO BE PROVIDED IN THE SUBMITTAL.

Table with columns: NO., REVISION, DATE



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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10028800

MAYFAIR LIFT STATION #3 AND FORCE MAIN
NEW BRAUNFELS, TEXAS
GENERATOR SPECIFICATIONS



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2.8.4 BATTERY CHARGER

BATTERY CHARGER - A CURRENT LIMITING BATTERY CHARGER SHALL BE FURNISHED TO AUTOMATICALLY RECHARGE BATTERIES. THE CHARGER SHALL BE DUAL CHARGE RATE WITH AUTOMATIC SWITCHING TO THE BOOST RATE WHEN REQUIRED. THE BATTERY CHARGER SHALL BE MOUNTED ON THE GENSET PACKAGE OR INSIDE THE GENSET ENCLOSURE/ROOM.

2.9 ENCLOSURE

2.9.1 SOUND ATTENUATED ENCLOSURE

THE COMPLETE DIESEL ENGINE GENERATOR SET, INCLUDING GENERATOR CONTROL PANEL, ENGINE STARTING BATTERIES AND FUEL OIL TANK, SHALL BE ENCLOSED IN A FACTORY ASSEMBLED, SOUND ATTENUATED ENCLOSURE MOUNTED ON THE FUEL TANK BASE. 1. A WEATHER RESISTANT, SOUND ATTENUATED ENCLOSURE OF STEEL WITH ELECTROSTATICALLY APPLIED POWDER COATED BAKED POLYESTER PAINT. THE ENCLOSURE SHALL HAVE A RESULTING SOUND LEVEL OF 71.2 DBA @ 23 FT WITH THE GENSET RUNNING UNDER FULL LOAD. IT SHALL CONSIST OF A ROOF, SIDE WALLS, AND END WALLS. FASTENERS SHALL BE EITHER ZINC PLATED OR STAINLESS STEEL. 2. ENCLOSURE SOUND ATTENUATION: ACOUSTICAL FOAM SHALL BE PROVIDED BETWEEN ALL SUPPORTS AND INSIDE DOORS AND SOUND Baffles ON AIR INTAKE AND AIR DISCHARGE.

3 EXECUTION

3.1 INSTALLATION

INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, THE PROJECT DRAWINGS AND SPECIFICATIONS, AND ALL APPLICABLE CODES.

3.2 START-UP AND TESTING

COORDINATE ALL START-UP AND TESTING ACTIVITIES WITH THE ENGINEER AND OWNER. AFTER INSTALLATION IS COMPLETE AND NORMAL POWER IS AVAILABLE, THE MANUFACTURER'S LOCAL DEALER SHALL PERFORM THE FOLLOWING:

NFPA 110 LOAD TEST REQS

- 1. VERIFY THAT THE EQUIPMENT IS INSTALLED PROPERLY.
2. CHECK ALL AUXILIARY DEVICES FOR PROPER OPERATION, INCLUDING BATTERY CHARGER, JACKET WATER HEATER(S), GENERATOR SPACE HEATER, REMOTE ANNUNCIATOR, ETC.
3. TEST ALL ALARMS AND SAFETY SHUTDOWN DEVICES FOR PROPER OPERATION AND ANNUNCIATION.
4. CHECK ALL FLUID LEVELS.
5. START ENGINE AND CHECK FOR EXHAUST, OIL, FUEL LEAKS, VIBRATIONS, ETC.
6. VERIFY PROPER VOLTAGE AND PHASE ROTATION AT THE TRANSFER SWITCH BEFORE CONNECTING TO THE LOAD.
7. CONNECT THE GENERATOR TO BUILDING LOAD AND VERIFY THAT THE GENERATOR WILL START AND RUN ALL DESIGNATED LOADS.
8. THE SYSTEM SHALL BE TESTED UNDER FULL LOAD AND MONITOR THE FOLLOWING READINGS:

- OIL PRESSURE
COOLANT TEMPERATURE
BATTERY CHARGE RATE
AC VOLTS
AC AMPERES- ALL PHASES
FREQUENCY
KILOWATTS
AMBIENT TEMPERATURE

3.3 OPERATION AND MAINTENANCE MANUALS

PROVIDE TWO (2) SETS OF OPERATION AND MAINTENANCE MANUALS COVERING THE GENERATOR, SWITCHGEAR, AND AUXILIARY COMPONENTS. INCLUDE FINAL AS-BUILT WIRING INTERCONNECT DIAGRAMS AND RECOMMENDED PREVENTATIVE MAINTENANCE SCHEDULES.

3.4 TRAINING

3.4.1 ON-SITE TRAINING

PROVIDE ON-SITE TRAINING TO INSTRUCT THE OWNER'S PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF THE EQUIPMENT. REVIEW OPERATION AND MAINTENANCE MANUALS, PARTS MANUALS, AND EMERGENCY SERVICE PROCEDURES.

AUTOMATIC TRANSFER SWITCH 125 AMP, 4 POLE, NEMA 4XSS

1 GENERAL

1.1 SCOPE

A. IT IS THE INTENT OF THIS SPECIFICATION TO SECURE A TRANSFER SWITCH THAT HAS BEEN PROTOTYPE TESTED, FACTORY BUILT, PRODUCTION TESTED AND SITE TESTED. A TRANSFER SWITCH WITH THE NUMBER OF POLES, VOLTAGE AND CURRENT RATINGS SHOWN ON THE PLANS AND SPECIFIED HEREIN SHALL BE PROVIDED.

1.2 CODES AND STANDARDS

- A. THE AUTOMATIC TRANSFER SWITCH SHALL CONFORM TO THE REQUIREMENTS OF:
1. UL 1008: UNDERWRITERS LABORATORIES STANDARD FOR AUTOMATIC TRANSFER SWITCHES
2. CSA: C22.2 NO. 178 CERTIFIED
3. IEC: 947-6-1 CERTIFIED AT 480 VAC
4. NFPA 70: NATIONAL ELECTRICAL CODE INCLUDING USE IN EMERGENCY AND STANDBY SYSTEMS IN ACCORDANCE WITH ARTICLES 517, 700, 701, 702
5. NFPA 99: ESSENTIAL ELECTRICAL SYSTEMS FOR HEALTH CARE FACILITIES
6. NFPA 101: LIFE SAFETY CODE
7. NFPA 110: STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS
8. IEEE 241: I.E.E.E. RECOMMENDED PRACTICE FOR ELECTRICAL POWER SYSTEMS IN COMMERCIAL BUILDINGS
9. IEEE 446: I.E.E.E. RECOMMENDED PRACTICE FOR EMERGENCY AND STANDBY POWER SYSTEMS
10. NEMA ICS10: AC AUTOMATIC TRANSFER SWITCH EQUIPMENT
11. UL 50/508: ENCLOSURES
12. ICS 6: ENCLOSURES
13. ANSI C33.76: ENCLOSURES
14. NEMA 250: ENCLOSURES
15. IEEE 472: (ANSI C37.90A): RINGING WAVE IMMUNITY
16. EN55022 (CISPR11): CONDUCTED AND RADIATED EMISSIONS (EXCEEDS EN55011 & MILSTD 461 CLASS 3)
17. EN61000-4-2: (LEVEL 4): ESD IMMUNITY TEST CLASS B
18. EN61000-4-3: (ENV50140): RADIATED RF, ELECTROMAGNETIC FIELD IMMUNITY
19. EN61000-4-4: ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST
20. EN61000-4-5: IEEE C62.41: SURGE IMMUNITY TEST (1.2 X 50\_\_\_S, 5 & 8 KV)
21. EN61000-4-6: (ENV50141): CONDUCTED IMMUNITY TEST
22. EN61000-4-11: VOLTAGE DIPS AND INTERRUPTION IMMUNITY
23. IEE-693-2005: SEISMIC CERTIFIED AT HIGH LEVEL WITH 2.5 AMPLIFICATION FACTOR
24. IBC-2003: AT IF=1.5 FOR Z/H LESS THAN OR EQUAL TO (IN ACCORDANCE WITH ICC-ES-AC156)

1.3 APPROVED MANUFACTURERS

A. THE AUTOMATIC TRANSFER SWITCH SHALL BE SUPPLIED BY:

- ASCO®
• RUSELECTRIC®
• ABB-ZENITH®

OR BY ALTERNATE MANUFACTURERS WHO SHALL SUBMIT A REQUEST ONE WEEK PRIOR TO BID AND INCLUDE A WRITTEN LIST OF DEVIATIONS FROM THIS SPECIFICATION TO BE CONSIDERED FOR APPROVAL.

2 PRODUCTS

2.1 PERFORMANCE AND CONSTRUCTION

- A. THE AUTOMATIC TRANSFER SWITCH SHALL BE OF DOUBLE THROW CONSTRUCTION OPERATED BY A RELIABLE SOLENOID DRIVEN MECHANISM. THERE SHALL BE A DIRECT MECHANICAL COUPLING TO FACILITATE TRANSFER IN 6 CYCLES OR LESS.
B. THE TRANSFER SWITCH SHALL INCORPORATE A TIMED, CENTER-OFF OR NEUTRAL POSITION FOR MOTOR AND INDUCTIVE LOAD DECAY. TRANSFER TIME SHALL BE ADJUSTABLE FROM 0-10 MINUTES TO EITHER SOURCE. A MECHANICAL INTERLOCK SHALL BE PROVIDED TO ENSURE THAT BOTH SETS OF CONTACTS CANNOT BE CLOSED AT THE SAME TIME.
C. FOR SWITCHES INSTALLED IN SYSTEMS HAVING GROUND FAULT PROTECTIVE DEVICES, AND/OR WIRED SO AS TO BE DESIGNATED A SEPARATELY DERIVED SYSTEM BY THE NEC, A 4TH POLE SHALL BE PROVIDED. THIS ADDITIONAL POLE SHALL ISOLATE THE NORMAL AND EMERGENCY NEUTRALS. THE NEUTRAL POLE SHALL HAVE THE SAME WITHSTAND AND OPERATIONAL RATINGS AS THE OTHER POLES AND SHALL BE ARRANGED TO BREAK LAST AND MAKE FIRST TO MINIMIZE NEUTRAL SWITCHING TRANSIENTS. ADD-ON OR ACCESSORY POLES THAT ARE NOT OF IDENTICAL CONSTRUCTION AND WITHSTAND CAPABILITY WILL NOT BE CONSIDERED.
D. THE CONTACT STRUCTURE SHALL CONSIST OF A MAIN CURRENT CARRYING CONTACT, WHICH IS A SILVER ALLOY WITH A MINIMUM OF 50% SILVER CONTENT. THE CURRENT CARRYING CONTACTS SHALL BE PROTECTED BY SILVER TUNGSTEN ARCING CONTACTS ON ALL SIZES ABOVE 400 AMPS.
E. THE TRANSFER SWITCH MANUFACTURER SHALL SUBMIT TEST DATA FOR EACH SIZE SWITCH, SHOWING IT CAN WITHSTAND FAULT CURRENTS OF THE MAGNITUDE AND THE DURATION NECESSARY TO MAINTAIN THE SYSTEM INTEGRITY. MINIMUM UL LISTED WITHSTAND AND CLOSE INTO FAULT RATINGS SHALL BE AS FOLLOWS:
SIZE (AMPS) COORDINATED BREAKER CURRENT LIMITING FUSE
40 - 600 50,000 200,000
800 65,000 200,000
1000 - 1200 85,000 200,000
1600 - 3000 100,000 200,000
F. A DIELECTRIC TEST AT THE CONCLUSION OF THE WITHSTAND AND CLOSING TESTS SHALL BE PERFORMED.
G. THE AUTOMATIC TRANSFER SWITCH MANUFACTURER SHALL CERTIFY SUFFICIENT ARC INTERRUPTING CAPABILITIES FOR 50 CYCLES OF OPERATION BETWEEN A NORMAL AND EMERGENCY SOURCE THAT ARE 120 DEGREES OUT OF PHASE AT 480 VOLTS, 600% OF RATED CURRENT AT .50 POWER FACTOR. THIS CERTIFICATION IS TO ENSURE THAT THERE WILL BE NO CURRENT FLOW BETWEEN THE TWO ISOLATED SOURCES DURING SWITCHING.
H. ALL RELAYS SHALL BE CONTINUOUS DUTY INDUSTRIAL TYPE WITH WIPING CONTACTS. COILS, RELAYS, TIMERS AND ACCESSORIES SHALL BE READILY FRONT ACCESSIBLE. THE CONTROL PANEL AND POWER SECTION SHALL BE INTERCONNECTED WITH A HARNESS AND KEYED DISCONNECT PLUGS FOR MAINTENANCE.
I. MAIN AND ARCING CONTACTS SHALL BE VISIBLE WITHOUT MAJOR DISASSEMBLY TO FACILITATE INSPECTION AND MAINTENANCE.
J. A MANUAL HANDLE SHALL BE PROVIDED FOR MAINTENANCE PURPOSES WITH THE SWITCH DE-ENERGIZED. AN OPERATOR DISCONNECT SWITCH SHALL BE PROVIDED TO DEFEAT AUTOMATIC OPERATION DURING MAINTENANCE, INSPECTION OR MANUAL OPERATION.
K. SWITCHES COMPOSED OF MOLDED CASE BREAKERS, LIGHTING CONTACTORS OR COMPONENTS THEREOF WILL NOT BE ACCEPTABLE.
L. THE CURRENT RATING SHALL BE A CONTINUOUS RATING WHEN THE SWITCH IS INSTALLED IN AN ENCLOSURE, AND SHALL CONFORM TO NEMA TEMPERATURE RISE STANDARDS.
M. THE UNIT SHALL BE RATED BASED ON ALL CLASSES OF LOADS, I.E., RESISTIVE, TUNGSTEN, BALLAST AND INDUCTIVE LOADS. SWITCHES RATED 400 AMPERES OR LESS SHALL BE UL LISTED FOR 100% TUNGSTEN LAMP LOAD.
N. TEMPERATURE RISE TESTS IN ACCORDANCE WITH UL 1008 SHALL HAVE BEEN CONDUCTED AFTER THE OVERLOAD AND ENDURANCE TESTS TO CONFIRM THE ABILITY OF THE UNITS TO CARRY THEIR RATED CURRENTS WITHIN THE ALLOWABLE TEMPERATURE LIMITS.
O. UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS, THE SWITCH SHALL BE MOUNTED IN A NEMA 1 ENCLOSURE.

2.2 CONTROL

- A. THE CONTROL PANEL SHALL BE OPTO-ISOLATED FROM ELECTRICAL NOISE AND PROVIDED WITH THE FOLLOWING INHERENT CONTROL FUNCTIONS AND CAPABILITIES:
1. EASY-TO-VIEW 4X20 LCD DISPLAY WITH LONG LASTING LED INDICATORS.
2. CONTROL PANEL SHALL DISPLAY VOLTAGE AND FREQUENCY OF BOTH SOURCES.
3. THE USER SHALL BE ABLE TO VIEW THE LAST 16 RECORDED EVENTS.
4. CAPABILITY FOR EXTERNAL COMMUNICATION AND NETWORK INTERFACE.
5. ADJUSTMENTS TO ALL SETTINGS SHALL BE MADE FROM THE FRONT OF THE PANEL WITHOUT OPENING THE DOOR.
B. THE TRANSFER SWITCH SHALL BE EQUIPPED WITH A MICROPROCESSOR BASED CONTROL PANEL. THE CONTROL PANEL SHALL PERFORM THE OPERATIONAL AND DISPLAY FUNCTIONS OF THE TRANSFER SWITCH. THE DISPLAY FUNCTIONS OF THE CONTROL PANEL SHALL INCLUDE ATS POSITION, SOURCE AVAILABILITY, SEQUENCE INDICATION AND DIAGNOSTICS.
C. ALL PROGRAMMABLE AND CONTROL FUNCTIONS SHALL BE PASS CODE PROTECTED AND ACCESSIBLE THROUGH THE KEYPAD.
D. THE CONTROL PANEL SHALL BE PROVIDED WITH A SIMPLE USER INTERFACE FOR TRANSFER SWITCH MONITORING, CONTROL AND FIELD CHANGEABLE FUNCTIONS AND SETTINGS.
E. TOUCH PAD TEST SWITCH WITH FAST TEST/LOAD/NO LOAD SELECTION CAPABILITY TO SIMULATE A NORMAL SOURCE FAILURE.
F. THE CONTROLLER SHALL PROVIDE DIGITAL TIMER ADJUSTMENTS WITH 1-SECOND RESOLUTION. VOLTAGE AND FREQUENCY SHALL BE ADJUSTABLE TO 1% RESOLUTION TO FACILITATE ACCURATE TRANSFER.
G. TO ENSURE RELIABLE AND CONSISTENT USER OPERATION THE CONTROLS MUST BE EQUIPPED WITH NONVOLATILE MEMORY AND ALLOW AUTOMATIC DAYLIGHT SAVINGS TIME ADJUSTMENT.

3 OPERATION

3.1 SEQUENCE OF OPERATION

- A. THE ATS SHALL INCORPORATE ADJUSTABLE THREE PHASE UNDER VOLTAGE SENSING ON THE NORMAL SOURCE.
B. WHEN THE VOLTAGE OF ANY PHASE OF THE NORMAL SOURCE IS REDUCED TO 80% OF NOMINAL VOLTAGE, FOR A PERIOD OF 0-10 SECONDS (PROGRAMMABLE) A PILOT CONTACT SHALL CLOSE TO INITIATE STARTING OF THE ENGINE GENERATOR.
C. THE ATS SHALL INCORPORATE ADJUSTABLE UNDER VOLTAGE AND UNDER FREQUENCY SENSING ON THE EMERGENCY SOURCE. IN ADDITION, THE SWITCH WILL BE PROVIDED WITH A CENTER-OFF OR NEUTRAL POSITION
D. WHEN THE EMERGENCY SOURCE HAS REACHED A VOLTAGE VALUE OF 90% NOMINAL, ACHIEVED FREQUENCY WITHIN 95% OF THE RATED VALUE AND HAS REACHED THE END OF THE ADJUSTABLE DELAY, THE LOAD SHALL BE TRANSFERRED TO THE NEUTRAL POSITION FOR AN ADJUSTABLE TIME PERIOD OF 0-10 MINUTES. UPON COMPLETION OF THIS NEUTRAL TIME DELAY THE SWITCH SHALL BE TRANSFERRED TO THE EMERGENCY SOURCE.
E. WHEN THE NORMAL SOURCE HAS BEEN RESTORED TO NOT LESS THAN 90% OF RATED VOLTAGE ON ALL PHASES AND THE TIME DELAY TRANSFER TO NORMAL HAS EXPIRED, THE LOAD SHALL BE RETRANSFERRED TO THE NEUTRAL POSITION FOR AN ADJUSTABLE TIME PERIOD OF 0-10 MINUTES. AFTER WHICH THE SWITCH SHALL BE CONNECTED TO THE NORMAL SOURCE. THE GENERATOR SHALL RUN UNLOADED FOR 5 MINUTES (PROGRAMMABLE) AND THEN AUTOMATICALLY SHUT DOWN. THE GENERATOR SHALL BE READY FOR AUTOMATIC OPERATION UPON THE NEXT FAILURE OF THE NORMAL SOURCE.
F. IF THE ENGINE GENERATOR SHOULD FAIL WHILE CARRYING THE LOAD, RETRANSFER TO THE NORMAL SOURCE SHALL BE MADE INSTANTANEOUSLY UPON RESTORATION OF PROPER VOLTAGE (90%) ON THE NORMAL SOURCE.
G. INSPECTION AND OPERATIONAL TESTING/DEMONSTATION OF THE ATS SHALL BE CONDUCTED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE TO INDICATE THE ATS SATISFIES THESE SPECIFICATIONS.

3.2 STANDARD ACCESSORIES

- A. ADJUSTABLE TIME DELAY TO OVERRIDE MOMENTARY NORMAL SOURCE FAILURE PRIOR TO ENGINE START. FIELD PROGRAMMABLE 0-10 SECONDS FACTORY SET AT 3 SECONDS.
B. ADJUSTABLE TIME DELAY ON RETRANSFER TO NORMAL SOURCE, PROGRAMMABLE 0-60 MINUTES FACTORY SET AT 30 MINUTES. IF THE EMERGENCY SOURCE FAILS DURING THE RETRANSFER TIME DELAY, THE TRANSFER SWITCH CONTROLS SHALL AUTOMATICALLY BYPASS THE TIME DELAY AND IMMEDIATELY RETRANSFER TO THE NORMAL POSITION.
C. A TIME DELAY ON TRANSFER TO EMERGENCY, PROGRAMMABLE 0-5 MINUTES, FACTORY SET AT 1 SECOND.
D. A TIME DELAY AND CONTROL PANEL DISPLAY ON TRANSFER TO EITHER SOURCE WITH A CENTER-OFF POSITION, PROGRAMMABLE 0-10 MINUTES, AND FACTORY SET AT 5 SECONDS.
E. AN IN-PHASE MONITOR SHALL BE PROVIDED. THE MONITOR SHALL COMPARE THE PHASE ANGLE DIFFERENCE BETWEEN THE NORMAL AND EMERGENCY SOURCES AND BE PROGRAMMED TO ANTICIPATE THE ZERO CROSSING POINT TO MINIMIZE SWITCHING TRANSIENTS.
F. AN EXERCISER TIMER WITH MOMENTARY TEST PUSHBUTTON SHALL BE INCORPORATED WITHIN THE MICROPROCESSOR AND SHALL BE CAPABLE OF STARTING THE ENGINE GENERATOR SET AND TRANSFERRING THE LOAD (WHEN SELECTED) FOR EXERCISE PURPOSES ON A DAILY, WEEKLY OR MONTHLY BASIS. THE EXERCISER SHALL CONTAIN A BATTERY FOR MEMORY RETENTION DURING AN OUTAGE.
G. PROVIDE A MOMENTARY PUSHBUTTON TO BYPASS THE TIME DELAYS ON TRANSFER AND RETRANSFER AND PROGRAMMABLE COMMIT/NO COMMIT CONTROL LOGIC.
H. THE CONTROLLER SHALL ACCEPT A REMOTE PEAK SHAVE OR TEST INPUT TO SIGNAL THE TRANSFER SWITCH TO THE EMERGENCY POSITION.
I. A SET OF CUSTOMER CONTACTS SHALL BE PROVIDED TO INDICATE BOTH EMERGENCY AND NORMAL SOURCE POSITION.
J. ADDITIONAL AUXILIARY CONTACTS (A3) - CLOSED WHEN THE TRANSFER SWITCH IS IN SOURCE 2 POSITION.
K. ADDITIONAL AUXILIARY CONTACTS (A4) - CLOSED WHEN THE TRANSFER SWITCH IS IN SOURCE 1 POSITION.

4 EXECUTION

4.1 GENERAL

A. THE TRANSFER SWITCH SHALL BE INSTALLED AS SHOWN ON THE PLANS, IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS AND ALL APPLICABLE CODES.

4.2 FACTORY TESTS

A. THE TRANSFER SWITCH MANUFACTURER SHALL PERFORM A COMPLETE FUNCTIONAL TEST ON THE SWITCH, CONTROLLER AND ACCESSORIES PRIOR TO SHIPPING FROM THE FACTORY. A CERTIFIED TEST REPORT SHALL BE AVAILABLE UPON REQUEST.

4.3 SERVICE

A. THE MANUFACTURER SHALL MAINTAIN A NATIONAL SERVICE ORGANIZATION THAT IS FACTORY TRAINED AND CERTIFIED FOR TRANSFER SWITCH EQUIPMENT. IN ADDITION, THE SERVICE ORGANIZATION SHALL BE AVAILABLE 24 HOURS PER DAY, 365 DAYS PER YEAR.

4.4 WARRANTY

A. THE AUTOMATIC TRANSFER SWITCH SHALL BE WARRANTED AGAINST DEFECTIVE WORKMANSHIP FOR A PERIOD OF TWO YEARS.

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THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.



S. Kanetzky Engineering, LLC. 14425 Falcon Head Blvd. Building B, Suite 100 Bee Cave, Texas 78738 (512) 326-3380 www.skaneng.com TBPE Firm No. F-2356 SKE PROJECT # 2390824

Table with columns for DATE, NO., and REVISION.



PAPE-DAWSON 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 832.632.5633 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM # 10228690

MAYFAIR LIFT STATION #3 AND FORCE MAIN NEW BRAUNFELS, TEXAS GENERATOR AND ATS SPECIFICATIONS

Table with columns for JOB NO., DATE, DESIGNER, CHECKED, and SHEET. SHEET E1.3

SCADA SYSTEM - GENERAL PROVISIONS

PART 1: GENERAL

1.01 SCOPE OF WORK:

A. THE PROJECT SHALL CONSIST OF A COMPLETE AND OPERATING SCADA SYSTEM FOR THE FOLLOWING SITES:

- MAYFAIR LIFT STATION #3

THE COMPLETE SYSTEM SHALL INCLUDE BUT NOT LIMITED TO ALL HARDWARE, SOFTWARE, LABOR, AND COAX CABLE AS LISTED IN THIS PERFORMANCE SPECIFICATION. THE CONTRACTOR SHALL VISIT EACH SITE PRIOR TO SUBMITTING THEIR BID.

B. A SINGLE PRE-APPROVED SCADA SYSTEM INTEGRATOR (SSI) SHALL FURNISH ALL SERVICES AND EQUIPMENT DEFINED HEREIN AND IN OTHER SPECIFICATION SECTIONS AS REQUIRED TO PROVIDE A FULLY-FUNCTIONAL SCADA SYSTEM.

PRE-APPROVED SSI'S

- 1. TRAC-N-TROL (512-930-5721)
2. PRIME CONTROLS (830-358-3008)
3. MW CONTROLS (737-600-7411)

C. THE SSI SHALL PROVIDE ALL MATERIALS, EQUIPMENT, LABOR, AND SERVICES REQUIRED TO ACHIEVE A FULLY INTEGRATED AND OPERATIONAL SCADA SYSTEM. THE SSI SHALL DESIGN AND COORDINATE THE CONTROL SYSTEM FOR PROPER OPERATION WITH RELATED EQUIPMENT AND MATERIALS FURNISHED BY OTHER SUPPLIERS UNDER OTHER SECTIONS OF THESE SPECIFICATIONS AND WITH RELATED EXISTING EQUIPMENT. THE SSI SHALL PROVIDE A TURNKEY SCADA SYSTEM INCLUDING ALL REQUIRED ELECTRICAL CONDUIT AND WIRE UNLESS OTHERWISE SPECIFIED.

D. TO FACILITATE THE OWNER'S FUTURE CONSTRUCTION, OPERATION, AND MAINTENANCE, PRODUCTS SHALL BE BY A MAJOR INSTRUMENTATION AND SCADA EQUIPMENT MANUFACTURERS, WITH PANEL MOUNTED DEVICES OF THE SAME TYPE AND MODEL AS FAR AS POSSIBLE.

E. ALL MATERIALS, EQUIPMENT, LABOR, AND SERVICES NECESSARY TO ACHIEVE THE MONITORING AND CONTROL FUNCTIONS DESCRIBED HEREIN SHALL BE PROVIDED IN A TIMELY MANNER SUCH THAT THE MONITORING AND CONTROL FUNCTIONS ARE AVAILABLE WHEN THE EQUIPMENT IS READY TO BE PLACED INTO SERVICE.

F. A MANDATORY PRE-BID WALK-THROUGH SHALL BE SCHEDULED FOR ALL PLAN HOLDERS BIDDING ON THE SCADA PORTION OF THIS PROJECT.

1.02 QUALIFICATIONS AND REQUIREMENTS:

A. IN ORDER TO ENSURE A COMPLETE AND SUCCESSFUL PROJECT, THE SSI'S MUST DEMONSTRATE A HISTORY OF SUCCESSFUL REFERENCES AND FINANCIAL STABILITY, AND FIVE YEARS OF SUSTAINED BUSINESS ACTIVITY IN THE SCADA INDUSTRY SERVING WATER AND WASTEWATER UTILITIES IN TEXAS.

B. IN ORDER TO ENSURE QUALITY CONTROL AND COMPATIBILITY WITH EXISTING OPERATIONS, THE INDIVIDUAL INTEGRATOR(S) TO COMPLETE THE WORK MUST BE SPECIFIED IN THE PROPOSAL AND THEIR EXPERIENCE MUST BE ACCEPTABLE, WITHOUT LIMITATION, IN THE FOLLOWING AREAS:

LIST SPECIFIC QUALIFICATIONS INCLUDING:

1. INTEGRATION EXPERIENCE OF WATER UTILITIES SERVING SIMILAR GEOGRAPHICAL OR COUNTY-WIDE AREAS OF AT LEAST TEN PROJECTS OF SUCCESSFUL REFERENCE FOR RADIO TELEMETRY SCADA WITHIN THE STATE OF TEXAS.

C. IN ORDER TO ENSURE ADEQUATE RESPONSE TO EMERGENCIES AND SERVICE NEEDS, THE SSI MUST HAVE A SERVICE FACILITY WITHIN A 150 MILE RADIUS OF THE WATER TREATMENT PLANT.

D. THE ATTACHED 'SCOPE OF PROJECT AND EQUIPMENT SPECIFICATIONS' WILL BE REQUIRED AS PRESENTED. SEE SECTION ON 'SUBSTITUTE EQUIPMENT'.

E. THE SSI WILL SPECIFY EQUIPMENT, SIZES AND QUANTITIES WHICH ARE PROPOSED TO BE USED FOR THE PROJECT. ALL EQUIPMENT SPECIFIED SHALL BE NON-PROPRIETARY AND UNIVERSALLY AVAILABLE TO ALL SSI'S. ALL COMPUTER AND COMPUTER RELATED EQUIPMENT SHALL BE COMPLIANT FOR DATE-BASED FUNCTIONALITY. A COMPLIANCE CERTIFICATE SHALL BE REQUIRED FROM THE SSI STATING COMPLIANCE WITH THESE REQUIREMENTS.

F. THE SSI SHALL PROVIDE A SCHEDULE OF THE WARRANTY PROVIDED FOR WORK COMPLETED UNDER THIS PROPOSAL AND NON-WARRANTY SERVICE SCHEDULE WITH PRICING AND TERMS BEYOND THE WARRANTY PERIOD AS A PART OF ITS PROPOSAL.

G. THE SSI SHALL BE A 'SYSTEMS HOUSE' REGULARLY ENGAGED IN THE DESIGN AND THE INSTALLATION OF COMPUTER SYSTEMS AND THEIR ASSOCIATED SUBSYSTEM AS THEY ARE APPLIED TO THE RETAIL PUBLIC WATER UTILITY INDUSTRY. FOR THE PURPOSES OF THIS SPECIFICATIONS SECTION, A 'SYSTEMS HOUSE' SHALL BE INTERPRETED TO MEAN AN ORGANIZATION THAT COMPLIES WITH ALL OF THE FOLLOWING CRITERIA:

1. EMPLOY'S DESIGN AND TECHNICAL PERSONNEL ON THIS PROJECT WHO HAVE SUCCESSFULLY COMPLETED A MANUFACTURER'S TRAINING COURSE ON THE CONFIGURATION AND IMPLEMENTATION OF THE SPECIFIC HARDWARE AND SOFTWARE FOR THIS PROJECT.

H. THE SSI SHALL MAINTAIN A FULLY EQUIPPED OFFICE/PRODUCTION FACILITY WITH FULL TIME EMPLOYEES CAPABLE OF, CONFIGURING, INSTALLING, CALIBRATING, TROUBLESHOOTING, AND TESTING THE SYSTEM SPECIFIED HEREIN.

I. LISTED SSI'S SHALL NOT BE REQUIRED TO SUBMIT A QUALIFICATION PROPOSAL. SSI'S INTERESTED IN BEING LISTED AS AN EQUAL SHALL SUBMIT THREE (3) COPIES OF A QUALIFICATIONS PROPOSAL, AS REQUIRED HEREIN, TO THE ENGINEER NO LATER THAN TEN (10) DAYS BEFORE THE BID OPENING DATE. A LIST OF APPROVED EQUALS WILL BE ISSUED NO LATER FIVE (5) DAYS BEFORE THE BID OPENING DATE BY ADDENDUM.

1. THE QUALIFICATIONS PROPOSAL SHALL PROVIDE DETAILS AND A DESCRIPTION OF HOW THE SSI PROPOSES TO FULFILL THE REQUIREMENTS SET FORTH IN THIS SPECIFICATION. THE SSI SHALL ALSO BE CAPABLE OF SATISFYING THE OWNER'S FUTURE NEEDS WITH REGARD TO A FULLY FUNCTIONAL SCADA SYSTEM. THE SSI SHALL PRESENT THE PROPOSAL IN SUFFICIENT DETAIL SO THAT PROPER EVALUATION REGARDING THE EXPERIENCE AND CAPABILITIES OF THE SSI CAN BE PERFORMED. ALL ITEMS LISTED AS QUALIFICATION REQUIREMENTS SET FORTH IN THIS SECTION MUST BE PROVIDED FOR PROPER EVALUATION. FAILURE TO PROVIDE SUCH DOCUMENTATION WILL DISQUALIFY THE APPLICANT.

2. THE PROPOSAL SHALL CONTAIN EVIDENCE THAT THE SSI HAS SUFFICIENT FINANCIAL RESOURCES TO MEET THE OBLIGATIONS INCIDENTAL TO THE PERFORMANCE OF THE WORK INCLUDING BONDING. (THIS REQUIREMENT MAY BE PROVIDED IN THE FORM OF A VERIFIABLE OR CERTIFIED FINANCIAL REPORT FOR THE COMPANY'S LATEST FISCAL YEAR).

3. THE PROPOSAL SHALL CONTAIN A LIST OF PERSONNEL AVAILABLE FOR ASSIGNMENT TO THE RESPONSIBLE POSITIONS OF PROJECT MANAGER, PROJECT ENGINEER, LEAD PROGRAMMER, INSTALLATION SUPERVISOR, AND AREA SERVICE REPRESENTATIVE. ALSO, INCLUDE A CONCISE RESUME OF EACH INDIVIDUAL'S EDUCATION, TRAINING, WORK EXPERIENCE, AND ACCOMPLISHMENTS.

4. THE PROPOSAL SHALL CONTAIN THE FOLLOWING SPECIFIC INFORMATION:

- A. LOCATION OF SERVICE CENTER IN RELATION TO THE OWNER'S OFFICE.
B. TECHNICAL VALIDATION SAMPLES OF RECENTLY COMPLETED AND SIMILAR SCOPE PROJECTS.
C. A DESCRIPTION OF HOW THE SUPPLIER PLANS TO EXECUTE THE VARIOUS FUNCTIONS AND LOCATIONS WHERE THE VARIOUS WORK CAN BE PERFORMED, INCLUDING EXISTING LOCATIONS TO INTEGRATE INTO THE FUTURE PROJECTS AS DESIGNATED BY THE OWNER.

5. THE SSI SHALL BE REQUIRED TO PROVIDE A REFERENCE LIST OF A MINIMUM OF FIVE (5) YEARS RECENT PAST EXPERIENCE IN THE DESIGN, ASSEMBLY, AND COMMISSIONING OF INSTRUMENTATION AND CONTROL SYSTEMS OF COMPARABLE SIZE, TYPE, AND COMPLEXITY TO THE PROPOSED PROJECT. THE SSI SHALL BE REQUIRED TO HAVE HIS/HER OWN IN-HOUSE CAPABILITY TO HANDLE COMPLETE SYSTEM ENGINEERING, FABRICATION, AND TESTING.

6. THE SSI SHALL INDICATE THAT HE/SHE HAS IN HIS/HER EMPLOY CAPABLE PERSONNEL FOR DETAILED ENGINEERING, COORDINATION, DRAFTING, PROCUREMENT AND EXPEDITING, SCHEDULING, CONSTRUCTING, TESTING, INSPECTION, INSTALLATION, TRAINING, AND START-UP SERVICE FOR CALIBRATION AND COMMISSIONING AND WARRANTY COMPLIANCE FOR THE PERIOD SPECIFIED.

PART 2: SCADA SYSTEM

2.01 SCOPE OF PROJECT AND EQUIPMENT SPECIFICATIONS

A. THE SCADA SYSTEM SHALL BE A MICRO-PROCESSOR BASED MONITORING AND CONTROL-SYSTEM READY FOR COMMUNICATION WITH A MASTER TERMINAL UNIT (MTU) COMMUNICATING WITH OTHER REMOTE TERMINAL UNITS (RTU'S) VIA COMMUNICATION TECHNOLOGIES. RTU'S HEREIN SPECIFIED SHALL ALSO BE REQUIRED TO COMMUNICATE WITH OTHER RTU'S IN A PEER-TO-PEER MANNER FOR THE PURPOSE OF MEETING REGIONAL OR PRESSURE-PLANE-SPECIFIC REQUIREMENTS. PEER-TO-PEER COMMUNICATIONS BETWEEN RTU'S SHALL NOT REQUIRE PROGRAMMING AT EACH LOCATION. EACH MONITORING AND CONTROL SITE AT WHICH COMMANDS WILL BE EXECUTED SHALL BE LOCALLY CONTROLLED UTILIZING A LOGIC CONTROLLER WHICH SHALL BE PROGRAMMED ACCORDING TO IEC 61131 STANDARDS.

B. SYSTEM EQUIPMENT SPECIFICATIONS:

1. EXISTING MASTER TERMINAL UNIT (MTU): THE MTU IS A CONTROLLER/INTERPRETER WHICH IS INSTALLED AT THE EQUIPMENT RACK AND SHALL BE MODIFIED/EXPANDED AS NECESSARY TO ACHIEVE THE MONITORING AND CONTROL FUNCTIONS DESCRIBED HEREINAFTER. THE MTU SHALL COMMUNICATE WITH AN OPERATOR INTERFACE TERMINAL (OIT) CONTAINING THE HUMAN MACHINE INTERFACE (HMI) SOFTWARE (IGNITION SCADA). THE MTU SHALL INCLUDE THE REQUIRED NUMBER OF OPERATOR INTERFACE TERMINALS ALONG WITH WHATEVER IS NECESSARY IN ORDER TO EFFECT GOOD COMMUNICATIONS, DATA ACQUISITION AND SUPERVISORY CONTROL TO AND WITH THE RTU'S. THE MTU SHALL INCLUDE SCADA ALARM SOFTWARE THAT WILL PROVIDE ALARM DIALING CAPABILITY AND AN INSQL HISTORIAN WITH REPORTING CAPABILITY. THE MTU SHALL BE CAPABLE OF RECEIVING THE FOLLOWING SITES:

- MAYFAIR LIFT STATION #3

2. REMOTE TERMINAL UNIT (RTU): THE RTU IS A LOGIC CONTROLLER INSTALLED AT EACH REMOTE WELL SITE FOR THE CONTROL OF THE LOCAL EQUIPMENT AND THE MONITORING OF OPERATING PARAMETERS OF EACH SITE. EACH RTU SHALL CONTAIN A LOGIC CONTROLLER, MODEM, POWER SUPPLIES, RELAYS, WIRING, CONDUIT, CABLING, POWER/SURGE SUPPRESSION PROTECTION, UPS AND NEMA 4XSS RATED ENCLOSURES.

3. ENCLOSURES W/BACK PANELS: NEMA 4XSS RATED ELECTRICAL AND INSTRUMENTATION ENCLOSURES TO HOUSE ELECTRONIC SCADA EQUIPMENT, CONTROL AND INSTRUMENTATION DEVICES PER THE CONSULTING ENGINEERS REQUIREMENTS SHALL BE PROVIDED. THE SSI SHALL INSTALL THE SCADA RTU EQUIPMENT PER THE PLANS. THE RTU SHALL BE SUFFICIENTLY SIZED TO INCORPORATE THE SCADA HARDWARE HARDWARE. THE RTU ENCLOSURE SHALL HAVE 25% SPARE CAPACITY.

4. LOGIC CONTROLLER (LC): AN LC IS A MICRO-PROCESSOR INSTALLED AT THE MTU AND/OR EACH RTU SCADA SITE TO INTERPRET INFORMATION REGARDING THE OPERATION AT THE SITE AND TO EXECUTE LOCAL COMMANDS OR COMMANDS SENT FROM OTHER SCADA SITES.

AS SPECIFIED: ALLEN-BRADLEY COMPACT LOGIX 5069 OR APPROVED EQUAL
NOTE: WHEREVER POSSIBLE, ALL LOGIC CONTROLLERS SHALL BE OF THE SAME MODEL AND CONFIGURATION FOR ALL SITES IN ORDER TO PROVIDE THE OWNER WITH STANDARD PARTS FOR SERVICE CONTINUITY.

5. POWER SUPPLY: EACH RTU/MTU REQUIRES ALTERNATING CURRENT CONVERSION TO DIRECT CURRENT FOR OPERATIONS OF ITS COMPONENTS. A BATTERY PACK ALLOWS FOR DIRECT CURRENT FEED IN THE EVENT OF A POWER FAILURE. THIS BATTERY PACK WILL ENSURE CONTINUED OPERATION AND FLOW OF INFORMATION FROM LOGIC CONTROLLERS AT SCADA SITES DURING SHORT TERM POWER OUTAGES AND ENSURE MTU COMPUTER POWER SUPPLY BACKUP DURING SHORT- TERM POWER OUTAGES. TYPE QUINT4-PS/1AC/24DC BY PHOENIX CONTACT.

6. CELLULAR RADIO(S): TYPE CISCO IR1101 WITH MODULE P-5GS6-FL-V02.

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THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.



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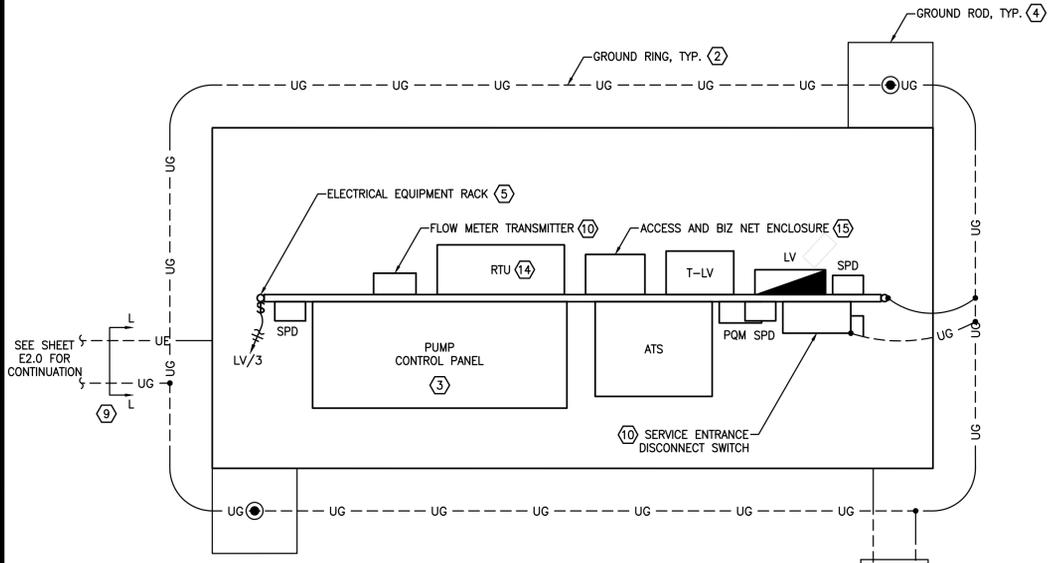
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MAYFAIR LIFT STATION #3 AND FORCE MAIN
NEW BRAUNFELS, TEXAS
SCADA SPECIFICATIONS

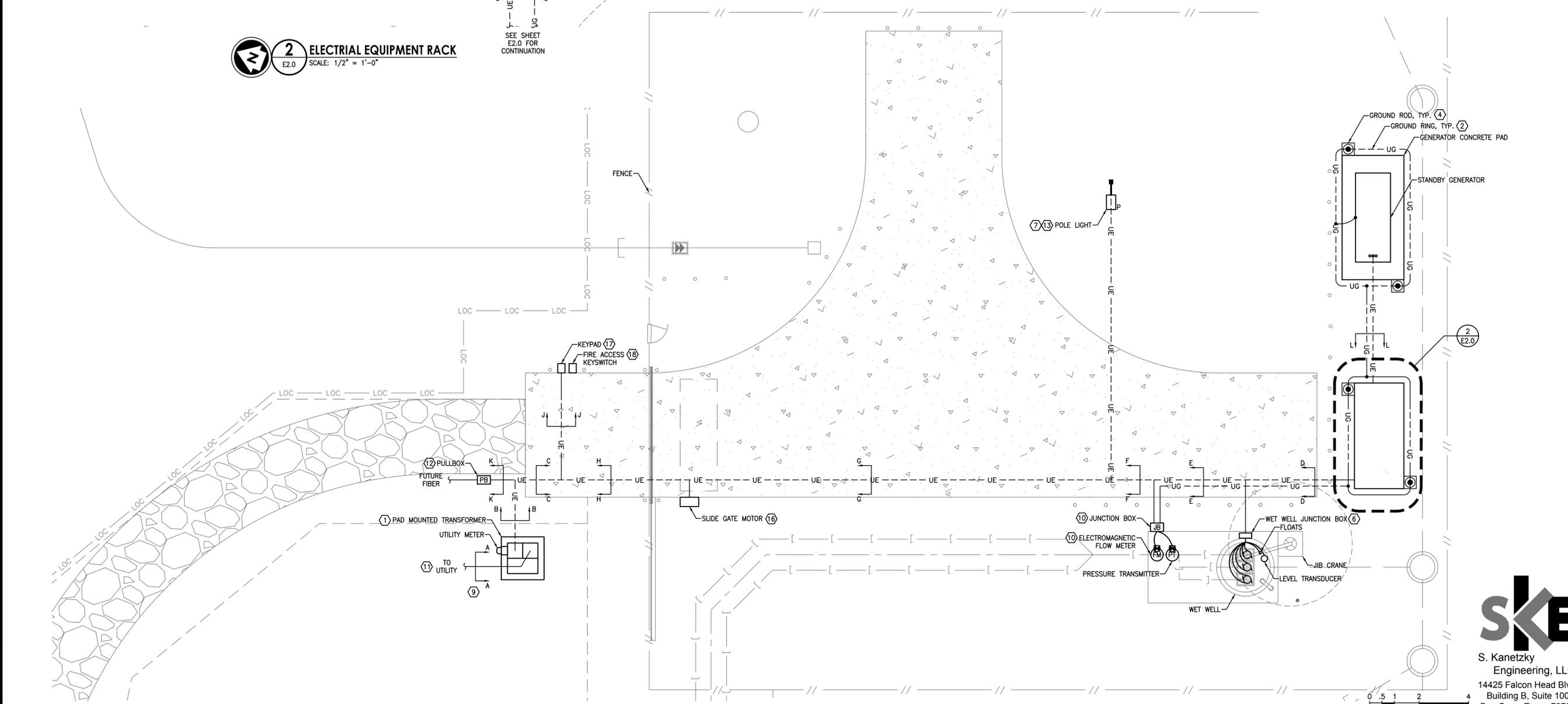
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**2 ELECTRICAL EQUIPMENT RACK**  
 E2.0 SCALE: 1/2" = 1'-0"

**REFERENCE NOTES**

- (1) INSTALL NEW 125A, 277/480V, 3 PHASE 4 WIRE ELECTRIC SERVICE. CONTRACTOR TO COORDINATE WITH NBU, WWW.NBUTEXAS.COM (830) 629-8400. PROVIDE PULL STRING IN EACH CONDUIT. VERIFY EXACT LOCATION OF TRANSFORMER PRIOR TO INSTALLATION.
- (2) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL #3/0 BARE COPPER GROUNDING RING. BOND EQUIPMENT RACKS, DISCONNECT SWITCH, SCADA TOWER, FLOW METER, AND GENERATOR SKID TO GROUNDING ELECTRODE SYSTEM VIA EXOTHERMIC WELD.
- (3) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PUMP CONTROL PANEL. REFER TO SHEET E5.0 & E5.1.
- (4) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL GROUND RODS. REFER TO DETAILS.
- (5) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL EQUIPMENT RACK PER DETAILS.
- (6) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL WET WELL JUNCTION BOX. REFER TO DETAILS.
- (7) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL POLE LIGHT. REFER TO DETAILS.
- (8) SEE FIBER OPTIC DESIGN DRAWINGS FOR MORE INFORMATION.
- (9) REFER TO UNDERGROUND ELECTRICAL DETAILS. TYPICAL.
- (10) REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION. TYPICAL.
- (11) ELECTRICAL CONTRACTOR SHALL STUB OUT ELECTRICAL PRIMARY FEEDER 10' FROM SERVICE ENTRANCE TRANSFORMER. COORDINATE EXACT LOCATION AND CONNECTION WITH ELECTRICAL UTILITY AS REQUIRED.
- (12) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PULLBOX. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
- (13) ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL AXIS Q6010-E WITH Q6074-E PTZ CAMERA 20' AFG AND TQ5001-E POLE MOUNT ON LIGHT MAST. PROVIDE AND INSTALL 12" X 12" X 6" NEMA 4X STAINLESS STEEL ENCLOSURE TO BE MOUNTED 5' AFG ON MAST WITH 120VAC DUPLEX POWER TO ALLOW FOR INSTALLATION OF POE MID SPAN. COORDINATE EXACT REQUIREMENTS WITH FRANK STRINGER [830-608-8857].
- (14) FUTURE FIBER OPTIC PATCH PANEL TO BE LOCATED INSIDE SCADA RTU PANEL. PROVIDE AND INSTALL FIBER OPTIC PATCH PANEL TYPE PANDUIT FAP24WALCZ OR APPROVED EQUAL.
- (15) ACCESS CONTROL & BIZNET ENCLOSURE: PROVIDE AND INSTALL NBU ACCESS CONTROL AND BIZNET ENCLOSURE. NBU BIZNET AND SCADA NETWORKS SHALL BE MECHANICALLY AND LOGICALLY SEPARATED, WITH EACH DATA SWITCH IN SEPARATE LOCATIONS. ENCLOSURE SHALL BE HOFFMAN NEMA 4X SS, PART #A363612LP W/ BACKPANEL #A36P36G, SIZED FOR LSP UNIT TYPE FP075-B10Q8PNL4E2M/T4-A W/ OPEN OPTION MERCURY CARD LP 1502 & LATEST MODEL MP 4502, DATA SWITCH, SWITCH PWR SUPPLY, & 120VAC DUPLEX RECEPTACLE. INSTALL HOFFMAN DIN RAIL #ADNR3 DIN3 TS35X7.5MM BELOW LSP FOR RUGGEDIZED CISCO SWITCH (CONFIRM PART # W/ TIM BROWN, NBU NETWORK). TERMINATE ALL DATA, COMPOSITE, & 18-6 AWG GATE SINGLES AT ENCLOSURE. PROVIDE PATHWAY FOR FIBER TO FIBER LIU. COORDINATE LSP EQUIPMENT & ENCLOSURE REQUIREMENTS W/ FRANK STRINGER (830-608-8857).  
 ALL DATA CABLES, COMPOSITE CABLES, AND 18-6 AWG GATE SINGLES SHALL TERMINATE AT THIS ENCLOSURE. PROVIDE PATHWAY FOR FIBER CONNECTIVITY TO FIBER LIU. COORDINATE ALL LSP EQUIPMENT AND ENCLOSURE REQUIREMENTS WITH FRANK STRINGER (830-608-8857) PRIOR TO INSTALLATION.
- (16) PROVIDE AND INSTALL LIFT MASTER SL3000UL ELITE SERIES SLIDE GATE PEDESTAL PRO MODEL NO. MC-CS-08-E AND MODEL NO. 72-9C-DSP FOR GATE SENSOR. CONTACT ROBERT FINEDA NBU FACILITIES FOR MORE INFORMATION. SEE DETAILS FOR FURTHER INFORMATION.
- (17) PROVIDE AND INSTALL HI/LO CARD READER STANCHION AT EXTERIOR APPROACH OF GATE PEDESTAL PRO. PART #72-9C-DSP. PROVIDE AND INSTALL TWO (2) CARD READER HOUSINGS PEDESTAL PRO PART #MC-CS-08-E. PROVIDE AND INSTALL ONE (1) HID SIGNO CARD READER PART #40XXXXXX AT THE HI LOCATION. PROVIDE AND INSTALL ONE (1) HID SIGNO CARD READER PART #40XXXXXX AT THE LO LOCATION. GATE CONTROL WILL REQUIRE TWO (2) 18AWG6C OSP TO BE RUN FROM SECURITY ENCLOSURE TO GATE LOCATION. ONE (1) 18/6 WILL APPEAR INSIDE THE HI/LO STANCHION FOR CARD READER CONNECTIVITY. DAISY CHAIN IS ACCEPTABLE. ONE (1) 18/6 WILL APPEAR INSIDE GATE MOTOR HOUSING TO SUPPLY CONNECTIVITY OF THE GATE TRIGGER AND GATE DPS TO MONITOR STATUS.
- (18) PROVIDE AND INSTALL KNOX BOX MODEL #3502 MOUNTED ON SINGLE GANG OUTDOOR RATED BOX ON EXTERIOR OF LO CARD READER HOUSING FACING AWAY FROM GATE FOR NBU ACCESS. COORDINATE EXACT REQUIREMENTS WITH FRANK STRINGER [830-608-8857].



**1 LIFT STATION SITE PLAN**  
 E2.0 SCALE: 1/8" = 1'-0"

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

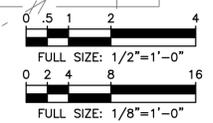
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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS

**LIFT STATION SITE PLAN**

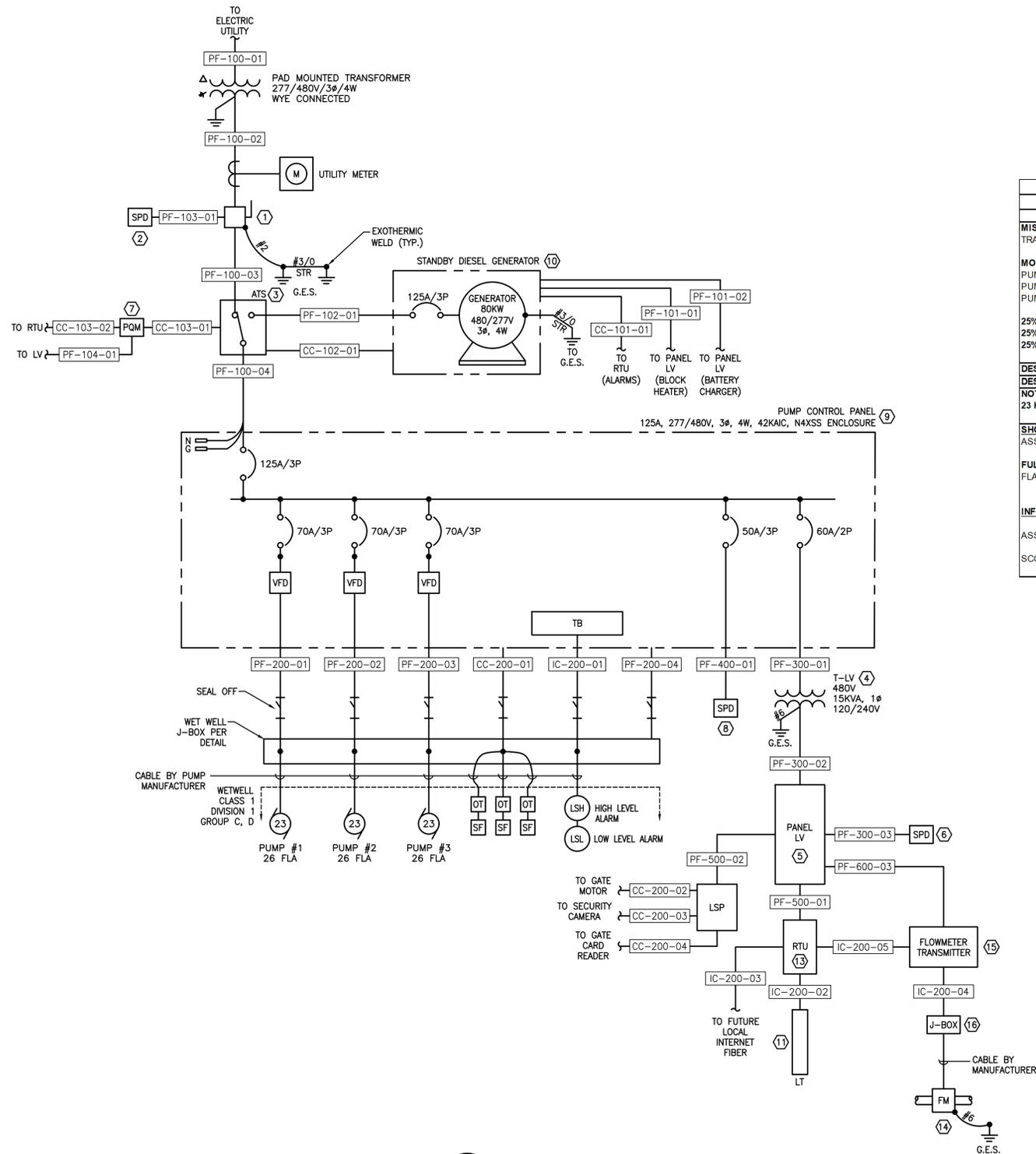
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 SKE PROJECT # 2390824



PLAT NO.	
JOB NO.	30002-74
DATE	SEPTEMBER 2025
DESIGNER	PD
CHECKED	SK DRAWN PD
SHEET	<b>E2.0</b>

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**1** LIFT STATION ONE-LINE DIAGRAM (12)(17)  
 E3.0 SCALE: NTS

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

LOAD CALCULATION					
	UTILITY			GENERATOR	
	HP	AMPS	KVA	STARTING	STEP
<b>MISC.</b>					
TRANSFORMER T-LV (1-PHASE)		31	15	N/A	1
<b>MOTORS</b>					
PUMP #1 (DUTY)	23	26	22	VFD	2
PUMP #2 (DUTY)	23	26	22	VFD	3
PUMP #3 (STANDBY)					
25% OF CONTINUOUS LOAD		0	0		
25% OF LARGEST MOTOR		7	5		
25% SPARE		22	16		
<b>DESIGN KVA TOTAL</b>			80		
<b>DESIGN AMPS @ 277/480 VOLTS, 3 PHASE</b>		112			
<b>NOTE: THE ELECTRICAL SERVICE IS DESIGNED TO RUN TWO 23 HP PUMPS AND ALL MISC. LOADS.</b>					
<b>SHORT CIRCUIT CURRENT CALCULATION:</b>					
ASSUMPTION: 1-75 KVA PAD MOUNTED TRANSFORMER					
<b>FULL LOAD AMPS:</b>					
FLA=(1.75)75KVA					
(75000)/(480*1.73) = 90.21A					
<b>INFINITE BUS SHORT CIRCUIT CURRENT CALCULATION:</b>					
ASSUMPTION: %Z=1.8					
SCCR = (100 / %Z) * FLA					
(100/1.8) * 90.21 = 5,012A					

**REFERENCE NOTES**

- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL MAIN DISCONNECT SWITCH 200A/3P/125AF/N4XSS/600V/SN/SE SQUARE D OR EQUAL. USE BUSSMANN #FRS-R-125 OR EQUAL WITH FACTORY NEUTRAL KIT AND GROUND BAR.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL SPD, EATON SPD-200-480Y-3-P OR EQUAL IN A NEMA 4XSS STAINLESS STEEL ENCLOSURE. CONNECT TO LOAD SIDE.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL AUTOMATIC TRANSFER SWITCH, 125A, 4 POLE, 600V, NEMA 4XSS ASCO OR EQUAL.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL 15KVA TRANSFORMER, 480V, 120/240V, NEMA 3R STAINLESS STEEL ENCLOSURE TYPE SQUARE D OR EQUAL.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PANEL LV, SEE PANEL SCHEDULE FOR DETAILS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL SPD, EATON SPD-050-240S-3-P OR EQUAL IN A NEMA 4XSS ENCLOSURE. CONNECT TO LOAD SIDE.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL POWER QUALITY METER EATON 2280 OR EQUAL. SEE DETAILS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL SPD, EATON SPD-100-480Y-3-P OR EQUAL IN A NEMA 4XSS ENCLOSURE. CONNECT TO LOAD SIDE.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PUMP CONTROL PANEL. SEE E5.0 AND E5.1 FOR DETAILS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL STANDBY GENERATOR 80KW, 277/480V, 3 PHASE, 4-WIRE.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL LEVEL TRANSMITTER, PMC-ST5 VERSALIN VL2000 SERIES.
- ALL ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE NEMA 4X 304SS UNLESS OTHERWISE ADVISED.
- SCADA CONTRACTOR SHALL PROVIDE AND INSTALL SCADA RTU PANEL. REFER TO SHEET E6.0 FOR MORE INFORMATION.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ELECTROMAGNETIC FLOW METER TYPE ENDRESS + HAUSER PROMAG 500 OR APPROVED EQUAL. CONTRACTOR SHALL GROUND FLOW METER PER DETAIL.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FLOW METER TRANSMITTER TYPE REMOTE IN NEMA 4X 304SS JUNCTION BOX WITH CLEAR SEE THROUGH WINDOW AND SHADE AIDE MINI SQUARE COVER.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FLOW METER JUNCTION BOX 12" X 12" X 12" IN NEMA 4X 304SS.
- THE ELECTRICAL CONTRACTOR SHALL PROCURE THE SERVICES OF A QUALIFIED ENGINEERING FIRM TO PERFORM A COMPREHENSIVE POWER SYSTEMS STUDY. THE STUDY SHALL INCLUDE A SHORT CIRCUIT ANALYSIS, PROTECTIVE DEVICE COORDINATION, AND AN ARC FLASH HAZARD EVALUATION IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 70E AND IEEE 1584. ALL FINDINGS AND RECOMMENDATIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO SYSTEM ENERGIZATION. ARC FLASH WARNING LABELS SHALL BE PROVIDED AND INSTALLED ON ALL APPLICABLE ELECTRICAL EQUIPMENT BASED ON THE RESULTS OF THE STUDY.

**GENERAL NOTE**

- IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROVIDE AND INSTALL ALL RACEWAYS AND CONDUCTORS CUMULATIVELY BETWEEN THE UNDERGROUND ELECTRICAL DETAILS, PANEL SCHEDULES, I/O SCHEDULES, AND CIRCUIT SCHEDULES. THE CIRCUIT SCHEDULES, I/O SCHEDULES AND PANEL SCHEDULES TAKE PRECEDENCE OVER THE UNDERGROUND ELECTRICAL DETAILS.

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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS

ONE-LINE DIAGRAM

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 SKE PROJECT # 2390824

PLAT NO.	
JOB NO.	30002-74
DATE	SEPTEMBER 2025
DESIGNER	PD
CHECKED	SK
DRAWN	PD
SHEET	<b>E3.0</b>

**CIRCUIT SCHEDULE**

TAG	RACEWAY	CONDUCTORS	FROM	TO	EQUIPMENT/FUNCTION
PF-100-01	2-4"C	PULLSTRING	UTILITY	PAD MOUNTED TRANSFORMER	POWER FEEDER
PF-100-02	1 1/2"C	4#1	PAD MOUNTED TRANSFORMER	SERVICE DISCONNECT SWITCH	POWER FEEDER
PF-100-03	1 1/2"C	4#1, 1#6GND	SERVICE DISCONNECT SWITCH	AUTOMATIC TRANSFER SWITCH	POWER FEEDER
PF-100-04	1 1/2"C	4#1, 1#6GND	AUTOMATIC TRANSFER SWITCH	PUMP CONTROL PANEL	POWER FEEDER
PF-101-01	1"C	2#12, 1#12GND	GENERATOR	PANEL LV	POWER FEEDER
PF-101-02	1"C	2#12, 1#12GND	GENERATOR	PANEL LV	POWER FEEDER
PF-102-01	1 1/2"C	4#1, 1#6GND	AUTOMATIC TRANSFER SWITCH	GENERATOR	POWER FEEDER
PF-103-01	1"C	5#6	SERVICE DISCONNECT SWITCH	SURGE PROTECTION DEVICE	SURGE PROTECTION
PF-104-01	1"C	2#12, 1#12GND	POWER QUALITY METER	PANEL LV	POWER FEEDER
PF-200-01	1"C	3#8, 1#10GND	PUMP CONTROL PANEL	PUMP #1	POWER FEEDER
PF-200-02	1"C	3#8, 1#10GND	PUMP CONTROL PANEL	PUMP #2	POWER FEEDER
PF-200-03	1"C	3#8, 1#10GND	PUMP CONTROL PANEL	PUMP #3	POWER FEEDER
PF-200-04	2"C	PULLSTRING	PUMP CONTROL PANEL	WET WELL JUNCTION BOX	SPARE
PF-300-01	1"C	2#6, 1#10GND	PUMP CONTROL PANEL	TRANSFORMER T-LV	POWER FEEDER
PF-300-02	1-1/4"C	3#3, 1#8GND	TRANSFORMER T-LV	PANEL LV	POWER FEEDER
PF-300-03	3/4"C	4#10	PANEL LV	SURGE PROTECTION DEVICE	SURGE PROTECTION
PF-400-01	1"C	5#6	PUMP CONTROL PANEL	SURGE PROTECTION DEVICE	SURGE PROTECTION
PF-500-01	1"C	2#12, 1#12GND	PANEL LV	SCADA RTU	POWER FEEDER
PF-500-02	1"C	2#12, 1#12GND	PANEL LV	LSP ENCLOSURE	POWER FEEDER
PF-600-01	1"C	2#12, 1#12GND	PANEL LV	POLE LIGHT	POWER FEEDER
PF-600-02	1"C	2#12, 1#12GND	PANEL LV	LIGHT POLE CAMERA	POWER FEEDER
PF-600-03	1"C	2#12, 1#12GND	PANEL LV	FLOW METER TRANSMITTER	POWER FEEDER
PF-600-04	1"C	2#12, 1#12GND	PANEL LV	PRESSURE TRANSMITTER	POWER FEEDER
CC-101-01	1"C	8#14, 1#12GND	GENERATOR	SCADA RTU	ALARMS/STATUS
CC-102-01	1"C	8#14	AUTOMATIC TRANSFER SWITCH	GENERATOR	CONTROLS CIRCUIT
CC-103-01	1"C	CT CONDUCTORS	AUTOMATIC TRANSFER SWITCH	POWER QUALITY METER	INSTRUMENTS
CC-103-02	2"C	1-CAT6	POWER QUALITY METER	SCADA RTU	COMMUNICATION
CC-200-01	1"C	12#14, 1#12GND	PUMP CONTROL PANEL	PUMP OVER TEMP & SEAL FAIL	CONTROLS CIRCUIT
CC-200-02	1 1/2"C	18#6 AWG, SHIELDED OSP GRADE	LSP ENCLOSURE	GATE MOTOR	CONTROLS CIRCUIT
CC-200-03	1"C	OSP CAT #6	LSP ENCLOSURE	SECURITY CAMERA	SECURITY
CC-200-04	1 1/2"C	18#6 AWG, SHIELDED OSP GRADE	LSP ENCLOSURE	GATE CARD READER	COMMUNICATION
IC-200-01	1"C	4#14	PUMP CONTROL PANEL	WET WELL FLOATS	INSTRUMENTATION CIRCUIT
IC-200-02	1"C	STP CABLE AS REQUIRED	SCADA RTU	LEVEL TRANSDUCER	INSTRUMENTATION CIRCUIT
IC-200-03	2"C	FIBER	SCADA RTU	PULLBOX	INSTRUMENTATION CIRCUIT
IC-200-04	1"C	MFR CABLE	FLOW METER	FLOW METER TRANSMITTER	INSTRUMENTATION CIRCUIT
IC-200-05	1"C	1#16TSP	FLOW METER TRANSMITTER	SCADA RTU	INSTRUMENTATION CIRCUIT
IC-200-06	1"C	1#16TSP	PRESSURE TRANSMITTER	SCADA RTU	INSTRUMENTATION CIRCUIT
IC-200-07	1"C	2 SETS #18AWG6C	LSP ENCLOSURE	GATE CARD READER	CONTROLS CIRCUIT

**LIGHTING FIXTURE SCHEDULE**

TYPE	MANUFACTURER	CATALOG NO.	TYPE	LUMENS	COLOR TEMP	FIX. WATTS	VOLTS	MOUNTING	REMARKS
A	PACO LIGHTING	PUAC-D-4F-40-40-MV-ND	LED	4,206	4000K	39	120	SURFACE	4" LENSED STRIP SUITABLE FOR WET LOCATIONS (ELECTRICAL RACK LIGHTING)
P	SIGNIFY GARDCO	OPF-M-A10-840-T4W-ARI-UNV-BZ	LED	19,487	4000K	112	120	POLE	FULL CUTOFF, DARK SKY COMPLIANT POLE #SSA-CA-4-125-16-D1-DT5-BZ-VDA (SITE LIGHTING)

**PANEL LV**

AMPS: 80A MCB  
 VOLTAGE: 240/120V  
 LOCATION: ELECTRICAL RACK  
 FED FROM: TRANSFORMER T-LV

PHASE: 1  
 WIRE: 3

MOUNTING: SURFACE  
 MINIMUM AIC RATING: 10 KA  
 BUSSING: COPPER  
 NEMA: 4XSS

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	POWER QUALITY METER	12	20	1	0.0	0.2		0.2	1	20	12	POLE LIGHT	2
3	RECEPTACLE	12	20	1	0.2		1.4	1.2	1	20	12	GEN. BATT. CHARGER	4
5	SPD	10	30	3	0.0	1.0		1.0	1	20	12	GEN. BLOCK HEATER	6
7					0.0			0.5	0.5	1	20	LSP ENCLOSURE	8
9	SLIDE GATE MOTOR	12	20	1	0.2	0.7		0.5	1	20	12	RTU	10
11	ELECT. RACK LIGHTS	12	20	1	0.0			0.5	0.5	1	20	FLOW METER TRANS.	12
13	CAMERA POWER	12	20	1	0.1	0.1		0.0				SPACE	14
15	SPACE				0.0		0.0	0.0				SPACE	16
17	SPACE				0.0	0.0		0.0				SPACE	18
19	SPACE				0.0		0.0	0.0				SPACE	20

PHASE LOAD IN KVA: 2.0 2.4  
 PHASE LOAD IN AMPS: 17 20

NOTE: SQUARE D NQ OR EQUAL

**GENERAL NOTE**

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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 ELECTRICAL SCHEDULES

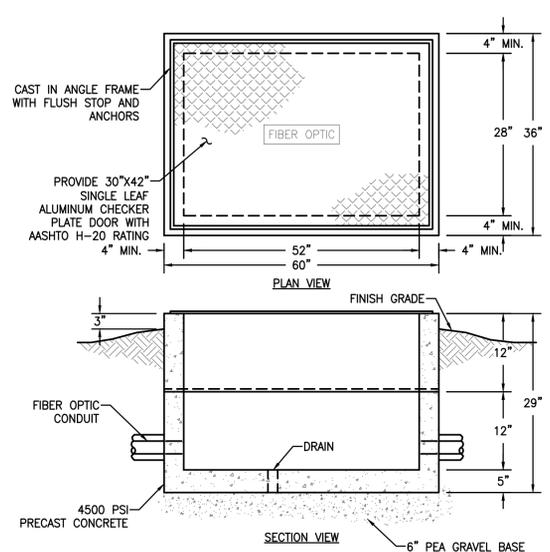


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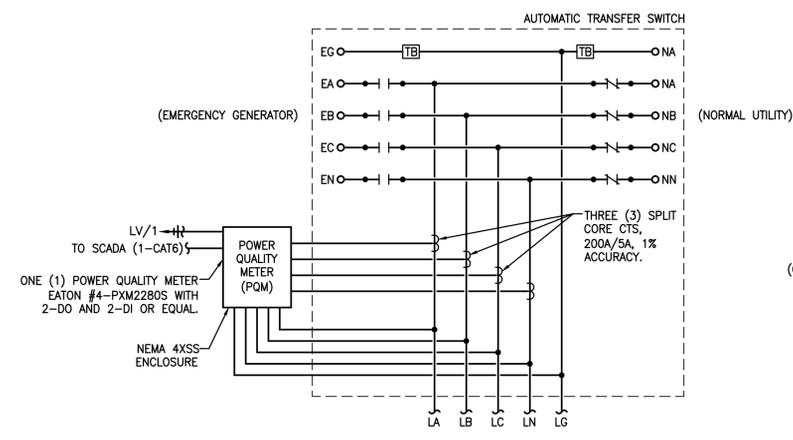
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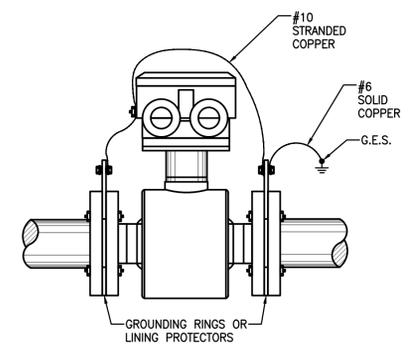
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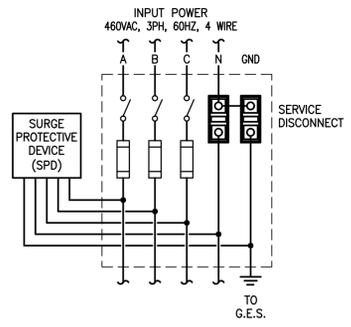
**9** DETAIL - FIBER HAND HOLE  
E4.1 SCALE: NTS



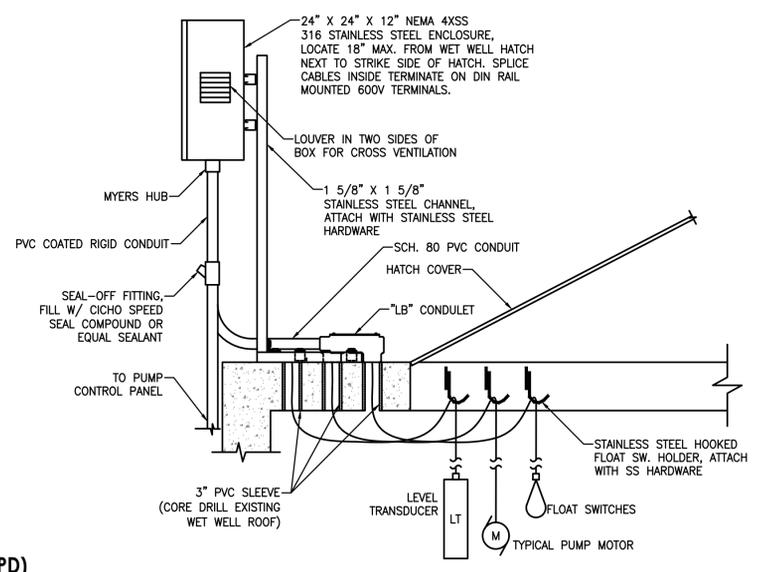
**8** DETAIL - POWER QUALITY METER (PQM)  
E4.1 SCALE: NTS



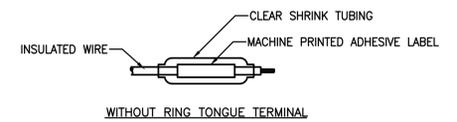
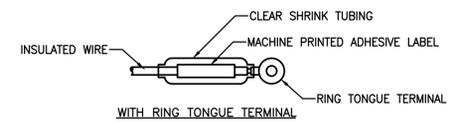
**11** DETAIL - MAGNETIC FLOWMETER - GROUNDING  
E4.1 SCALE: NTS



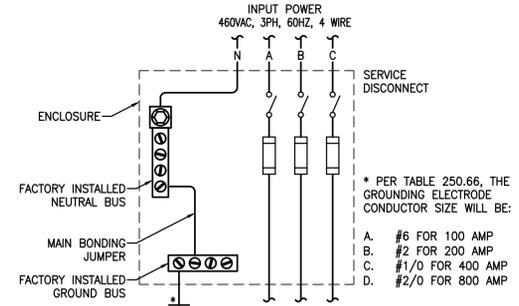
**10** DETAIL - SURGE PROTECTION DEVICE (SPD)  
E4.1 SCALE: NTS



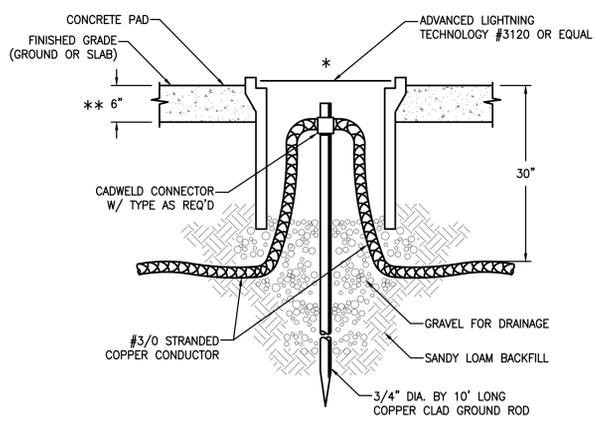
**7** DETAIL - WET WELL JUNCTION BOX  
E4.1 SCALE: NTS



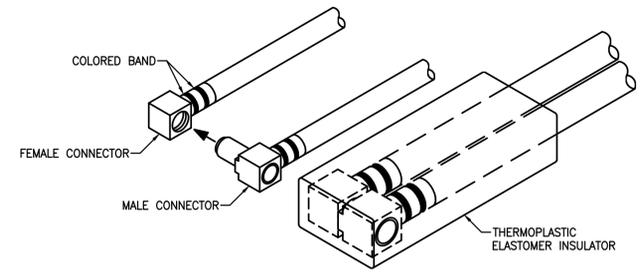
**6** DETAIL - WIRE TERMINATION AND MARKING  
E4.1 SCALE: NTS



**5** DETAIL - GROUNDING SERVICE DISCONNECT  
E4.1 SCALE: NTS

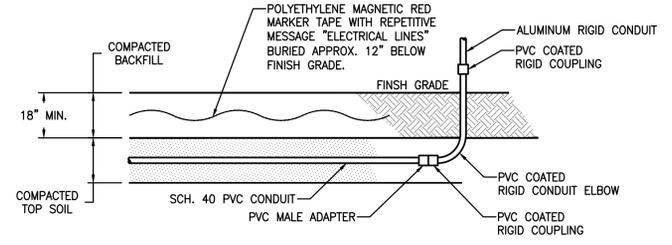


**4** DETAIL - 3/4" X 10' GROUND ROD  
E4.1 SCALE: NTS

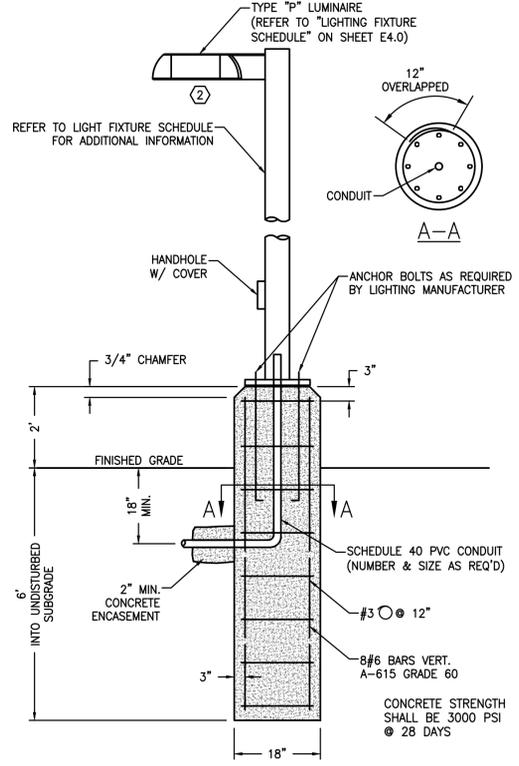


**3** DETAIL - MOTOR LEAD DISCONNECT  
E4.1 SCALE: NTS

- REFERENCE NOTES**
- COORDINATE INSTALLATION OF WET WELL JUNCTION BOX WITH SITE CONDITIONS AND SHEET E2.0.
  - CONTRACTOR SHALL INSTALL NBU APPROVED SECURITY CAMERA ON TOP OF POLE LIGHT.
  - CONTRACTOR SHALL REFERENCE CIVIL AND STRUCTURAL PLANS FOR ALL WET WELL WALL TOP SLAB PENETRATION LOCATIONS AND COORDINATE WITH WET WELL MANUFACTURER.
  - PRECAST STRUCTURE SHALL BE DESIGNED TO MEET ASTM C857 AND C858.



**2** DETAIL - TYPICAL UNDERGROUND CONDUIT RUN  
E4.1 SCALE: NTS



**1** DETAIL - POLE MOUNTED LIGHTING FIXTURE  
E4.1 SCALE: NTS

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(512) 326-3380  
www.skaneng.com  
TBPE Firm No. F-2356  
SKE PROJECT # 2390824

DATE	
NO.	REVISION
2390824	

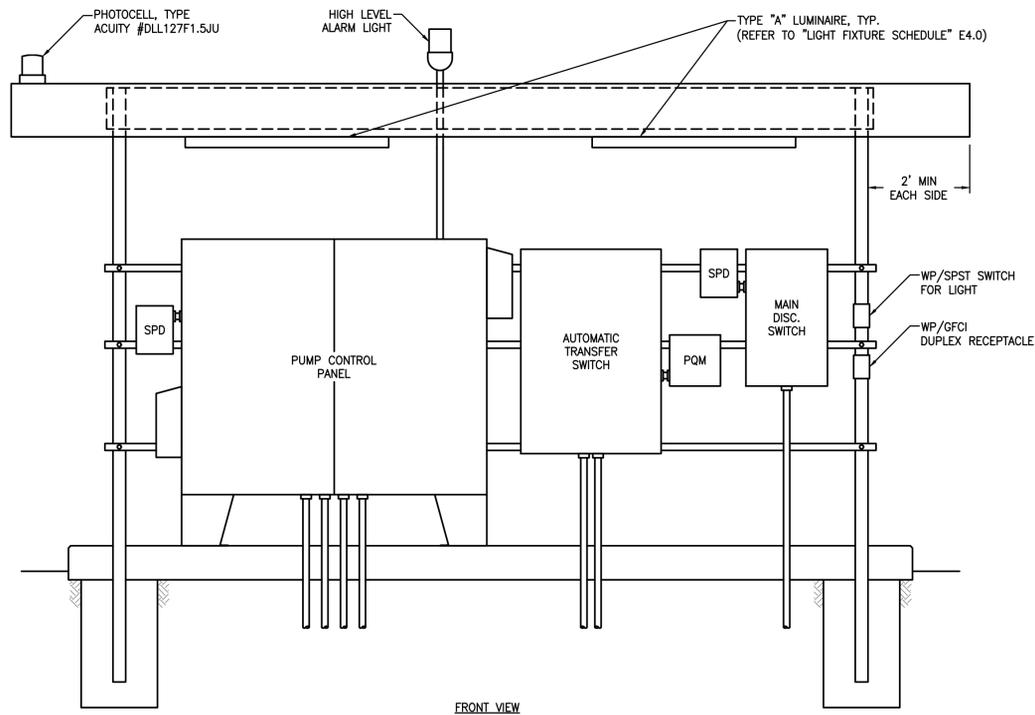
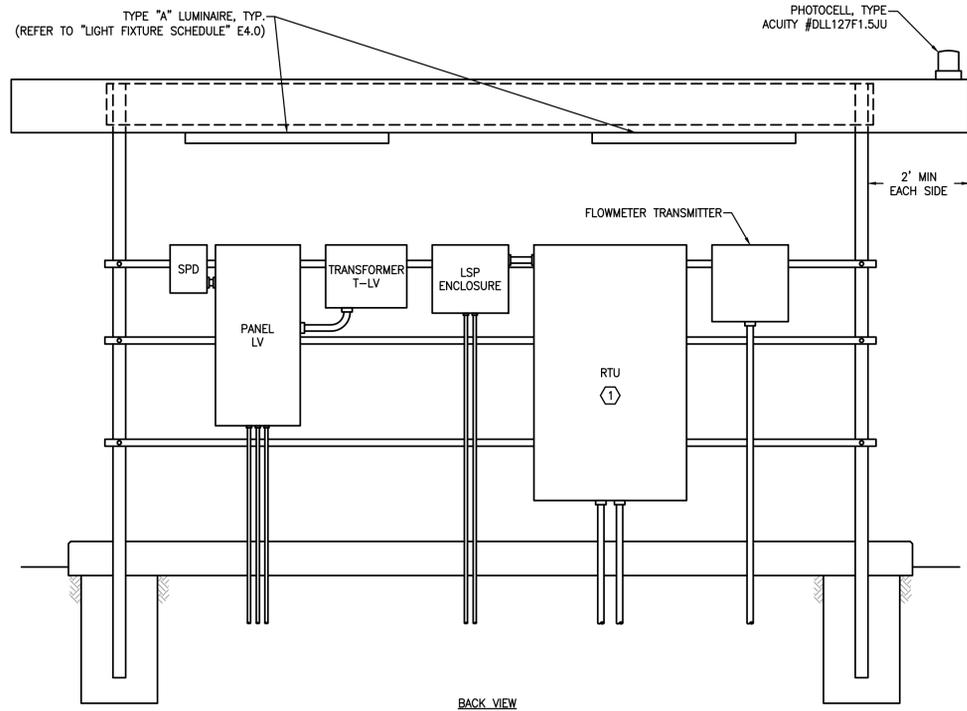
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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
ELECTRICAL DETAILS

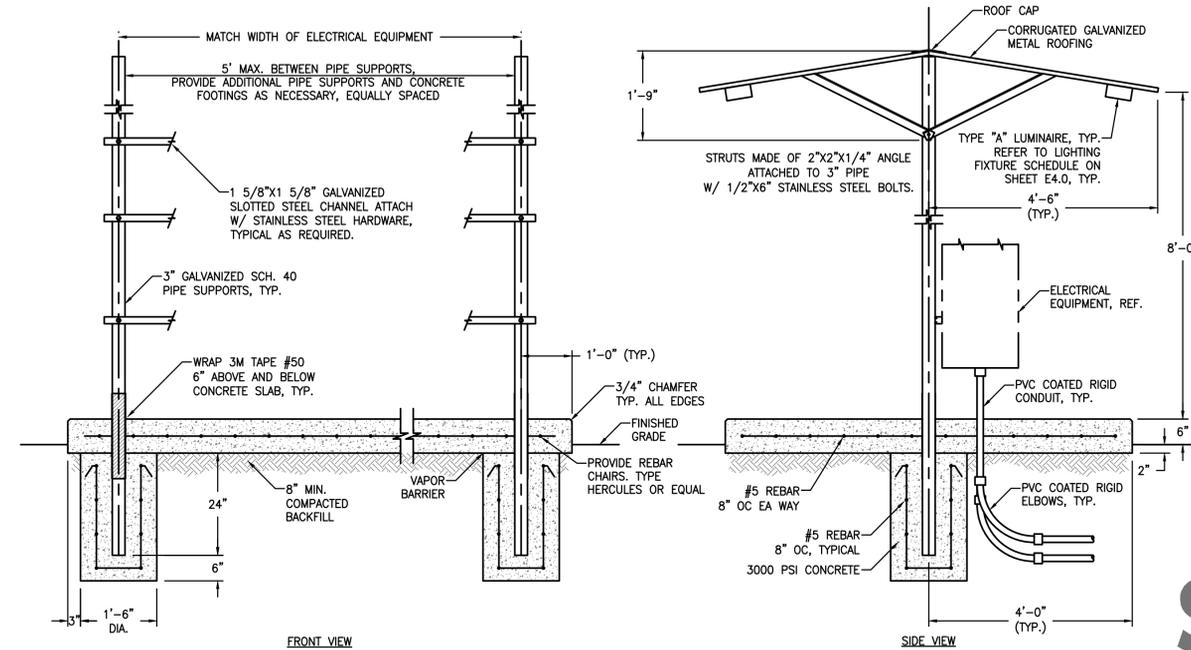
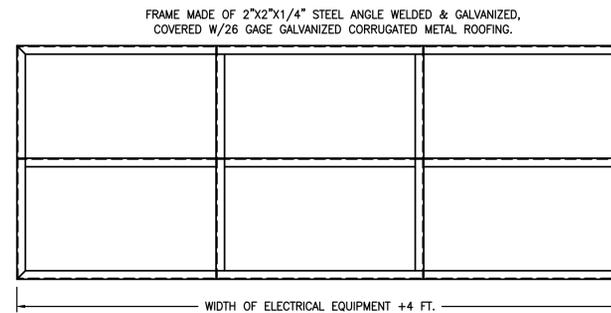
PLAT NO.	
JOB NO.	30002-74
DATE	SEPTEMBER 2025
DESIGNER	PD
CHECKED	SK_DRAWN_PD
SHEET	<b>E4.1</b>

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THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.



**2** DETAIL - TYPICAL ELECTRICAL EQUIPMENT INSTALLATION  
E4.2 SCALE: NTS



**1** DETAIL - TYPICAL RACK SUPPORT AND ROOFING  
E4.2 SCALE: NTS

**REFERENCE NOTES**

- ① ELECTRICAL CONTRACTOR SHALL COORDINATE WITH LOCAL INTERNET PROVIDER FOR CONNECTION TO ORDER. ADD ADDITIONAL EQUIPMENT AS REQUIRED.
- ② ROOF MEMBERS OMITTED FOR CLARITY.
- ③ ALL STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. FIELD WELDS OR ANY DAMAGE TO GALVANIZING SHALL BE PAINTED WITH ZINC RICH COATING, SUCH AS ZRC GALVANIZING COMPOUND OR GALV-LITE.

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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS

**ELECTRICAL DETAILS**

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SHEET	<b>E4.2</b>

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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS

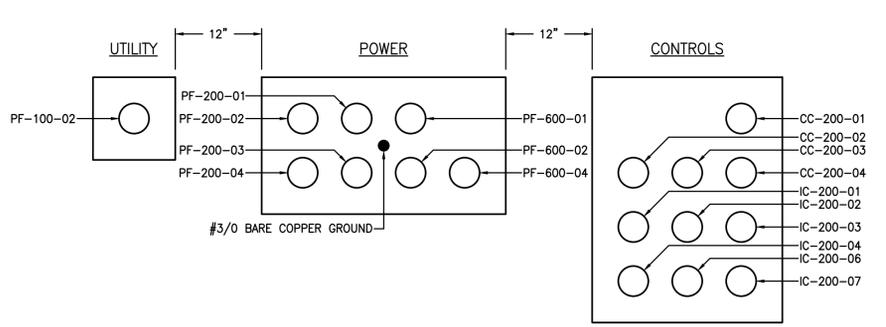
**ELECTRICAL DETAILS**

PLAT NO.	
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DATE	SEPTEMBER 2025
DESIGNER	PD
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SHEET	<b>E4.3</b>

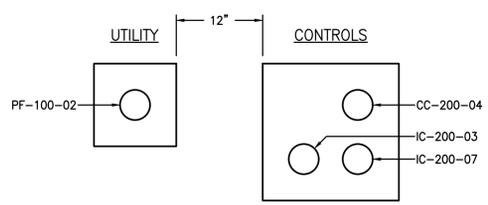
- REFERENCE NOTES**
- REFER TO UTILITY DUCTBANK SECTION DETAIL 2/E4.3 FOR CONSTRUCTION INFORMATION, TYPICAL.
  - REFER TO DUCTBANK SECTION DETAIL 1/E4.3 FOR CONSTRUCTION INFORMATION, TYPICAL.
  - REFER TO "CIRCUIT SCHEDULE" ON SHEET E4.0 FOR ADDITIONAL INFORMATION, TYPICAL.

**GENERAL NOTE**

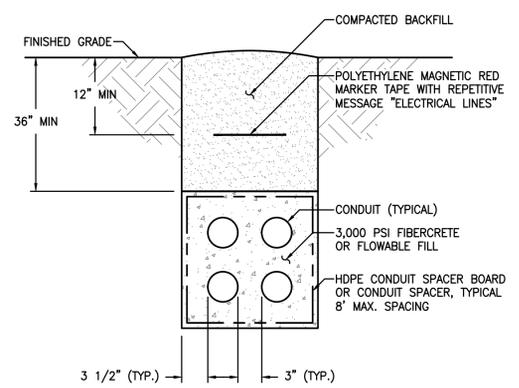
- IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROVIDE AND INSTALL ALL RACEWAYS AND CONDUCTORS CUMULATIVELY BETWEEN THE UNDERGROUND ELECTRICAL DETAILS, PANEL SCHEDULES, I/O SCHEDULES, AND CIRCUIT SCHEDULES. THE CIRCUIT SCHEDULES, I/O SCHEDULES AND PANEL SCHEDULES TAKE PRECEDENCE OVER THE UNDERGROUND ELECTRICAL DETAILS.



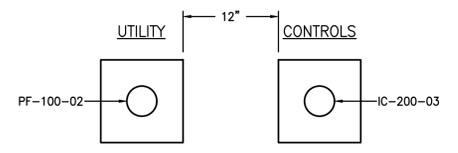
**6** **DETAIL - DUCTBANK SECTION D-D** (2/3)  
E4.3 SCALE: NTS



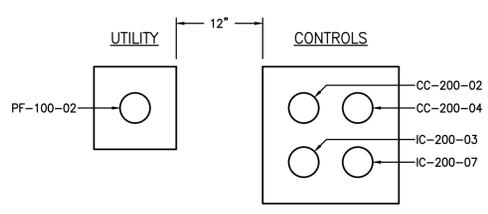
**10** **DETAIL - DUCTBANK SECTION H-H** (2/3)  
E4.3 SCALE: NTS



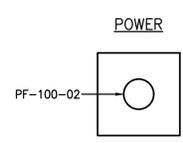
**2** **DETAIL - UTILITY DUCTBANK SECTION CONSTRUCTION, TYP.**  
E4.3 SCALE: NTS



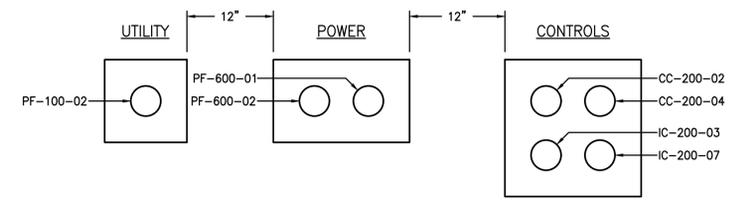
**5** **DETAIL - DUCTBANK SECTION C-C** (2/3)  
E4.3 SCALE: NTS



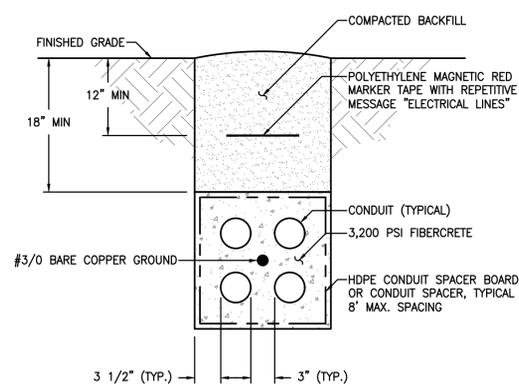
**9** **DETAIL - DUCTBANK SECTION G-G** (2/3)  
E4.3 SCALE: NTS



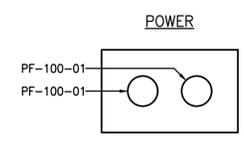
**4** **DETAIL - DUCTBANK SECTION B-B** (2/3)  
E4.3 SCALE: NTS



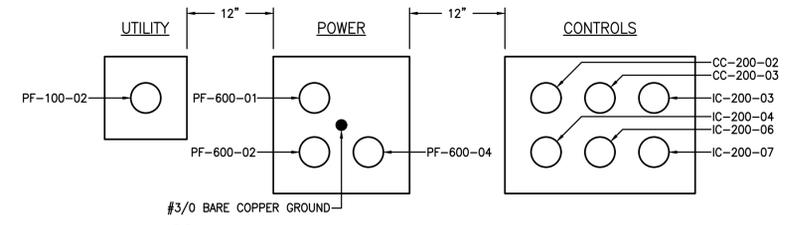
**8** **DETAIL - DUCTBANK SECTION F-F** (2/3)  
E4.3 SCALE: NTS



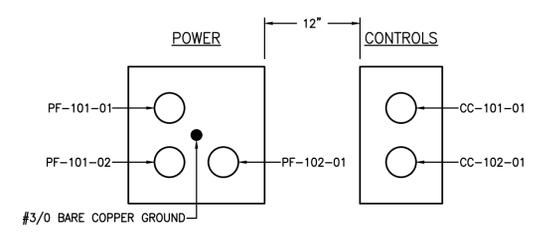
**1** **DETAIL - TYP. DUCTBANK SECTION CONSTRUCTION**  
E4.3 SCALE: NTS



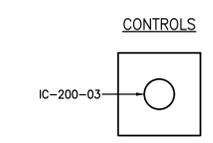
**3** **DETAIL - DUCTBANK SECTION A-A** (1/3)  
E4.3 SCALE: NTS



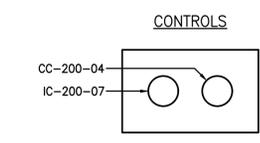
**7** **DETAIL - DUCTBANK SECTION E-E** (2/3)  
E4.3 SCALE: NTS



**13** **DETAIL - DUCTBANK SECTION L-L** (2/3)  
E4.3 SCALE: NTS



**12** **DETAIL - DUCTBANK SECTION K-K** (2/3)  
E4.3 SCALE: NTS

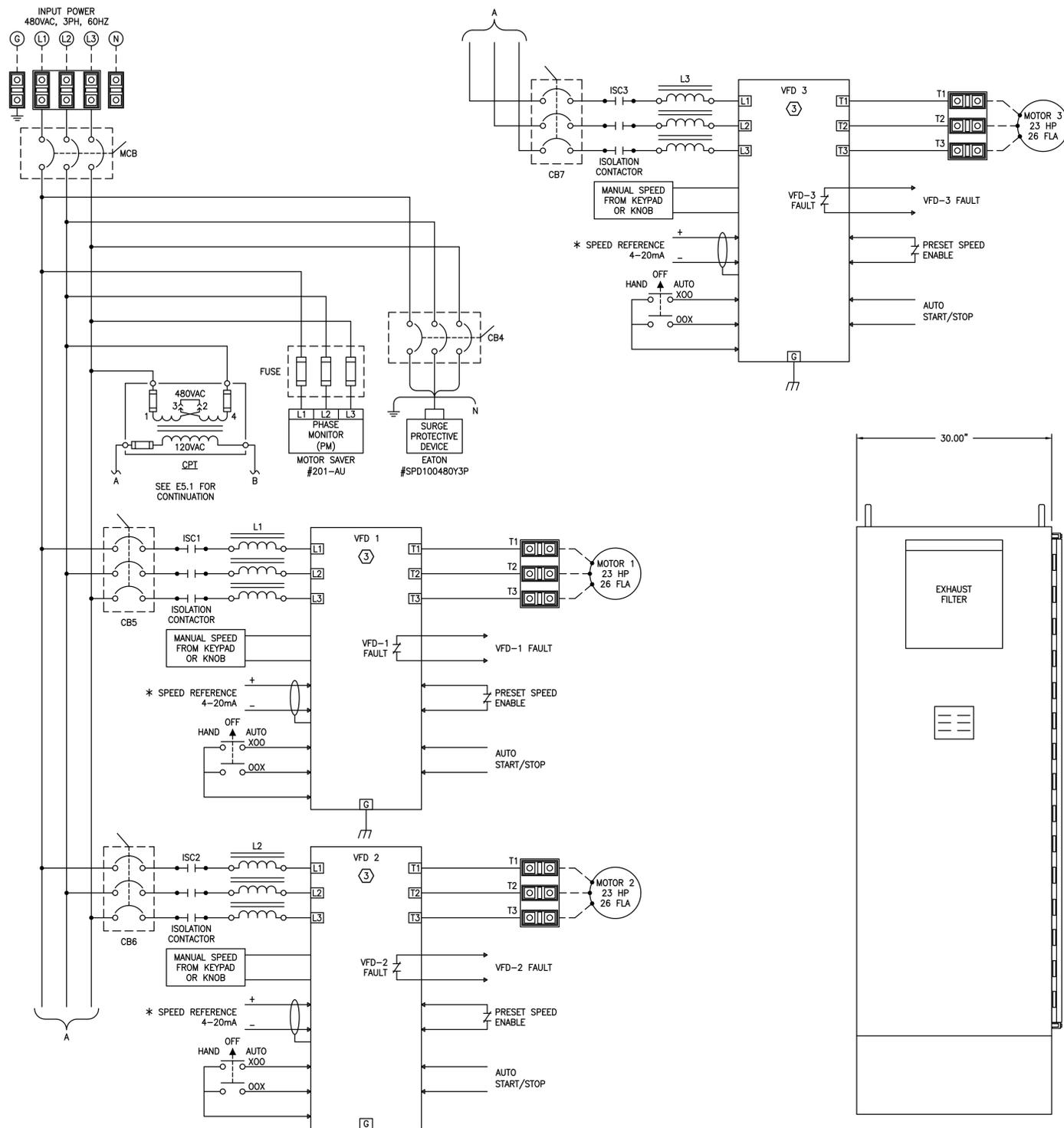


**11** **DETAIL - DUCTBANK SECTION J-J** (2/3)  
E4.3 SCALE: NTS

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

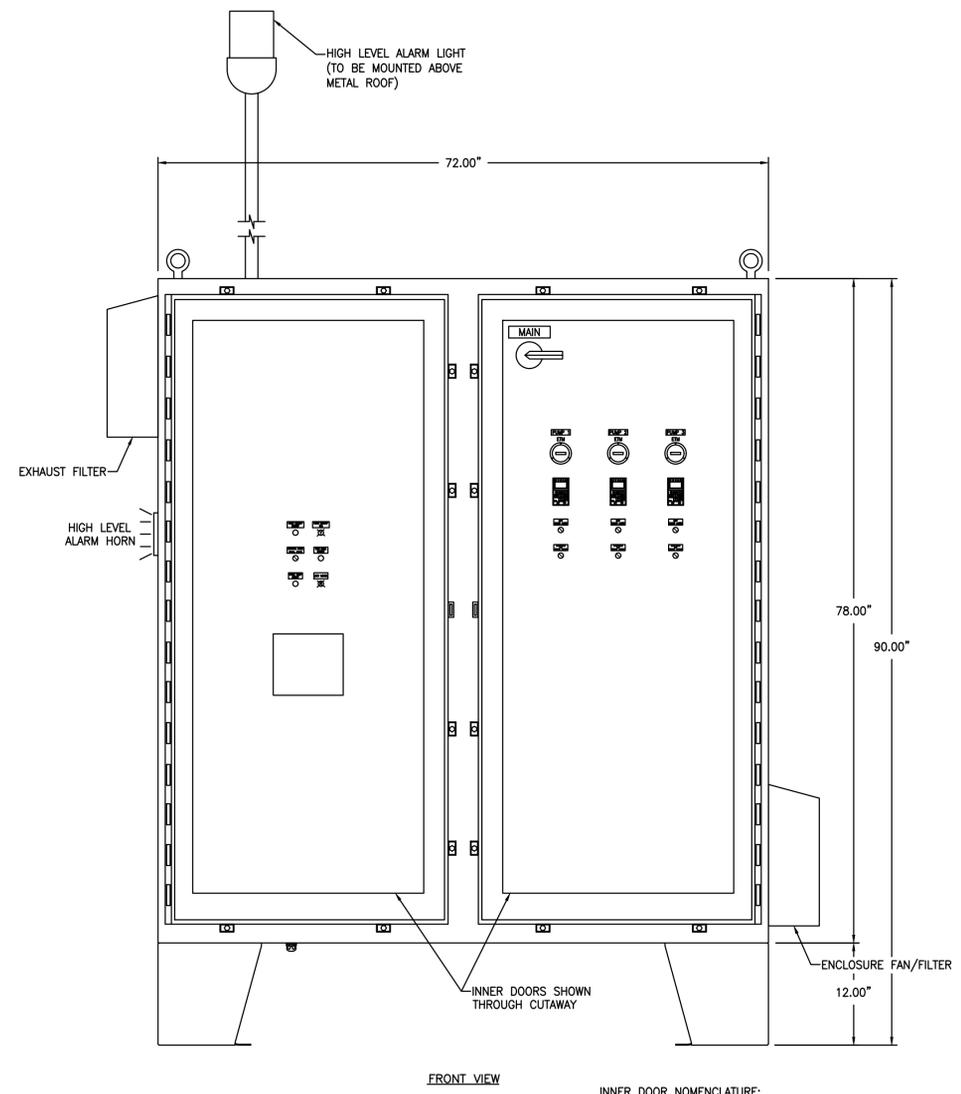
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**1 CONTROL PANEL SCHEMATIC** (1)(2)  
 E5.0 SCALE: NTS  
 \* = FIELD WIRED BY CONTRACTOR.

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.



**1 RECYCLE PUMP CONTROL PANEL ENCLOSURE**  
 E5.0 SCALE: NTS  
 NOTE:  
 ENCLOSURE, NEMA 4X 304 STAINLESS STEEL DEAD FRONT W/ INNER DOORS AND AIR CONDITIONER

INNER DOOR NOMENCLATURE:  
 1. VFD 1 KEYPAD  
 2. VFD 2 KEYPAD  
 3. VFD 3 KEYPAD

**REFERENCE NOTES**

- ① PUMP CONTROL PANEL WIRING IS TYPICAL. FINAL HARDWARE CONFIGURATION WILL VARY ACCORDING TO PUMP CONTROL PANEL SPECIFICATIONS.
- ② TRIPLEX PUMP CONTROL PANEL, 480V, 3 PHASE, UL805A LABELED. VERIFY EXACT PUMP SIZES AND SIZE CIRCUIT BREAKERS AND OVERLOADS ACCORDINGLY. THE PUMP CONTROL PANEL SHALL BE MANUFACTURED BY S STAR ELECTRIC, SAN ANTONIO, TEXAS 210-492-4200 OR APPROVED EQUAL.
- ③ CONTRACTOR SHALL PROVIDE AND INSTALL VFD'S TYPE ABB MODEL ACQ580 SIZED FOR 23HP MOTORS SERIES W/ ETHERNET UP. TYPICAL.

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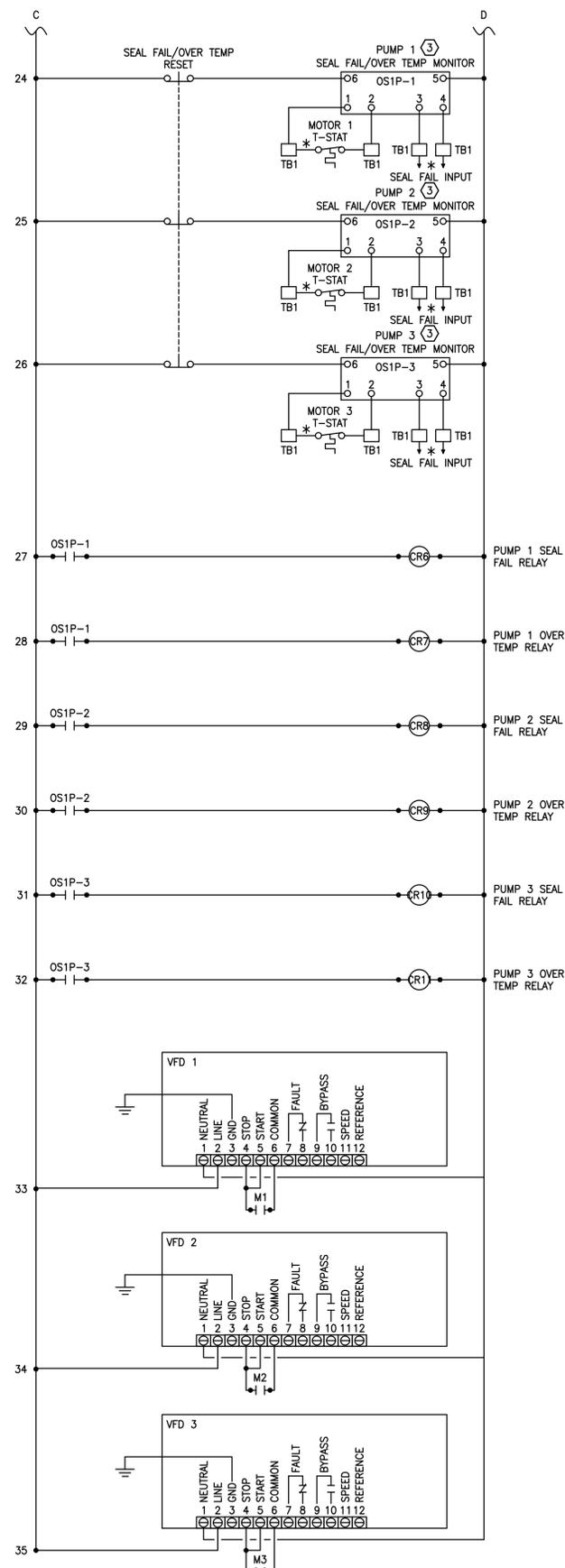
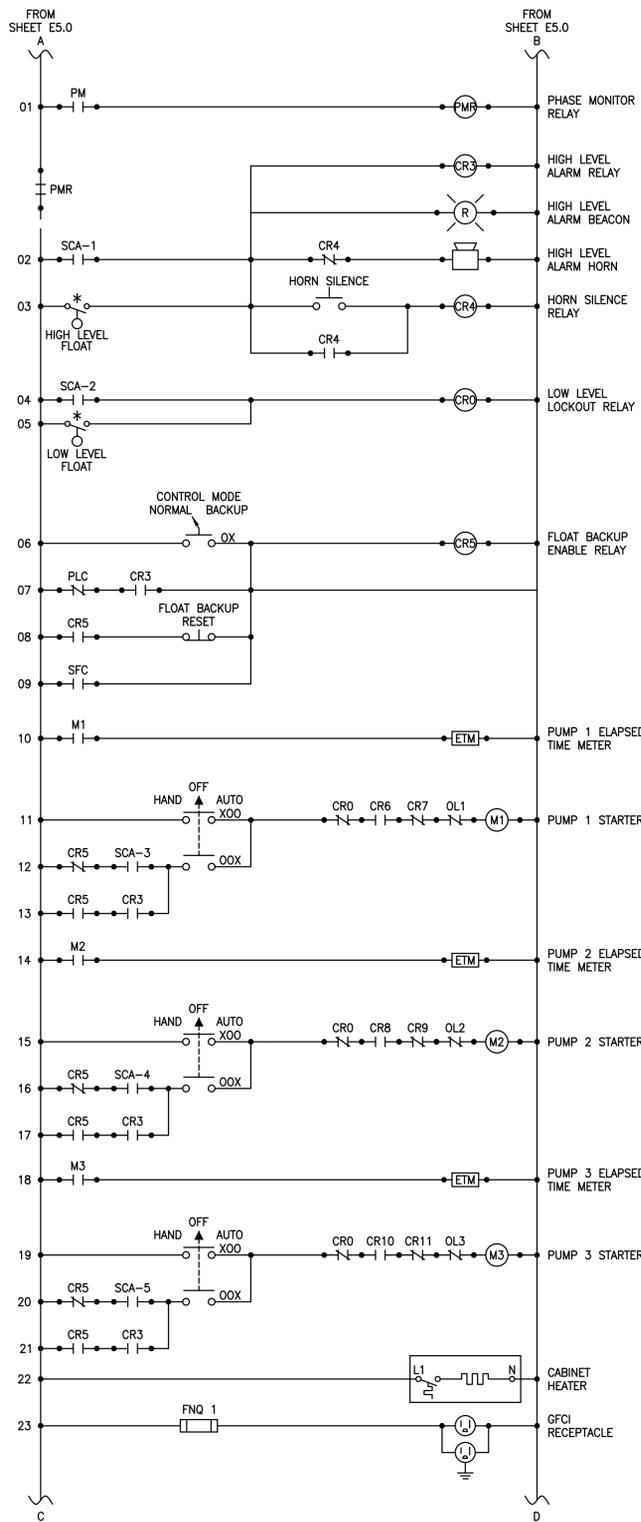
**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS

PUMP CONTROL PANEL DETAILS

NO. REVISION  
 DATE  
 2390824  
 STATE OF TEXAS  
 STEVE L. KANETZKY  
 84586  
 LICENSED PROFESSIONAL ENGINEER  
 EXPIRES 12/31/25  
 1/16/25

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PLAT NO. \_\_\_\_\_  
 JOB NO. 30002-74  
 DATE SEPTEMBER 2025  
 DESIGNER PD  
 CHECKED\_SK DRAWN\_PD  
 SHEET **E5.0**



**REFERENCE NOTES**

- ① PUMP CONTROL PANEL WIRING DIAGRAM IS TYPICAL. FINAL HARDWARE CONFIGURATION WILL VARY ACCORDING TO PUMP CONTROL PANEL SPECIFICATIONS FOR THE SUBMERSIBLE PUMPS.
- ② PROVIDE STARTUP AND MINIMUM 4 HOURS TRAINING FOR OPERATOR PERSONNEL. SUBMIT STARTUP REPORT TO ENGINEER.
- ③ MOISTURE/OVER TEMPERATURE MONITOR RELAY SHALL BE INTEGRATED TO THE CONTROL LOGIC TO PROVIDE FAIL SAFE OPERATION. THUS, WHEN THE MOISTURE/OVER TEMPERATURE MONITOR RELAY IS REMOVED FROM THE CONTROL CIRCUIT OR FAILS, THE CORRESPONDING PUMP WILL BE LOCKED OUT.
- ④ ALL SEALED FLOAT SWITCHES SHALL BE CONNECTED TO THE CONTROL LOGIC VIA INTRINSICALLY SAFE RELAYS.

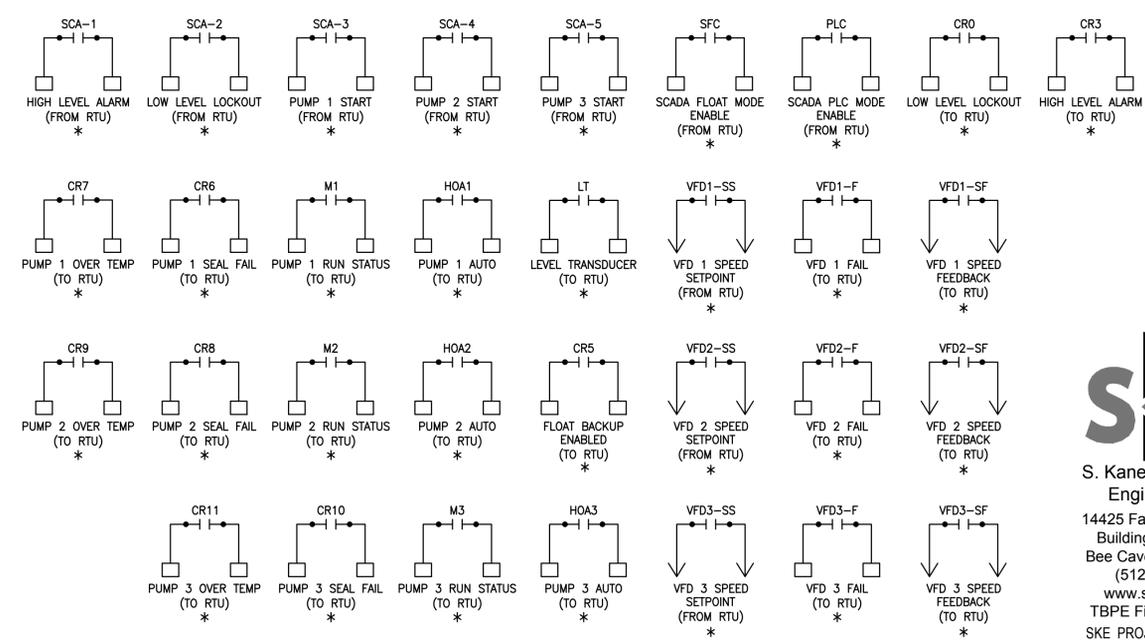
**SEQUENCE OF OPERATION:**

**LEVEL CONTROL OPERATION:**

THE PUMP CONTROL PANEL SHALL UTILIZE ONE (1) LEVEL SENSOR TO CONTROL THE LEVEL IN THE WET WELL. ON SUMP LEVEL RISE TO 1ST PUMP TURN-ON LEVEL SETTING, THE CONTROLLER SHALL START THE 1ST PUMP. IF THE LEVEL CONTINUES TO RISE TO THE 2ND PUMP TURN-ON LEVEL SETTING, THE CONTROLLER SHALL START THE 2ND PUMP. SUMP LEVEL SHALL LOWER TO LOW LEVEL TURN-OFF SETTING AND ALL PUMPS SHALL STOP. ALTERNATING RELAY SHALL INDEX ON STOPPING OF PUMP SO THAT 2ND PUMP WILL START ON NEXT OPERATION AND SO FORWARD. IF LEVEL CONTINUES TO RISE AND HIGH LEVEL SETTING IS REACHED, THE CONTROLLER SHALL TRIGGER THE HIGH LEVEL ALARM. ALARM SHALL BE MANUAL RESET. LEVELS SHALL BE SET AS INDICATED IN THE SPECIFICATIONS AND SHOWN ON THE CIVIL PLANS. AN AUTOMATIC BACKUP LEVEL FLOATS SYSTEM SHALL BE PROVIDED. IF ONE PUMP SHOULD FAIL FOR ANY REASON, THE SECOND PUMP SHALL OPERATE ON THE CONTROLLER OVERRIDE SIGNAL. ALL LEVEL SETTINGS SHALL BE ADJUSTABLE FROM THE CONTROLLER SELECTABLE MENU/SCREEN. WITH THE PUMP OPERATING, THE SUMP FLUID LEVEL SHALL LOWER. WHEN THE LOW LEVEL TURN-OFF SETTING IS REACHED THE PUMP RUNNING WILL THEN CEASE TO OPERATE.

**AUTOMATIC BACKUP LEVEL FLOATS OPERATION:**

WHEN THE LEVEL TRANSMITTER FAILS THE PUMP CONTROL PANEL SHALL AUTOMATICALLY OPERATE BY THE LEVEL FLOATS ACCORDING TO THE FOLLOWING ORDER.  
 IF THE HIGH LEVEL FLOAT IS ACTIVATED IT SHOULD TRANSFER TO FLOAT MODE.  
 IF THE PLC HAS A HARD FAULT IT SHOULD TRANSFER TO FLOAT MODE.  
 ON SUMP LEVEL RISE, LOWER (OFF) FLOAT SWITCH SHALL FIRST BE ENERGIZED. WITH THE PUMP OPERATING, THE SUMP FLUID LEVEL SHALL LOWER. WHEN THE LEVEL CAUSES THE LOWER (OFF) MERCURY FLOAT SWITCH TO TILT BACK TOWARD HANGING VERTICAL, ITS CONTACT SHALL OPEN CAUSING THE MOTOR CONTACTOR TO LOSE POWER TO THE COIL AND THUS OPEN THE CIRCUIT TO THE PUMP MOTOR. THE PUMP OR PUMPS RUNNING WILL THEN CEASE TO OPERATE.  
 IF THE HIGH LEVEL FLOAT IS ACTIVATED ALL PUMPS SHALL BE CALLED TO RUN AT 100% FLOW CAPACITY.  
 SCADA SHALL HAVE THE ABILITY TO TURN THE BACKUP FLOAT MODE ON AND OFF REMOTELY.



\* = FIELD WIRED BY CONTRACTOR.  
**1** CONTROLS SCHEMATIC (1/2)  
 E5.1 SCALE: NTS

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

DATE	
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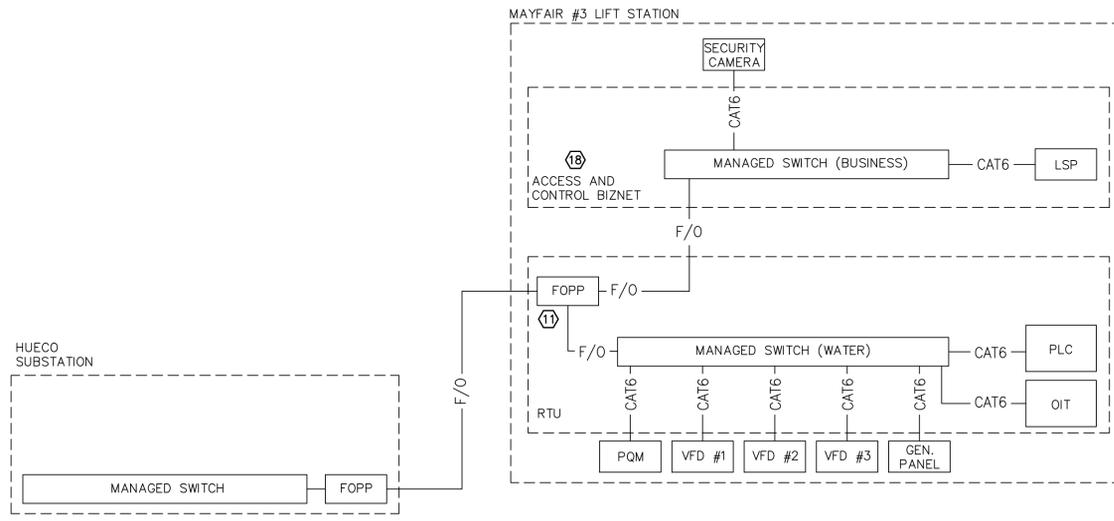
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**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
 PUMP CONTROL SCHEMATICS

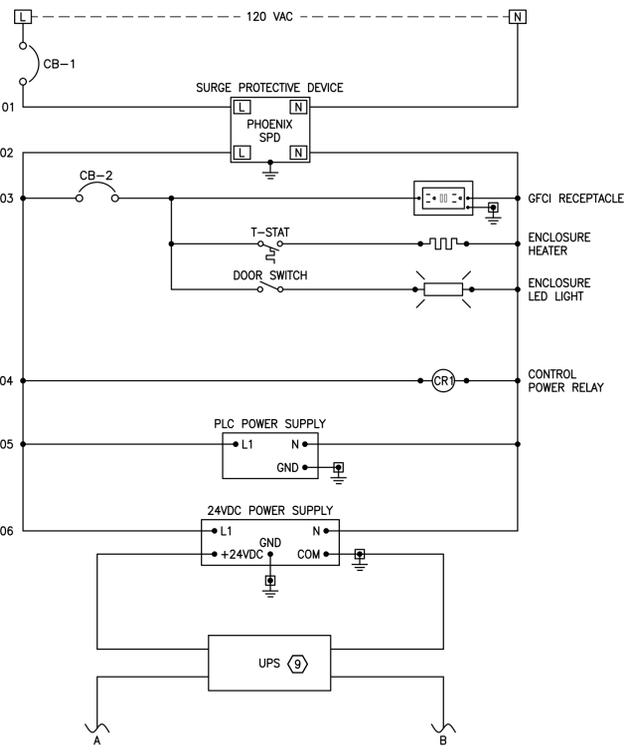
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PLAT NO.	
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DESIGNER	PD
CHECKED	SK_DRAWN_PD
SHEET	<b>E5.1</b>

Date: Feb. 16, 2025, 8:26am User ID: pformigant File: K:\Projects\2024\3390824-Page 03-RTU Schematic.dwg Lift Station: #3 Design Phase: CAD\3390824-E60.dwg



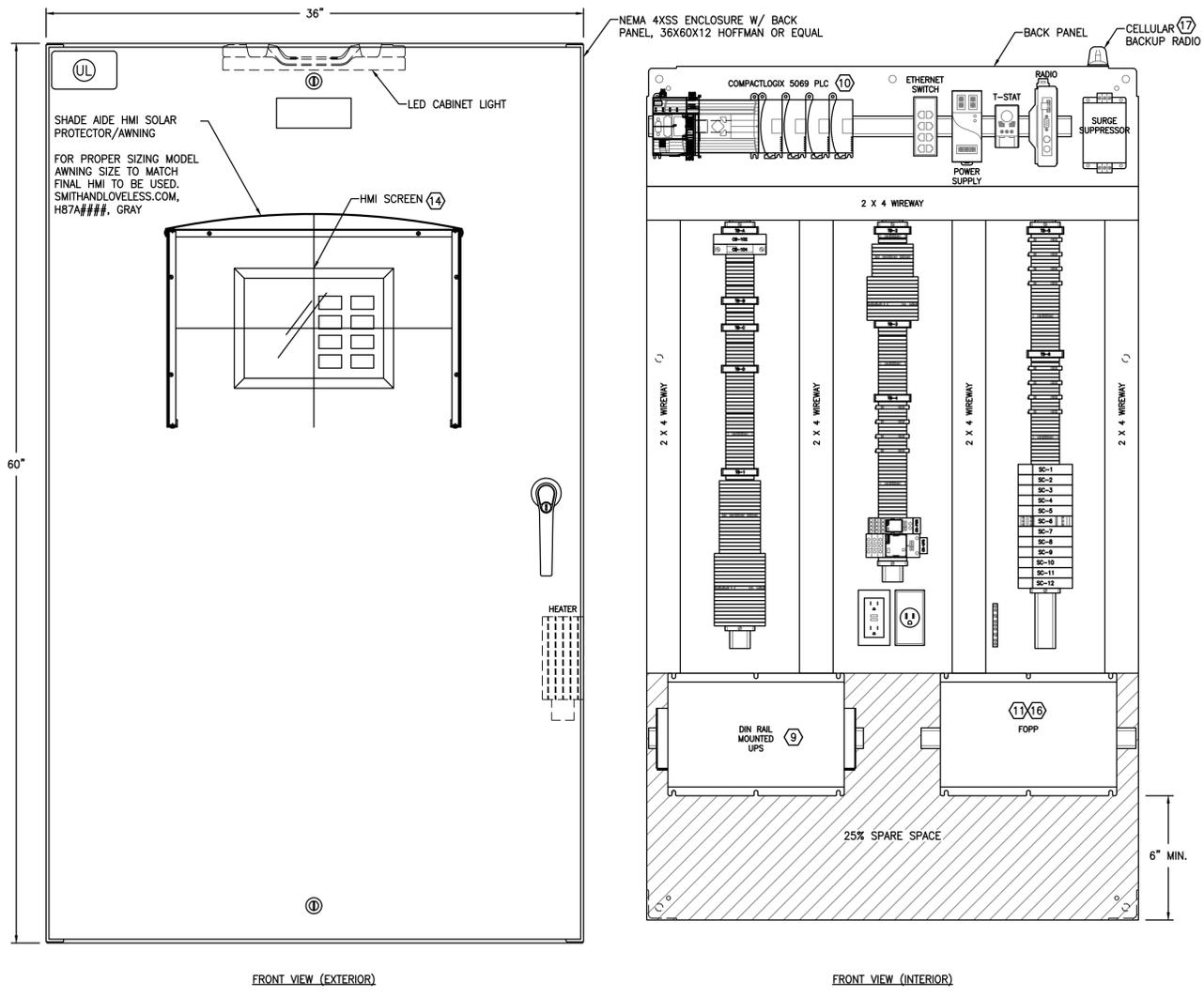
**3 NETWORK DIAGRAM**  
E6.0 SCALE: NTS



**2 RTU SCHEMATIC**  
E6.0 SCALE: NTS

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

\* INDICATES FIELD WIRING REQUIRED BY CONTRACTOR



**1 SCADA RTU ENCLOSURE**  
E6.0 SCALE: NTS

**REFERENCE NOTES**

- ① RTU PANEL SCHEMATIC AND WIRING DIAGRAM IS TYPICAL IN NATURE. FINAL HARDWARE CONFIGURATION MAY VARY.
  - ② PROVIDE FACTORY AUTHORIZED STARTUP AND MINIMUM 4 HOURS TRAINING FOR OPERATOR PERSONNEL.
  - ③ THE LIFT STATION SCADA SYSTEM SHALL OPERATE PER THE SEQUENCE OF OPERATIONS PROVIDED BY THE CIVIL ENGINEER.
  - ④ ALL CONDUITS AND WIRING PROVIDED, INSTALLED BY THE ELECTRICAL CONTRACTOR AND TERMINATED BY THE SCADA CONTRACTOR.
  - ⑤ ELECTRICAL CONTRACTOR MAY GROUP WIRES WITH SAME VOLTAGE FOR FIELD DEVICES IN CONDUIT AS HE DEEMS BEST APPROPRIATE.
  - ⑥ ANALOG AND LOW VOLTAGE SIGNALS SHALL NOT BE RUN IN SAME CONDUIT AS 120VAC AND 480VAC CIRCUITS.
  - ⑦ QUANTITY OF CONDUCTORS SHOWN ARE FOR REFERENCE ONLY. VERIFY EXACT WIRING REQUIREMENTS TO FIELD DEVICES PER INFORMATION PROVIDED BY THE EQUIPMENT VENDOR PRIOR TO INSTALLATION.
  - ⑧ USE SHIELDED TWISTED PAIR (STP) CABLE BELDEN #5341FE OR EQUAL.
  - ⑨ PROVIDE AND INSTALL PHOENIX QUINT DC-UPS WITH DIN RAIL - PANEL MOUNTED UPS WITH PHOENIX QUINT SERIES BATTERY PACK. MODEL SHALL BE QUINT-UPS/24DC/24DC/XX/EIP AND UPS-BAT/PB/24VDC BY PHOENIX CONTACT.
  - ⑩ PROVIDE AND INSTALL ALLEN BRADLEY COMPACTLOGIX 5069 PLC WITH I/O AS SHOWN ON 1/0 LIST\* SCHEDULE.
  - ⑪ ELECTRICAL CONTRACTOR SHALL COORDINATE FUTURE FIBER CONNECTION WITH NBU NETWORK SYSTEMS SUPERVISOR JASON STARNES (JSTARNES@NBUTEXAS.COM). ADD ADDITIONAL EQUIPMENT AS REQUIRED. FIBER DESIGN TO BE PROVIDED AS A SEPARATE DESIGN PACKAGE.
  - ⑫ CONTRACTOR TO INSTALL DIN RAIL MOUNTED LIU TO CONNECT TO SCADA NETWORK WITH LC TYPE CONNECTORS.
  - ⑬ ALL CONDUCTORS IN PLC CABINET SHALL REQUIRE CRIMPED FERRULES. TYPICAL PLC WIRE COLOR SHALL BE  
- 24VDC POSITIVE - ORANGE  
- 24VDC NEGATIVE - WHITE W/ORANGE
- LABELING SHALL FOLLOW THE FOLLOWING NOMENCLATURE:  
 - +24VDC WIRE NUMBERS - 2000-2499  
 - -24VDC WIRE NUMBERS - 2500-2999  
 - 120VAC WIRE NUMBERS - 3000-2499  
 - NEUTRAL WIRE NUMBERS - 3500-3999  
 - DIGITAL IN WIRE NUMBERS - 5000-5999  
 - DIGITAL OUT WIRE NUMBERS - 6000-6999  
 - ANALOG IN WIRE NUMBERS - 7000-7999  
 - ANALOG OUT WIRE NUMBERS - 8000-8999
- ⑭ CONTRACTOR SHALL PROVIDE HMI SCREEN TYPE 15" MAPLE SYSTEMS MODEL CMT3162X4.
  - ⑮ CONTRACTOR SHALL PROVIDE AND INSTALL CISCO IE 3400-8P2S W/ FOUR (4) SFP MODULES MODEL GLC-EX-SM-RGD-AO OR EQUAL. SEPERATE SWITCHES SHALL BE USED FOR DIFFERENT NBU NETWORKS (BUSINESS, ELECTRIC AND WATER) AS REQUIRED. COORDINATE EXACT REQUIREMENTS WITH NBU NETWORK SYSTEMS SUPERVISOR TIM BROWN (TBROWN@NBUTEXAS.COM).
  - ⑯ PROVIDE AND INSTALL FIBER OPTIC PATCH PANEL TYPE PANDUIT FAPZEAQLCZ OR APPROVED EQUAL.
  - ⑰ INSTALL AND PROVIDE TEMPORARY CELLULAR RADIO, ONCE FIBER CONNECTION HAS BEEN INSTALLED, TESTED, AND PLACED IN OPERATION, THE CELLULAR RADIO SHALL BE DEACTIVATED AND REMOVED FROM SERVICE. RADIO SHALL BE TYPE CISCO IR1101 WITH MODULE P-5656-GL-V02 PER DESIGN STANDARDS.
  - ⑱ SEE SHEET E2.0 FOR ACCESS AND CONTROL BIZNET.

**SKE**  
S. Kanetcky  
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14425 Falcon Head Blvd.  
Building B, Suite 100  
Bee Cave, Texas 78738  
(512) 326-3380  
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TBPE Firm No. F-2356  
SKE PROJECT # 2390824

DATE	
NO.	REVISION



**PAPE-DAWSON**  
1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1028860

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
NEW BRAUNFELS, TEXAS  
SCADA DETAILS

PLAT NO.	
JOB NO.	30002-74
DATE	SEPTEMBER 2025
DESIGNER	PD
CHECKED	SK_DRAWN_PD
SHEET	<b>E6.0</b>

**GENERAL NOTE**

- IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROVIDE AND INSTALL ALL RACEWAYS AND CONDUCTORS CUMULATIVELY BETWEEN THE UNDERGROUND ELECTRICAL DETAILS, PANEL SCHEDULES, I/O SCHEDULES, AND CIRCUIT SCHEDULES. THE CIRCUIT SCHEDULES, I/O SCHEDULES AND PANEL SCHEDULES TAKE PRECEDENCE OVER THE UNDERGROUND ELECTRICAL DETAILS.

I/O LIST					
ITEM	DESCRIPTION	TYP.	CONDUCTOR	FROM	TO
1	UTILITY POWER STATUS (FROM ATS)	DI	2#14	AUTOMATIC TRANSFER SWITCH	SCADA RTU
2	ATS IN EMERGENCY	DI	2#14	AUTOMATIC TRANSFER SWITCH	SCADA RTU
3	GENERATOR FAIL	DI	2#14	GENERATOR	SCADA RTU
4	GENERATOR LOW FUEL	DI	2#14	GENERATOR	SCADA RTU
5	GENERATOR COMMON ALARM	DI	2#14	GENERATOR	SCADA RTU
6	GENERATOR RUNNING	DI	2#14	GENERATOR	SCADA RTU
7	PHASE MONITOR ALARM	DI	2#14	PHASE MONITOR	SCADA RTU
8	HIGH LEVEL ALARM	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
9	LOW LEVEL LOCKOUT	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
10	PUMP #1 RUN STATUS	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
11	PUMP #1 AUTO	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
12	PUMP #1 OVER TEMP	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
13	PUMP #1 SEAL FAIL	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
14	PUMP #1 VFD FAIL	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
15	PUMP #2 RUN STATUS	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
16	PUMP #2 AUTO	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
17	PUMP #2 OVER TEMP	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
18	PUMP #2 SEAL FAIL	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
19	PUMP #2 VFD FAIL	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
20	PUMP #3 RUN STATUS	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
21	PUMP #3 AUTO	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
22	PUMP #3 OVER TEMP	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
23	PUMP #3 SEAL FAIL	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
24	PUMP #3 VFD FAIL	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
25	FLOAT BACKUP ENABLED	DI	2#14	PUMP CONTROL PANEL	SCADA RTU
26	SCADA PLC MODE ENABLED	DI	2#14	SCADA RTU	PUMP CONTROL PANEL
27	UPS ALARM	DI	2#14	UPS	SCADA RTU
28	CONTROL POWER	DI	1#16	CR1-12	TB#
29	SPARE	DI			
30	SPARE	DI			
31	SPARE	DI			
32	SPARE	DI			
33	HIGH LEVEL ALARM	DO	2#14	SCADA RTU	PUMP CONTROL PANEL
34	LOW LEVEL LOCKOUT	DO	2#14	SCADA RTU	PUMP CONTROL PANEL
35	PUMP #1 START	DO	2#14	SCADA RTU	PUMP CONTROL PANEL
36	PUMP #2 START	DO	2#14	SCADA RTU	PUMP CONTROL PANEL
37	PUMP #3 START	DO	2#14	SCADA RTU	PUMP CONTROL PANEL
38	SCADA FLOAT MOAD ENABLE	DO	2#14	SCADA RTU	PUMP CONTROL PANEL
39	SPARE	DO			
40	SPARE	DO			
41	SPARE	DO			
42	SPARE	DO			
43	LEVEL TRANSDUCER	AI	1#16TSP	PUMP CONTROL PANEL	SCADA RTU
44	PUMP #1 VFD SPEED FEEDBACK	AI	1#16TSP	PUMP CONTROL PANEL	SCADA RTU
45	PUMP #2 VFD SPEED FEEDBACK	AI	1#16TSP	PUMP CONTROL PANEL	SCADA RTU
46	PUMP #3 VFD SPEED FEEDBACK	AI	1#16TSP	PUMP CONTROL PANEL	SCADA RTU
47	SPARE	AI			
48	SPARE	AI			
49	SPARE	AI			
50	PUMP #1 VFD SPEED SETPOINT	AO	1#16TSP	SCADA RTU	PUMP CONTROL PANEL
51	PUMP #2 VFD SPEED SETPOINT	AO	1#16TSP	SCADA RTU	PUMP CONTROL PANEL
52	PUMP #3 VFD SPEED SETPOINT	AO	1#16TSP	SCADA RTU	PUMP CONTROL PANEL
53	SPARE	AO			
54	SPARE	AO			
55	SPARE	AO			
56	POWER QUALITY METER	E	1-CAT6	POWER QUALITY METER	SCADA RTU
57	SECURITY CAMERA	E	1-CAT6	SECURITY CAMERA	SCADA RTU
58	PUMP #1 VFD	E	1-CAT6	PUMP #1 VFD	SCADA RTU
59	PUMP #2 VFD	E	1-CAT6	PUMP #2 VFD	SCADA RTU
60	PUMP #3 VFD	E	1-CAT6	PUMP #3 VFD	SCADA RTU
61	GENERATOR CONTROL PANEL	E	1-CAT6	GENERATOR	SCADA RTU
62	UPS	E	1-CAT6	UPS	SCADA RTU

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

Date: Feb 16, 2025, 8:26am User ID: pformigant File: K:\Projects\2025\2390824-PAPE-Dawson\Mayfair Lift Station.dwg Plot: K:\Projects\2025\2390824-PAPE-Dawson\Mayfair Lift Station.dwg

DATE	
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REVISION	



**PAPE - DAWSON**  
 1677 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

**MAYFAIR LIFT STATION #3 AND FORCE MAIN**  
 NEW BRAUNFELS, TEXAS  
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JOB NO.	30002-74
DATE	SEPTEMBER 2025
DESIGNER	PD
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DRAWN	PD
SHEET	<b>E6.1</b>