

CIVIL SITE PLANS FOR:

STORMWATER AND UTILITY IMPROVEMENTS

PREPARED FOR:

FIRST UNITED METHODIST CHURCH

PORT ST. JOE, FLORIDA

PREPARED BY:

RR

PREBLE-RISH INC

CONSULTING ENGINEERS AND SURVEYORS

CIVIL • SURVEYING • SITE PLANNING

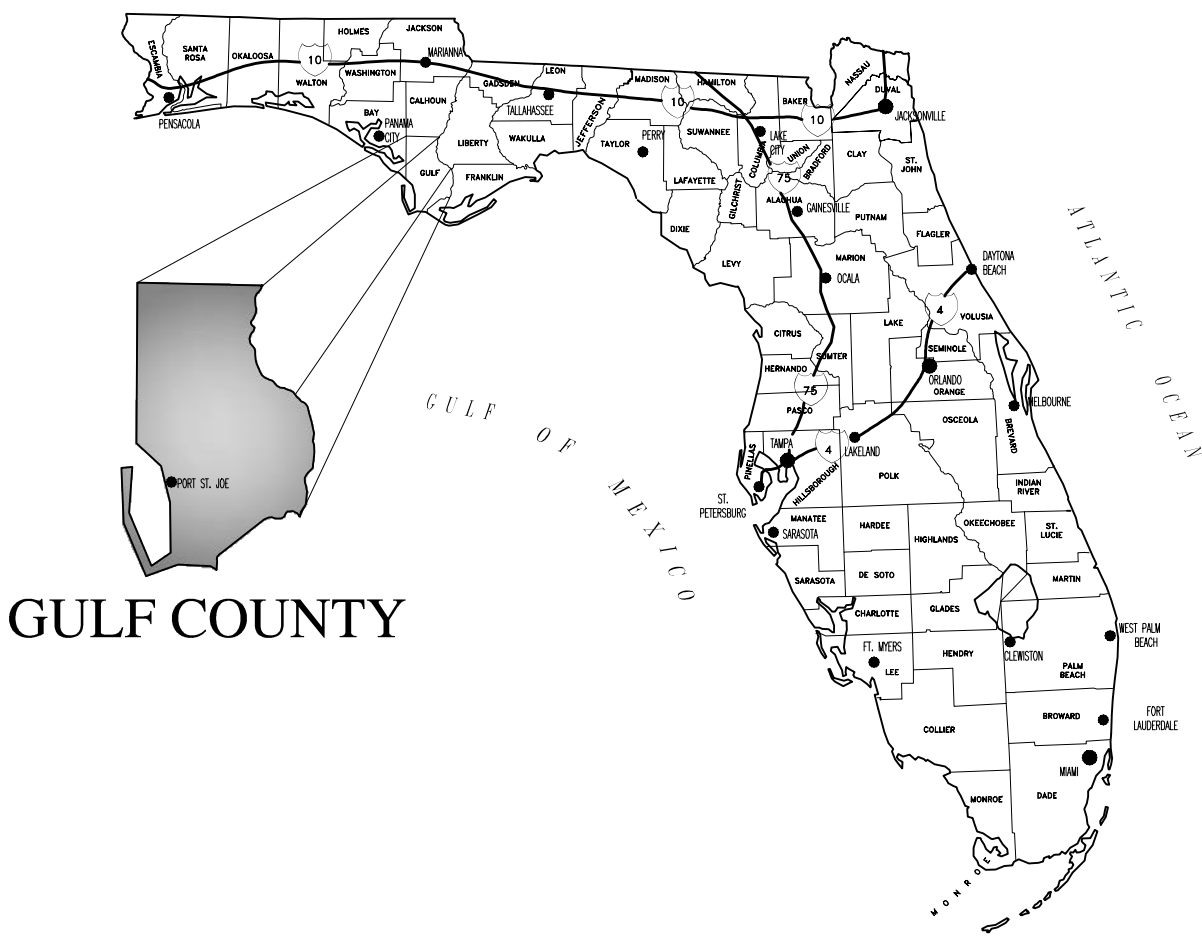
203 ABERDEEN PKWY, PANAMA CITY, FL 32405

(850) 522-0644

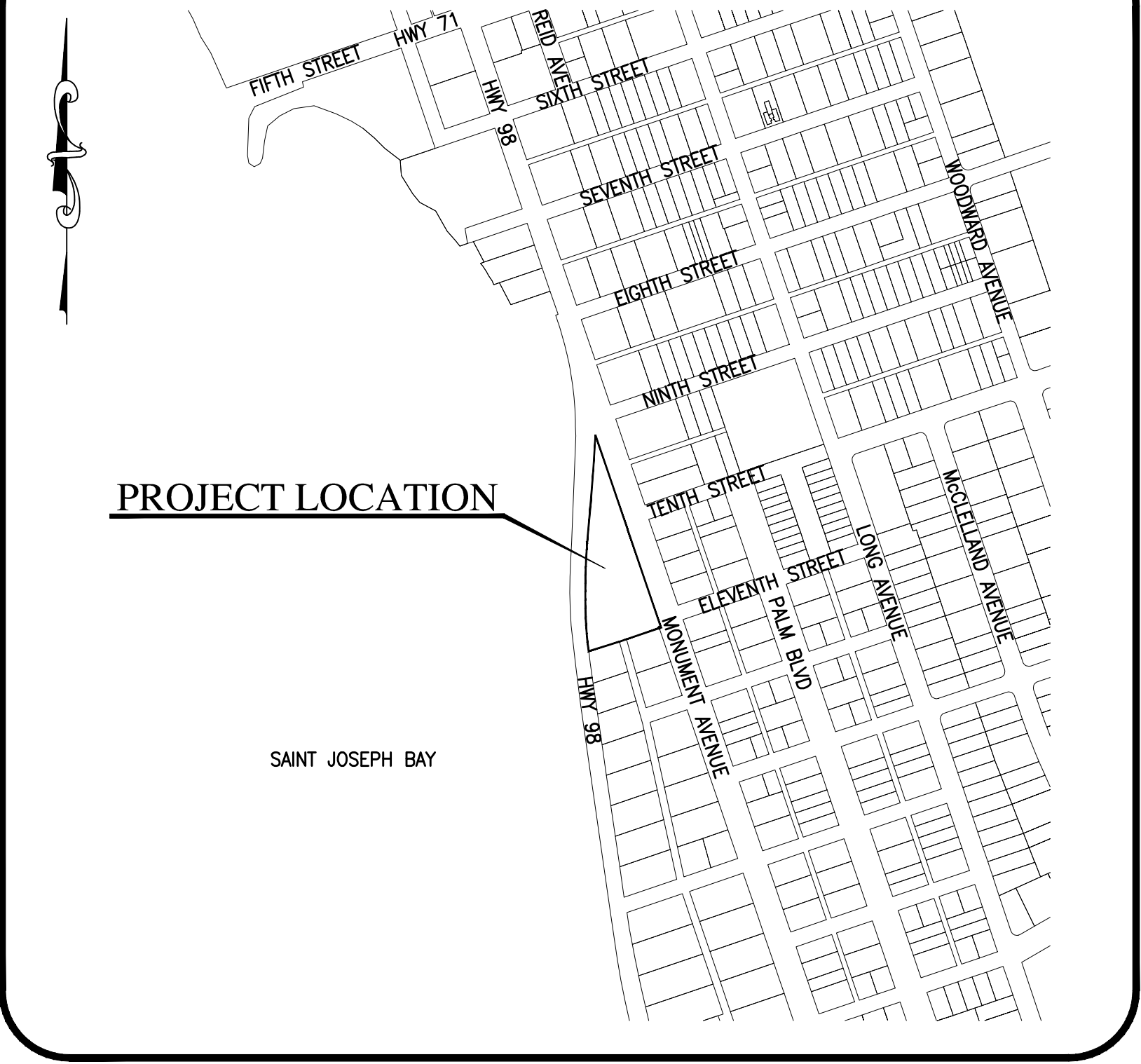
REV. NO.	REV. DATE	REVISION DESCRIPTION	RELEASED TO	RELEASE DATE
1	11-11-15	REV SHEET C1.8 & C2.2, ADDED 8" RPZ BACKFLOW PREVENTER		
2	02-05-16	REV 30" STORM PIPE ROUTE		

PROJECT NUMBER - 500.044
SEPTEMBER 28, 2015

VICINITY MAP



LOCATION MAP



DRAWING INDEX

TITLE	NO.
EXISTING CONDITIONS	C1.1
GENERAL NOTES & SPECIFICATIONS	C1.2 - C1.3
DEMO PLAN	C1.4
SITE PLAN	C1.5
GRADING AND DRAINAGE PLAN	C1.6
STORMWATER POND DETAILS	C1.7
UTILITY PLAN	C1.8
DETAILS	C2.1 - C2.4

Quina Grundhoefer Architects

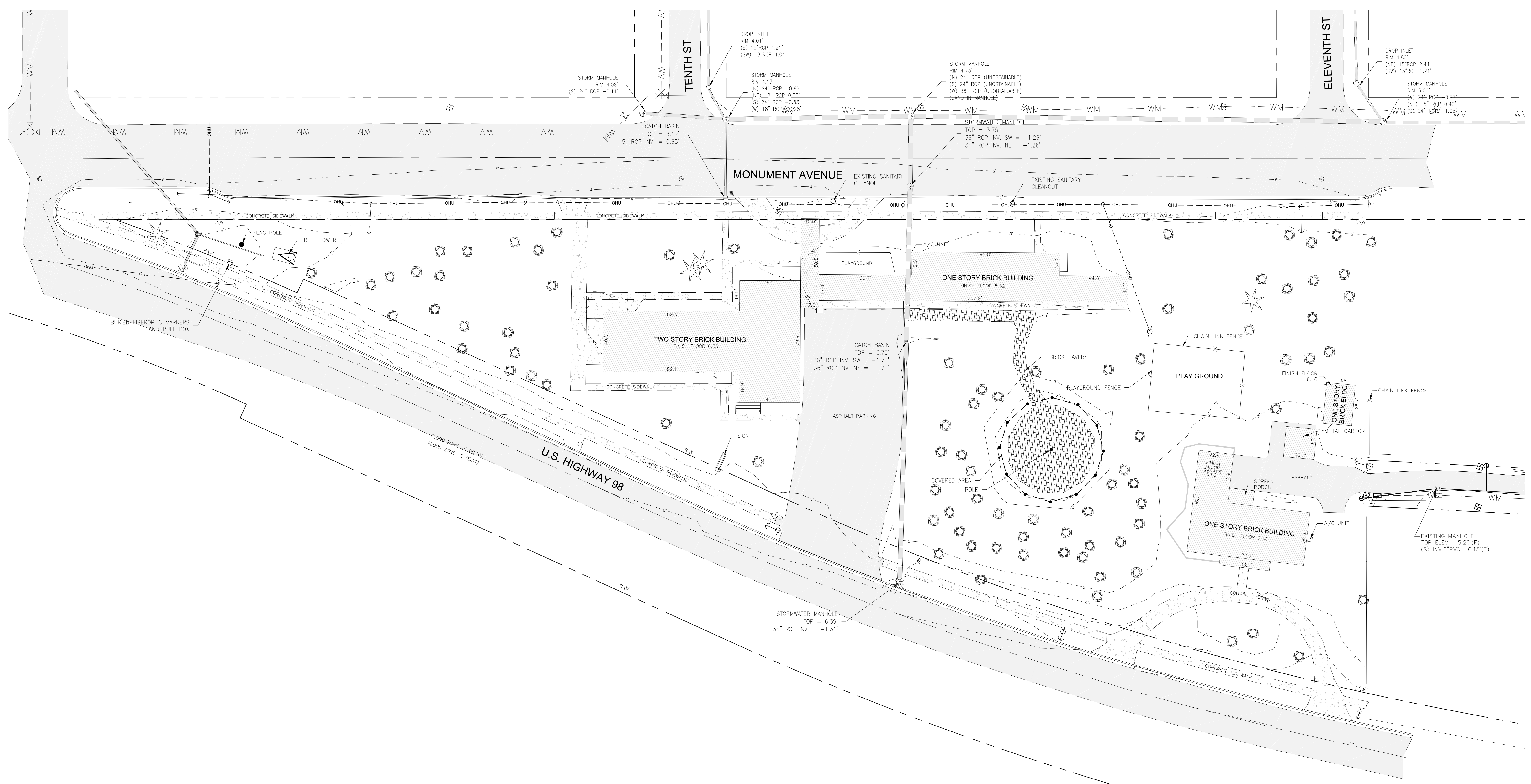
• • •

400 West Romana Street Pensacola, FL 32502
850 433-5575 Fax 850 433-5366
E-mail: qg@qgarchitects.com

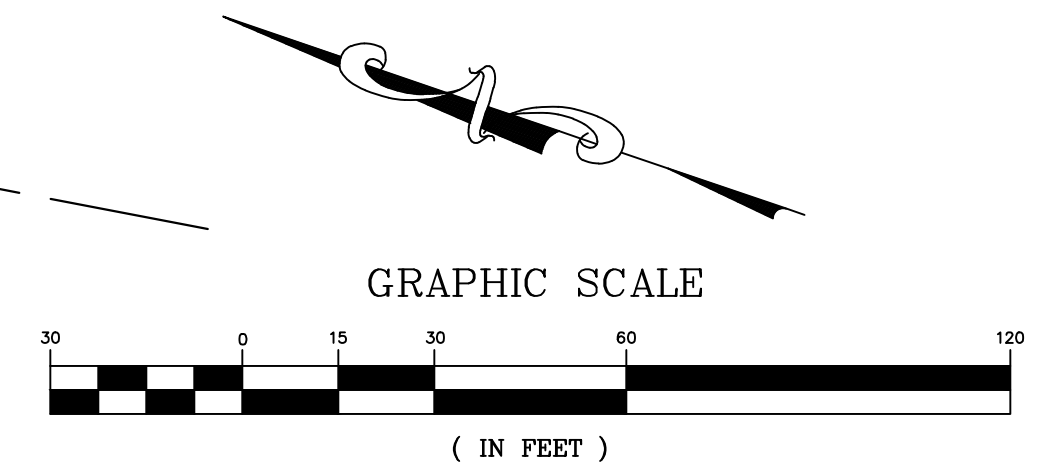
Project
FUMC
Port St. Joe
Great Hall
COVER SHEET

Date:
9-28-15
Project No.
0615

Sheet No.
C0.0



- SYMBOLS & ABBREVIATIONS
- ⊗ = STORM MANHOLE
 - ⊙ = SEWER MANHOLE
 - = PILING
 - ⊕ = PALM TREE
 - ⊗ = PINE TREE
 - ⊙ = GUY ANCHOR
 - ⊙ = UTILITY POLE
 - OHU — = OVERHEAD UTILITY LINES
 - R/W = RIGHT OF WAY
 - BRICK PAVERS
 - CONCRETE
 - ASPHALT



February 1, 2016 03:29:20 EST
K:\500044 METHODIST CHURCH IMPROVEMENTS\CTV\3DFLUIDEX - PRODUCTION\500044_C01.DWG

GENERAL NOTES:

- ALL PROPOSED GROUND ELEVATIONS ARE FINISHED SOD ELEVATIONS. FINISH EARTHWORK GRADING SHALL BE 0.2 FEET BELOW ELEVATIONS SHOWN TO ALLOW FOR SOD THICKNESS.
- SODDING INCLUDES MAINTAINING SLOPES AND SOD UNTIL COMPLETION AND ACCEPTANCE OF TOTAL PROJECT OR GROWTH IS ESTABLISHED, WHICHEVER COMES LAST. UNTIL THEN, ALL EROSION, SILTATION AND MAINTENANCE OF GRADES IS THE RESPONSIBILITY OF THE CONTRACTOR.
- WHERE EXCAVATIONS ARE IN CLOSE PROXIMITY OF TREES NOT SHOWN AS BEING REMOVED, THE CONTRACTOR SHALL USE EXTREME CARE IN NOT DAMAGING THE ROOT SYSTEM. NO EQUIPMENT, SUPPLIES, OR VEHICLES SHALL BE STORED OR PARKED WITHIN THE DRIP LINE OF TREES TO REMAIN AND BE PRESERVED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM ALL EMPLOYEES AND SUBCONTRACTORS OF THIS REQUIREMENT AND TO ENFORCE SAME.
- THE CONTRACTOR SHALL NOTIFY UTILITY OWNERS THROUGH SUNSHINE STATE ONE CALL OF FLORIDA (800-432-4770 AT LEAST TWO (2) FULL BUSINESS DAYS IN ADVANCE OF BEGINNING CONSTRUCTION ON THE JOB SITE. THE CONTRACTOR SHALL WAIT THE REQUIRED TIME FOR BURIED UTILITIES TO BE LOCATED AND MARKED. THE CONTRACTOR SHALL PROTECT THE MARKS DURING CONSTRUCTION. IF THE MARKS ARE DESTROYED, THE CONTRACTOR SHALL CALL SUNSHINE STATE ONE CALL FLORIDA AGAIN.
- ALL INLETS SHALL BE PROTECTED AS PER FDEP BEST MANAGEMENT PRACTICES, AND THE FDEP/FDOT EROSION AND SEDIMENT CONTROL HANDBOOK.
- THE CONTRACTOR IS TO MAINTAIN AND KEEP STREET NAME IDENTIFICATION (STREET SIGNS) VISIBLE DURING CONSTRUCTION OPERATIONS, IN ORDER TO FACILITATE EMERGENCY VEHICLE TRAFFIC.
- THE CONTRACTOR SHALL NOT BRING ANY HAZARDOUS MATERIALS ONTO THE PROJECT. SHOULD THE CONTRACTOR REQUIRE SUCH MATERIALS FOR PERFORMING THE CONTRACTED WORK, THE CONTRACTOR SHALL REQUEST, IN WRITING, WRITTEN PERMISSION FROM THE PROJECT ADMINISTRATOR.
- ANY KNOWN OR SUSPECTED HAZARDOUS MATERIAL FOUND ON THE PROJECT SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER WHO SHALL DIRECT THE CONTRACTOR TO PROTECT THE AREA OF KNOWN OR SUSPECTED CONTAMINATION FROM FURTHER ACCESS. THE ENGINEER IS TO NOTIFY THE PROJECT ADMINISTRATOR OF DISCOVERY. THE PROJECT ADMINISTRATOR WILL ARRANGE AN INVESTIGATION, IDENTIFICATION AND REMEDIATION OF THE HAZARDOUS MATERIAL. THE CONTRACTOR SHALL NOT RETURN TO THE AREA OF CONTAMINATION UNTIL APPROVAL IS PROVIDED BY THE ENGINEER. THE PROJECT ADMINISTRATOR WILL ADVISE THE ENGINEER.
- DEWATERING: SHOULD LOWERING OF GROUNDWATER BE NECESSARY FOR THE INSTALLATION OF CONCRETE STRUCTURES, OR TO PREVENT LATERAL MOVEMENT OF CONCRETE ALREADY PLACED, SUCH LOWERING SHALL BE ACCOMPLISHED BY MEANS OF A WELL POINT SYSTEM OR OTHER APPROVED MEANS, AT CONTRACTOR'S EXPENSE. COMPREHENSIVE PLANS FOR DEWATERING OPERATIONS, IF USED, SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO INSTALLATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITTING ASSOCIATED WITH DEWATERING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING NPDES PERMIT, IF NECESSARY.
- THE CONTRACTOR SHALL REPAIR OR REPLACE ANY METERS, VALVES, SERVICE LATERALS, FIRE HYDRANTS, MAINS, WATER, WASTEWATER, OR GAS FACILITIES DAMAGED DURING CONSTRUCTION AT NO ADDITIONAL COST.
- SWEEPING SHALL OCCUR DAILY OR IMMEDIATELY AFTER SUCH EVENTS THAT CAUSE TRACKING ONTO STREET.
- ALL SIGNAGE IMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE RELOCATED BY CONTRACTOR AT NO ADDITIONAL COST.
- ANY SIGNS DAMAGED BY THE CONTRACTOR OR STOCKPILED BY THE CONTRACTOR THAT BECOME DAMAGED SHALL BE REPLACED.
- ALL MAILBOXES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.
- CONTRACTOR SHALL PROVIDE THREE (3) SETS OF AS-BUILT DRAWINGS AND ONE (1) DIGITAL COPY IN AUTOCAD FORMAT OF THE COMPLETED PROJECT. THE AS BUILT DRAWINGS SHALL BE SIGNED AND SEALED BY A FLORIDA REGISTERED SURVEYOR.
- ALL DEMOLISHED MATERIALS SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
- EXCEPT FOR THE INFORMATION PROVIDED IN THESE DRAWINGS, ALL WORK SHALL CONFORM TO DIVISION II AND III OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION AND ANY IMPLEMENTED MODIFICATIONS OF THOSE SPECIFICATIONS.

CONSTRUCTION SEQUENCE AND BMP'S

- THE INITIAL PART OF THE CONSTRUCTION PROCESS SHALL BE THE INSTALLATION OF SILT FENCE AROUND THE PERIMETER OF THE AREA THAT IS TO BE DISTURBED TO ENSURE NO TURBID RUNOFF LEAVES THE CONSTRUCTION SITE. THE SILT FENCE SHALL BE INSTALLED PER THE CONSTRUCTION DETAILS. IF THERE IS A POSSIBILITY OF RUNOFF TO A WATER BODY, TURBIDITY CURTAIN SHALL BE INSTALLED PER THE CONSTRUCTION DETAILS. THE SECOND STEP SHALL BE THE INSTALLATION OF THE CONSTRUCTION ENTRANCE AND DEMOLITION OF ANY EXISTING IMPROVEMENTS AS NEEDED (SEE DEMOLITION PLAN). THE THIRD STEP SHALL BE TO CLEAR AND GRUB AREAS WHERE IMPROVEMENTS ARE TO BE INSTALLED. AS FILL IS BROUGHT INTO THE SITE, THE STORM WATER BASIN SHOULD BE CREATED TO CAPTURE ANY OVERLAND FLOW AND ACT AS A SEDIMENT TRAP. IT IS RECOMMENDED THAT THE BASIN BE CONSTRUCTED APPROXIMATELY 1/2' HIGHER THAN DESIGN AT THIS POINT TO ENSURE ALL SILTS AND FINES ARE REMOVED AT THE TIME OF FINAL GRADING OF THE STORM WATER BASIN.
- TYPICALLY, THE SANITARY SEWER, STORM SEWER, AND WATER MAINS ARE INSTALLED RESPECTIVELY. UPON INSTALLATION OF THE STORM SEWER, HAY BALES AND FILTER FABRICS SHALL BE USED AT ALL INLET OPENINGS PER THE CONSTRUCTION DETAILS TO KEEP THE SYSTEM FREE OF SEDIMENTS DURING THE CONSTRUCTION PHASE. DEPENDING ON SITE CONDITIONS AND SIZE, SEDIMENT TRAPS SHALL BE UTILIZED TO PREVENT TURBID RUNOFF FROM LEAVING THE SITE (SEE EROSION CONTROL PLAN).
- SITE STABILIZATION SHALL BE PROVIDED AS SOON AS THE GRADING WILL ALLOW IN ORDER TO STOP EROSION AND REDUCE TURBID RUNOFF. SEEDING SODDING, OR HYDROSEEDING SHALL BE USED WHEN FINAL GRADES ARE ESTABLISHED.
- EROSION CONTROL MEASURES SHALL BE UTILIZED THROUGHOUT THE CONSTRUCTION PHASE OF THIS PROJECT AND BE MANAGED IN ACCORDANCE WITH THE STATE NPDES PROGRAM.
- THE DESIGN OF THE STORM WATER MANAGEMENT SYSTEM FOR THIS PROJECT COMPLIES WITH THE REQUIREMENTS OF THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT.

SECTION 1506-PIPE AND FITTINGS

PART 1 - GENERAL

- RELATED DOCUMENTS:
 - Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.
- DESCRIPTION OF WORK:
 - Extent of pipes and pipe fittings required by this section is indicated on drawings and/or specified in other sections.
 - Types of pipes and pipe fittings specified in this section include the following:
 - Ductile Iron Pressure Pipes (Pressure Pipes)
 - Plastic Pipes (Pressure Pipes)
 - Miscellaneous Piping Materials/Products
 - Pipes and pipe fittings furnished as part of factory-fabricated equipment, are specified as part of equipment assembly in other sections.
- QUALITY ASSURANCE:
 - Manufacturer's Qualifications: Firms regularly engaged in manufacture of pipes and pipe fittings of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years. All fittings, valves, service saddles, etc., shall meet the requirements of the Safe Drinking Water Act including the Reduction of Lead in Drinking Water Act (Public Law 111-380).
 - Codes and Standards:
 - Welding: Qualify welding procedures, welders and operators in accordance with ASME B31.1 or ASME B31.9, as applicable, for shop and project site welding of piping work.
 - Brazing: Certify brazing procedures, brazers, and operators in accordance with ASME Boiler and Pressure Vessel Code, Section IX, for shop and job-site brazing of piping work.
 - NSF Labels: Where plastic piping is indicated to transport potable water, provide pipes and pipe fittings bearing approval label by National Sanitation Foundation (NSF).

PART 2 - PRODUCTS

- GENERAL:
 - Piping Materials: Provide pipe and tube of type, joint type, grade, size and weight (wall thickness or class) indicated for each service. Where type, grade or class is not indicated, provide proper selection as determined by Installer for installation requirements, and comply with governing regulations and industry standards.
 - Pipe/Tube Fittings: Provide factory-fabricated fittings of type, materials, grade, class and pressure rating indicated for each service and pipe size. Provide sizes and types matching pipe, tube, valve or equipment, connection in each case. Where not otherwise indicated, comply with governing regulations and industry standards for selection, and with pipe manufacturer's recommendations where applicable.
- DUCTILE IRON PRESSURE PIPES AND PIPE FITTINGS:
 - Ductile-Iron Pipe: ANSI A21.51; AWWA C151.
 - Ductile-Iron Fittings: AWWA C110.
 - Rubber Gasket Joints: AWWA C111.
 - Where ductile iron pipe and fittings are to be below ground or installed in a casing pipe, the coating shall be a minimum 1.0 mil thick in accordance with ANSI/AWWA A21.51. Where ductile iron pipe and fittings are to be installed above ground, pipe, fittings and valves shall be thoroughly cleaned and given one field coat (minimum 1.5 mils dry thickness) of red ironbore primer. The intermediate and field coats of Alkyl shall also be applied by the Contractor (minimum 1.5 mil dry thickness each coat). Primer and field coats shall be compatible and shall be applied in accordance with the manufacturer's recommendations. Final field coat shall be blue.
 - All ductile iron pipe and fittings shall have an interior protective lining of cement-mortar with a seal coat of asphaltic material in accordance with ANSI/AWWA A21.4 C104.
 - Polyethylene: coatings for interior liners shall be American Polybond Plus, or approved equal.
- PLASTIC PIPES AND PIPE FITTINGS:
 - Use SDR 9, Polyethylene Pipe (PE) ASTM D 1248, D 3550, Type III, Grade P 34 for water services with embedded blue stripe.
 - Use DR 11, Polyethylene Pipe (PE) ASTM D 1248, D 3550, Type III, Grade P 34 for sewer services with embedded green stripe.
 - Use Polyvinyl Chloride Pipe (PVC) AWWA C 900 (inter revision) for pipe 4" thru 12". All pipe shall be DR 25 unless specified otherwise. The pipe color shall be green for sewer and blue for potable water.
 - Use Pressure Rated PVC Pipe conforming to ASTM D-2241 for potable water mains 3" and less. All pipe shall be SDR 21 unless specified otherwise. Pipe color shall be blue.
 - Pressure Pipe Fittings 3" and Larger: Use mechanical joint, ductile iron Class 150, compact fittings manufactured in accordance with ANSI/AWWA C10 A21.53-84, as manufactured by American, Union Foundry, or equal. Sewer fittings shall be lined inside with polyureth 401 or approved equal.
 - Pressure PVC Pipe Fittings 3" and Less: Use Solvent Weld push on type SCH 80 PVC.
- MISCELLANEOUS PIPING MATERIALS/PRODUCTS:
 - Welding Materials: Except as otherwise indicated, provide welding materials as determined by Installer to comply with installation requirements.
 - Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials.
 - Soldering Materials: Except as otherwise indicated, provide soldering materials as determined by Installer to comply with Installation requirements.
 - Gaskets for Flanged Joints: ANSI B16-21, full-faced for cast-iron flanges, raised-face for steel flanges, unless otherwise indicated.

PART 3 - EXECUTION

3.01 INSTALLATION:

General Instructions:

- All excavation and backfilling for underground piping shall be done in accordance with the applicable sections of these specifications. All pipe, fittings, and valves shall be carefully handled at all times to prevent damage to the pipe or other installations on the job site. Install ductile iron water mains and appurtenances in accordance with AWWA C 600. Install PVC pressure pipe in accordance with AWWA C605.
- All joints shall be wiped free of all dirt, rust and foreign material and the pipe shall be carefully examined for defects before installation.
- At times when pipe installation is not in progress, the open ends of the pipe shall be closed by approved means and shall remain closed until construction on that particular section is resumed, eliminating the possibility of any flow obstructions getting into the pipe.
- Install pipes and pipe fittings in accordance with recognized industry practices which will achieve permanently leakproof piping systems, capable of performing each indicated service without piping failure. Install all run with minimum joints and couplings, but with adequate and accessible unions for disassembly and maintenance/repairment of valves and equipment. Reduce stress (valves indicated) by type of indicating fittings. Align piping accurately at connections, within 1/16" misalignment tolerance.

3.02 SPECIFIC INSTRUCTIONS:

- All non-metallic water lines (except service lines) shall be installed with underground locator marking tape. Locator tape shall be installed 12 inches below the ground surface or pavement directly over the pipeline. Locator tape shall be of an inert polyethylene material having a minimum thickness of 0.1 mm and should be color-coded "Safety Green" as adopted by the American Pipeline Works Association and the Florida Utilities Coordination Committee. The tape shall bear printed identification describing the type of pipeline buried below and shall contain a 0.025 mm thick reflective foil core. The imprint shall repeat itself for the entire length of the tape. Contractor shall use 12 gauge copper tracer wire for all non-metallic water lines and shall be placed 1 to 4" above the pipe.

3.03 PVC FITTINGS:

- PVC fittings will not be used on pressure pipe 3" in diameter or larger. PVC Pipe Fittings shall be Solvent Weld push on type SCH 80 PVC.

3.04 PIPING SYSTEM JOINTS:

- General: Provide joints of type indicated in each piping system.
- Weld pipe joints of steel water pipe in accordance with AWWA C 206.
- Flanged Joints: Match flanges within piping system, and at connections with valves and equipment. Clean flange faces and install gaskets. Tighten bolts to provide uniform compression of gaskets.
- Plastic Pipe/Tube Joints: Comply with manufacturer's instructions and recommendations, and with applicable industry standards.
- Heat Joining of Thermoplastic Pipe: ASTM D 2657.

3.05 ANCHORAGE OF BENDS, TEES, AND PLUGS:

- Limiting Pipe Diameter and Degree of Bend: Reaction of thrust blocking shall be applied on all pipe lines at all tees, plugs, caps and at bends deflecting 11-14 degrees or more, or movement shall be prevented by attaching suitable metal rods or straps as directed.

3.06 CLEANING, FLUSHING, INSPECTING:

- General: Clean exterior surfaces of installed piping systems of superfluous materials, and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items.
- Inspect pressure piping in accordance with procedures of ASME B 31.
- Disinfect water mains and water service piping in accordance with AWWA C 601.

3.07 HYDROSTATIC TESTING:

- General: Provide temporary equipment for testing, including pump and gauges. Test piping system before insulation is installed wherever feasible, and remove control devices before testing. Test each natural section of each piping system independently but do not use piping system valves to isolate sections where test pressure exceeds valve pressure rating. Fill each section with water and pressurize for indicated pressure and time.
- Hydrostatic testing shall be in accordance with AWWA C 600.
- Should any test of combined sections of pipe disclose leakage greater than the specified limit, the Contractor shall, at his own expense, locate and repair the defective joints until the leakage is within the specified allowance.
- Water for testing shall be provided by the Contractor.
- Water may be subjected to hydrostatic pressure, inspected and tested for leakage at any convenient time after partial completion of backfill. The Contractor may test the system with joints exposed or backfilling complete at his option. The Engineer shall be notified at least 48 hours before beginning testing.
- Drain test water from piping system after testing and repair work has been completed.

END OF SECTION 1500

SECTION 1507- HDPE PIPE

PART 1 - GENERAL

DESCRIPTION OF WORK

This section includes material and installation requirements necessary for furnishing and installing HDPE pipe, fittings and specials in the locations and quantities as shown on the drawings. Quantities shown on the plans may not be the exact length needed for directional borers. The Contractor shall investigate this before the Bid and shall inform the Engineer prior to the bid if additional HDPE pipe will be needed. Any additional HDPE pipe needed after the Bid will be the responsibility of the Contractor and shall not require any additional costs to the Owner.

QUALITY CRITERIA

Reference to industry standards as contained herein shall be construed as to be in reference to the latest revision or edition.

The pipe fittings and specials shall be made by a manufacturer experienced in producing pipe, fittings, and specials of the type, size, configuration, and quality specified herein. The manufacturer shall have produced pipe, fittings and specials having a record of at least five years successful performance.

SUBMITTALS

The Contractor shall submit shop drawings showing the pipe lengths, design details, joint details, specials, etc., for the Engineer's approval. Pipe shall be fabricated in accordance with these plans.

The Contractor shall submit a notarized statement of certification from the pipe manufacturer as to conformance with the specified ANSI/AWWA Specifications listed herein, and modifications thereto, at the time of submitting shop drawing data on the pipe and fittings.

DELIVERY, STORAGE AND HANDLING

The Contractor shall be responsible for the acceptability of all material furnished by him and shall assume responsibility for the replacement of all such material found damaged in shipping, or defective in manufacture. This shall include the furnishing of all material and labor required for the replacement of installed material discovered to be defective prior to the final acceptance of the work.

The interior, as well as all sealing surfaces of all pipe, fittings, and other accessories shall be kept free from dirt and foreign matter. Consult the manufacturer for specific storage recommendations.

Materials shall, at all times, be handled properly to prevent damage in accordance with manufacturer's recommendations. Pipe and fittings shall not be thrown, dropped, or dragged.

PART 2 - PRODUCTS

HDPE PIPE

Polyethylene pipe shall be manufactured in accordance with ASTM F714. All HDPE pipe used for force mains shall have an embedded blue stripe on each side, all pipe used for water mains shall have an embedded blue stripe on each side, and all pipe used for reclaimed water shall have an embedded purple stripe on each side.

The polyethylene pipe shall be rated for use with water at 73.4oF at a hydrostatic design stress of 800 psi and a minimum working pressure of 160 psi.

Dimension Ratio (DR) shall be DR11 for the HDPE pipe shown on the drawings. All pipe shall be DDP size.

Polyethylene extrusion compound from which the polyethylene pipe is extruded shall comply with application requirements for PE-340R high molecular weight polyethylene plastic material. Material shall be as described in ASTM D1248 and shall comply with the following:

- Pipe resin shall have a minimum inherent viscosity of 2.5 when run according to ASTM D1601.
- Exceed 5,000 hours on ESC as determined by ASTM D-1248-345434C.
- Have a specific gravity of between 0.9141 and 0.955.
- Contain a minimum of 2% and a maximum of 3% of carbon black and shall produce a finish product that is uniformly black.

Marking on the pipe shall include the nominal pipe or tubing size; the type of plastic material, i.e., PE-340R; the standard thermoplastic pipe dimension ratio or the pressure rating in psi for water at 73.4oF; (160 psi); the ASTM designation with which the pipe complies; and manufacturer's name or trade mark and code.

FITTINGS AND JOINTS

Fittings shall be fabricated to the same standards as the pipe from the same raw materials by thermal fusion. Joining shall be by the thermal butt fusion method as recommended by the manufacturer. Fittings and joints shall have a pressure rating equal to the pipe and shall have machined face ends matched to pipe wall. The Contractor shall use mechanical joint fusion welded adapters with ductile iron mechanical joint sleeves for transition connections as shown on the plans.

PART 3 - EXECUTION

GENERAL REQUIREMENTS

Installation of all polyethylene pipe, fittings, specials and appurtenances shall be in accordance with the Manufacturer's Instructions.

Openings such as stubs, tees and other services along the lines shall be securely closed by means of an approved stopper that fits into the pipe and is recommended by the pipe manufacturer. This stopper shall be joined in such a manner that it may be removed at some future time without injury to the pipe itself. At the close of each day's work and other times when the pipe is not being laid, the end of the pipe shall be temporarily closed with a close-fitting stopper.

Cleaning - All necessary precautions shall be taken to prevent the entrance of mud, sand or other obstructing material into the pipelines. As the work progresses, the interior of the main shall be cleaned of all dirt, jointing material, and superfluous materials of every description.

Joining of piping shall be performed by experienced fusion technicians with a minimum of five (5) years or more experience in field application involving large diameter (over 12 inches) polyethylene pipe. Experience record shall be submitted for review 15 days prior to directional boring activities.

If the Contractor feels that the length of HDPE pipe shown on the plans is not adequate, then the Contractor shall notify the Engineer prior to the bid. Contractor shall not ask for additional directional boring cost after the bid.

Handling:

- Pipe must be handled in a way to insure that it is not gouged or scratched to a depth of more than 10% of the wall thickness.
- Pipe shall not be bent to a radius of less than 30 diameters at any time during installation.
- Pipe shall be handled at all times with strapping that a combined width at each load area of at least half the pipe diameter to prevent point damage to the pipe. No wire rope slings shall be used. Contractor shall use the locator wire on all HDPE pipe.

TESTING IN THE TRENCH

Fill the pipeline with water after it has been laid, bleed off any trapped air. Subject the lowest element in the system to a test pressure that is 1.5 times the design pressure, and check for any leakage. When in the opinion of the engineer, local conditions require that the trenches be backfilled immediately after the pipe has been laid, apply the pressure test after backfilling has been completed but not sooner than a time which will allow sufficient curing of any concrete that may have been used. Typical minimum concrete curing times are 36 hours for early strengths and seven days for normal strengths.

The test procedures consist of two steps: the initial expansion and the test phase. When test pressure applied to a water-filled pipe, the pipe expands. During the initial expansion of the pipe under test, sufficient make-up water must be added to the system at hourly intervals for three hours to maintain the test pressure. After about four hours, initial expansion should be complete and the actual test can start.

When the test is to begin, the pipe is full of water and is subjected to a constant test pressure of 1.5 times the system design pressure. The test phase should not exceed three hours, after which time any water deficiency must be replaced and measured. Add and measure the amount of make-up water required to return to the test pressure.

An alternate leakage test consists of maintaining the test pressure (described above) over a period of four hours, and then dropping the pressure by 10 psi (0.89 MPa). If the pressure then remains within 5% of the target value for one hour, this indicates there is no leakage in the system.

NOTE: Under no circumstances shall the total time under test exceed eight (8) hours at 1 ½ times the system pressure rating. If the test is not complete within this time limit (due to leakage, equipment failure, etc.), the test section shall be permitted to "relax" for eight (8) hours prior to the next test sequence. Air testing is not recommended. Additional safety precautions may be required.

END OF SECTION 1507

SECTION 1510-VALVES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

1.02 DESCRIPTION OF WORK:

- Extent of valves required by this section is indicated on drawings.

B. Types of valves specified in this section include the following:

- Gate Valves
- Check Valves
- Tapping Valves
- Air Valves

C. Valves furnished as part of factory-fabricated equipment, are specified as part of equipment assembly in other.

1.03 QUALITY ASSURANCE:

- Manufacturer's Qualifications: Firms regularly engaged in manufacture of valves, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years. All fittings, valves, service saddles, etc., shall meet the requirements of the Safe Drinking Water Act including the Reduction of Lead in Drinking Water Act (Public Law 111-380).
- Valve Types: Provide valves of same type by same manufacturer.
- Valve Identification: Provide valves with manufacturer's name (or trademark) and pressure rating clearly marked on valve body.

D. Codes and Standards:

- ANSI Compliance: For face-to-face and end-to-end dimensions of flanged or welded-end valve bodies, comply with ANSI B16.10 "Face to Face and End-to-End Dimensions of Ferrous Valves".
- UL and FM Compliance: Provide valves used in fire protection piping, which are UL-listed and FM approved.

1.04 SUBMITTALS:

- Product Data: Submit manufacturer's technical product data, including installation instructions for each type of valve. Include pressure drop curve or chart for each type and size of valve. Submit valve schedule showing manufacturer's figure number, size, location, and valve features for each required valve. Submit manufacturer's statement of certification as to conformance with the Reduction of Lead in Drinking Water Act (Public Law 111-380).
- Shop Drawings: Submit manufacturer's assembly-type (exploded view) shop drawings for each type of valve, indicating dimensions, weights, materials, and methods of assembly of components.
- Maintenance Data: Submit maintenance data and spare parts lists for each type of valve. Include this data, product data, and shop drawings in Maintenance Manual.

PART 2 - PRODUCTS

2.01 VALVES:

- General: Provide factory-fabricated valves recommended by manufacturer for use in service indicated. Provide valves of types and pressure ratings indicated. Provide proper selection as determined by Installer to comply with installation requirements. Provide end connections which properly mate with pipe, tube, and equipment connections. Where more than one type is indicated, select in Installer's option.

B. Barbed Valves: Provide 2" square nut operator. For quarter-turn valves 6" and larger, provide gear operator also. Provide one (1) valve key fabricated of carbon steel of suitable length for each four (4) valves of suitable strength.

C. Exposed Valves: Provide handwheels for all valves except quarter-turn valves, 6" and smaller. Provide lever handle for quarter-turn valves 6" and smaller. Provide one (1) lever handle for each valve pit.

2.02 GATE VALVES:

A. Over Three Inches and Smaller: All gate valves over 3" or less shall be iron body, non-rising bronze or stainless steel stem, resilient seat wedge type with flanged, mechanical joint or threaded ends, depending on installation, furnished with all necessary joint materials. Flanged gate valves shall be provided with 125 lb. American Standard flanges. Threaded valves shall use brass or stainless steel fittings and hardware for connections. Valves shall conform to AWWA Specification C509.

B. Over Three Inches: All gate valves over three inches shall be of the iron body, non-rising bronze or stainless steel stem, resilient seat wedge type with flanged, mechanical joint or spigot ends, depending on installation, furnished with all necessary joint materials. Flanged gate valves shall be provided with 125 lb. American Standard flanges. Valves shall conform to AWWA Specification C509-80.

C. Gate valves shall be M & H Valve Co., AWWA C 509, resilient seated gate valve or approved equal.

2.03 AIR VALVES

A. Combination Air Valves shall be of the single housing style that combines the operating features of both an Air/Vacuum and an Air Release Valve.

B. The Air/Vacuum portion shall automatically exhaust large quantities of air during the filling of the pipeline and automatically allows air to re-enter the pipeline when the internal pressure of the pipeline approaches a negative value due to column separation, draining of the pipeline, power outage, pipeline break/rupture, etc.

C. The Air Release portion shall automatically release small pockets of air from the pipeline while the pipeline is in operation and under pressure.

D. The Combination Air Valve shall have a 1" NPT inlet and outlet connections and a 1" Large orifice diameter and a 5/64" diameter air release orifice for a maximum working pressure of 300 psi.

E. The materials of construction shall be: Body, Cover and Baffle of Cast Iron; Float and all other trim shall be of Stainless Steel with the exception of the Buna-N-Seal and adjustable Viton Offsets Button.

F. Valves shall be Series Val-Matic Valve Model 4 201C or approved equal.

2.04 CHECK VALVES:

A. Over Three Inches: The check valve over three inches shall be iron-body, bronze-mounted, spring and lever with flanged ends, except as specified herein. All working parts shall be spring-loaded to prevent slamming. The check valves shall be Clove, Model F-5181 - spring-lever or approved equal.

2.05 FLUSHING HYDRANTS:

A. Flushing hydrants shall be a post type flushing hydrant, non-freezing, self-draining, Maingaud No. 77 as manufactured by Kupferle Foundry Company, or approved equal. Provide three (3) valve keys to the City.

2.06 TAPPING VALVE AND SLEEVE:

A. Tapping valves and sleeves shall be ductile iron and used for tie-ins at the locations and of the size shown on the construction plans. The tapping sleeve shall be a full hot round and shall have a flanged outlet. The tapping valve shall be a flanged mechanical joint valve. Valves shall be M & H Size 3751 or approved equal. The installation of the tapping sleeve shall be on a clean surface and shall have a minimum of 6 pipe diameters to the nearest existing joint. The tapping valve and sleeve shall be mounted and the wet tap made in accordance with the manufacturer's recommendation. The tapping sleeve shall be a manufactured by Ford (PT5 coated) or approved equal.

2.07 VALVE BOXES:

A. Cast-iron boxes shall be provided for all underground valve installations. They shall consist of a base covering the operating nut and head of the valve, vertical shaft, at least 5-1/4 inches in diameter, and a top section extending to a point even with the finished ground surface. Provide a cast-iron cover marked "WATER" and place it concentrically over the operating nut. The valve boxes shall be Clove 2-2454 screw-type valve box USB 7500 or approved equal.

2.08 VALVE FEATURES:

A. General: Provide valves with features indicated and, where not otherwise indicated, provide proper valve features as determined by Installer for installation requirements. Comply with ASME B31.9 for building services piping, and ASME B31.1 for power piping.

B. Flanged: Valve flanges complying with ANSI B16.1 (cast iron), ANSI B16.5 (steel), or ANSI B16.24 (bronze).

C. Threaded: Valve ends complying with ANSI B2.1.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. General: Except as otherwise indicated, comply with the following requirements:

- Install valves where required for proper operation of piping and equipment, including valves in branch lines where necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.
- Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable. Install valve drains with hose-end adapter for each valve that must be installed with stem below horizontal plane.

B. Insulation: Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.

3.02 ADJUSTING AND CLEANING:

- Valve Adjustment: After piping systems have been tested and put into service, but before final testing, adjusting, and balancing, inspect each valve for possible leaks. Adjust or replace packing to stop leaks, replace valve if leak persists.
- Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

END OF SECTION 1510



PREBLE-RISH INC
CONSULTING ENGINEERS AND SURVEYORS
CIVIL • SURVEYING • SITE PLANNING
203 ABERDEEN PKWY, PANAMA CITY, FL 32405
(850) 522-0644

Quina Grundhoefer Architects



400 West Romana Street Pensacola, FL 32502
850 433-5575 Fax 850 433-5366
E-mail: qg@qgarchitects.com

Project
FUMC
Port St. Joe
Great Hall
GEN. NOTES & SPECS

Port St. Joe, Florida

Date:
9-28-15
Project No.
0615

Sheet No.
C1.2

SECTION 15130 - DIRECTIONAL BORES

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of directional boring is shown on the drawings.

The work included in this section covers the installation of carrier pipe by the directional boring (trenchless installation) method as described herein, within the limits indicated on the drawings. In general, include bore pit, pilot hole (as required), drilling fluids, carrier pipe, removal and disposal of drilling fluids and soil cuttings, soil reports as required by jurisdictional agencies beyond those already provided by the Owner, sitation and sediment control, and all other work required to install the carrier pipe as specified herein and as shown on the drawings.

The Contractor will furnish all labor, equipment, materials and supplies and will perform all work necessary to provide Owner with a complete, finished reclaimed water and sewer force main crossing via horizontal directional drilling.

For all directional bores crossing a state highway, the Contractor shall have an FDOT inspector on the job site and shall conform to the FDOT Specifications on Directional Boring.

DESIGN/PERFORMANCE REQUIREMENTS

Provide design engineering for the work as described in paragraph 1.2 and as described herein and on the contract drawings, including, but not limited to, the following elements:

- Bore hole diameter and length,
- Location of borehole entry and exit points,
- Drilling procedures,
- Pipeline pulling operations,
- Method of drilling fluid disposal,
- Area required for drilling operations and storage of pipe,
- Drilling fluids management plan, and
- Review of plan and profile drawings and proposed horizontal and vertical alignment of the pipeline, with written certification of agreement with them, or recommended departure from them.

The Contractor's submitted design shall be signed and sealed by a Professional Engineer whose specialty includes design of horizontal drilling operations. The cost of these engineering services will be included in the bid price.

The Contractor shall be responsible for conducting the job in accordance with all applicable federal, state and local permits, codes and statutes.

SUBMITTALS

Drawings: Working drawings showing in detail the size and location of boring pits together with all sheeting and shoring to be used in supporting embankments and trench walls, and any other details of the proposed methods of installation required to allow adequate review by the engineer. The Contractor shall prepare a drilling plan indicating equipment proposed for each location, pull-back forces anticipated and shall verify that the DR of the pipe specified is adequate to withstand the anticipated pull-back forces in addition to the earth, line and groundwater loads.

Shop Drawings: Complete layout and details for fabrication and installation of pipeline; including design data and calculations. Submittal shall include, but not be limited to, elements listed in the above Design/Performance Requirements paragraph.

Task Schedule: Detailed schedule of tasks for each stage or operation involved in the work of this section. Include as a minimum the following major tasks:

- Preparatory earthwork operations,
- Drilling rig mobilization and set-up,
- Pipe delivery and on-site pipe joining operations,
- Pilot hole drilling and reaming operations,
- Pipeline pulling operations,
- Pipeline hydrostatic testing,
- Drilling fluid disposal, and
- Restoration and demobilization.

Task Schedule shall conform to contract schedule as outlined in the General Provisions.

On completion of pilot hole phase of each drill site, a complete set of "as-built" records shall be submitted in duplicate to the Engineer. These records shall include copies of the plan and profile drawing, as well as directional survey reports as recorded during the drilling operation. Upon completion drawings shall be submitted to the engineer in ACAD file format.

Technical data of equipment to be utilized.

Prior to approval, submit the names of supervisory field personnel and historical information of directional boring experience.

Submit MSDS (Material Safety Data Sheets) information for the drilling slurry compounds.

Disposal Plan: The plan shall describe the Contractor's plans for disposal of the drilling fluid and the names, addresses and telephone numbers of any and all subcontractors who will be performing any portion of the disposal activities. At a minimum the plan shall include:

- Disposal method,
- Disposal hauler(s),
- Disposal locations,
- Estimated quantity to be disposed,
- Type of vehicle hauling drilling fluids,
- Signed statement that all hauling equipment (ie., vehicle, tanker, dump truck, trailer, etc.) meets all requirements of state agencies, and
- Letter from proposed disposal site(s) accepting material.

Erosion Control Plan: The erosion control plan shall be submitted prior to the preconstruction conference. It shall be a written, detailed plan for the accomplishment of acceptable erosion control on the project. The plan shall describe all necessary temporary measures to be implemented for preventing soil erosion from the construction site until permanent erosion control and finished surfaces are installed. The plan shall comply with all state and local requirements.

Pipe Connection Procedures: The Contractor shall submit pipe connection procedures to the Engineer prior to connecting any pipe. For plastic (HDPE) pipe, the Contractor shall submit the pipe manufacturer's representative's written approval of his procedures.

PERMITS

If necessary, the Owner shall obtain Corps of Engineer and FDEP wetland impact permits. Copies of the permits shall be kept on-site during construction operations.

QUALITY ASSURANCE

Crossings must conform to applicable requirements of all utility companies affected, State Highway Department, and environmental agencies.

Qualifications: The Contractor shall be thoroughly experienced in the type construction contemplated herein.

The Contractor must demonstrate expertise in trenchless methods by providing a list of five references for whom similar work has been performed within the last two years. Two of the references shall be from projects where the SAME SIZE OR LARGER pipe than the largest carrier pipe specified in the contract documents was successfully installed at a linear distance greater than or equal to the longest bore required by the contract documents. The references shall include a name and telephone number where contact can be made to verify capability. The subcontractor must provide documentation showing successful completion of the projects used for reference. Conventional trenching experience will not be considered applicable.

Upon completion of carrier pipe installation, Contractor shall pass a mandrel through the entire length of the bore in the presence of the Owners representative to inspect for roughness and necking. Mandrel shall not be more than two-inches in diameter smaller than the ID of the carrier pipe installed. Mandrel and torque shall be constructed of materials that will not scar or harm the carrier pipe in any manner.

Pipe Manufacturer's Quality Control: The pipe manufacturer shall have an on going Quality Control program for incoming and outgoing materials. High-density polyethylene (HDPE) resins for manufacturing of pipe shall be checked for density, melt flow rate, and contamination. These incoming resins shall be approved by NSF before being converted to pipe. Pipe shall be checked for outside diameter, wall thickness, length, roundness, and surface finish on the inside and outside and end cut.

Fittings Manufacturer's Quality Control: The fitting manufacturer shall have an on-going quality control program for incoming and outgoing materials. Molded fittings shall be inspected for voids and knit lines. All fabricated fittings shall be inspected for joint quality and alignment. All fabricated fitting welds shall be made using a Data Logger. A record of the temperature, pressure and graph of the fusion cycle shall be maintained by the fitting manufacturer.

PRODUCT DELIVERY, STORAGE, AND HANDLING

The pipe and fitting manufacturer shall package products for shipment in a manner suitable for safe transport on commercial carriers. When delivered, a receiving inspection shall be performed, and any shipping damage reported to the pipe and fittings manufacturer. Pipe and fittings shall be handled, installed, and tested in accordance with manufacturer's recommendations and the requirements of this specification.

Deliver and store materials within limits of rights-of-way and/or property lines as shown on the drawings as directed by the owner.

The Contractor shall be responsible for securing all project materials and shall bear the cost of replacing any materials which may become misplaced or stolen.

JOB CONDITIONS

The Contractor shall be held fully responsible for protecting against surface subsidence, damage, or disturbance of adjacent property and facilities from his construction methods.

Each directional boring crew shall have a reasonable proportion of experienced men. A superintendent and/or engineer experienced in directional boring methods and techniques, and who represents the boring contractor, shall be present at all times while work is proceeding. He shall also be responsible for the frequent checking of line and grade, if needed. Tolerances should be agreed to in the light gradient and easement requirements.

Contractor shall be held responsible for the coordination and scheduling of all construction work.

SAFETY

All drilling equipment must have a permanent, inherent alarm system capable of detecting an electrical current. The ground system shall be equipped with an audible alarm to warn the operator when the drill head nears electrified cable.

All crews shall be provided with grounded safety mats, heavy gauge ground cables with connectors, and hot boots and gloves.

All supervisory personnel must be adequately trained and have direct supervisory experience in directional boring.

PART 2 - PRODUCTS

MATERIALS

Drilling fluid shall be a gel-forming colloidal fluid consisting of at least 10% of high-grade bentonite, which is totally inert and contains no environmental risk, or equal.

Carrier Pipe:

- Pipe and fittings shall be high-density polyethylene manufactured from NSF approved PLEXCO P34CH compound, PE 3408, or equal.
- Pipe shall meet AWWA C-906, PE Pressure Pipe and Fittings 4" - 53" for Distribution and be marked with the NSF-pw logo.
- Hydrostatic design stress (HDS) shall be 800 psi at 73.4°F with a minimum pipe DR of 11 and operating pressure of 200 psi at 73.4°F.
- Pipe and fittings shall be produced by the same manufacturer from identical materials meeting the requirements of this specification.
- Molded fittings shall meet the requirements of ASTM D-3261 and this specification. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the outside diameter and minimum wall thickness specifications of ASTM F-714 for the same size of pipe.
- Pipe shall be manufactured in accordance with ASTM F-714, ASTM D-3035, or the applicable dedicated service specification. Print line markings shall include a production code from which the location and date of manufacture can be identified. Upon request, the manufacturer shall provide an explanation of his production code.
- Pipe Marking: HDPE color coding shall be in accordance with the marking requirements specified herein.

Acceptable Pipe Manufacturer:

Performance Pipe, Driscopex 4000, PE 3408, AWWA C-906, DIPS sizing, Richardson TX, (800) 527-0662; Supplier: ISCO Industries, Grand Bay, AL, 1-800-345-4726, or engineer approved equal.

Butt fusion Fittings: HDPE fittings shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99, and approved for AWWA use. Butt fusion fittings shall have a manufacturing standard of ASTM D3261. Molded and fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified in the plans. Fabricated fittings are to be manufactured using Data Loggers. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the Quality Control records. All fittings shall be suitable for use as pressure conduits, and per AWWA C906, have nominal burst values of three and one-half times the working pressure rating of the fitting.

Transition Fittings: Terminate all HDPE pipe with fusion welded flanges (125 lb bolt pattern). See paragraph above for alternate fusion procedures.

EQUIPMENT

Directional Drilling Equipment:

- General: The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pull back the pipe, a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the installation, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused (if required), a magnetic guidance system or walk over system to accurately guide boring operation, a vacuum truck of sufficient capacity to handle the drilling fluid volume, trained and competent personnel to operate the system. All equipment shall be in good, safe condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.
- Drilling Rig: The directional drilling machine shall consist of a hydraulically powered system to rotate and push hollow drilling pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guideable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the installation. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pullback pressure during pullback operations. There shall be a system to detect electrical current from the drill string and an audible alarm which automatically sounds when an electrical current is detected.
- Drill Head: The drill head shall be steerable by changing it's rotation and shall provide necessary cutting surfaces and drilling fluid jets.

Guidance System:

- General: An electronic walkover tracking system or a Magnetic Guidance System (MGS) probe or proven gyroscopic probe and interface shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance shall be capable of tracking at all depths up to fifty feet and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction). The guidance system shall be accurate and calibrated to manufacturer's specifications of the vertical depth of the borehole at sensing position at depths up to fifty feet and accurate to 2-feet horizontally.
- Components: The Contractor shall supply all components and materials to install, operate, and maintain the guidance system.
- The guidance System shall be of a proven type, and shall be set up and operated by personnel trained and experienced with the system. The operator shall be aware of any geo-magnetic anomalies and shall consider such influences in the operation of the guidance system.

JOINING METHODS

Butt fusion joining: Plain end pipe and fittings shall be made using butt fusion. The butt fusion procedures shall be in accordance with the manufacturer or the PPI. The fusion equipment operator shall receive training using the recommended procedure. The Contractor shall be responsible to verify that the fusion equipment is in good operating condition and that the operator has been trained within the past twelve months. The fusion equipment shall be equipped with a Data Logger. Records of the welds (heater temperature, fusion pressure, and a graph of the fusion cycle) shall be maintained for five (5) years. Fusion beads shall not be removed.

Mechanical Joining: Polyethylene pipe and fittings may be joined together using flanges or mechanical joint adapters. These fittings shall be made from PE 3048 HDPE, with a Cell Classification of 345464C as determined by ASTM D3350-99. Flanged and MJ adapters shall have a manufacturing standard of ASTM D3261. They shall have a pressure rating equal to the pipe unless otherwise specified on the plans.

Electrofusion couplings: Polyethylene pipe and fittings may be joined using approved electrofusion couplings. Fittings shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99. Electrofusion fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. All electrofusion fittings shall be suitable for use as pressure conduits, and per AWWA C906, have nominal burst values of three and one-half times the working pressure rating of the fitting.

PART 3 - EXECUTION

EXECUTION

The Utility bore depth will equal or exceed 10 times the bore size. The Contractor shall be responsible for setting all grade stakes, lines, and levels.

Coordinate the locations of underground utilities with appropriate companies. Advise Engineer immediately if conflict exists.

Contractor shall operate and maintain all equipment as required to keep the work free from excessive spoil and environmental risks.

Install siltation fences, sediment barriers, etc., as required and shown on the Contractor's Erosion Control Plan drawings.

The Contractor shall perform the necessary general earthwork operations as required for the directional drilling and pipe pulling operations.

The Contractor shall be responsible for restoring all areas impacted by contractors work effort to pre-work conditions. The Contractor shall be responsible for constructing all means of temporary access to the designated work sites and shall be liable for all damages caused as a result of the work.

INSTALLATION

Installation shall be in a trenchless manner producing continuous bores. The entry point shall be where shown on the plan submitted as required in 1.2 above. The exit point for the drilled hole shall be within 10 feet laterally and within 20 feet longitudinally of where shown on the plan submitted as required in 1.2 above. No exception to this requirement will be allowed.

The tunneling system shall be remotely steerable and permit electronic monitoring of tunnel depth and location. Tunneling must be performed by a fluid-cutting process (high pressure-low volume) utilizing a liquid clay, i.e., bentonite. The clay lining will maintain tunnel stability and provide lubrication in order to reduce frictional drag while the pipe is being installed. In addition, the clay fluid must be totally inert and contain no environmental risk.

The Contractor must also have a mobile vacuum spoils recovery vehicle on site to remove the drilling spoils from the access pits. The spoils must then be transported from the job site and be properly disposed of. Under no circumstances will the drilling spoils be permitted to be disposed of into sanitary, storm, or other public or private drainage systems.

Mechanical, pneumatic, or water-jetting methods will be considered unacceptable due to the possibility of surface subsidence.

After an initial bore has been completed, a reamer will be installed at the termination pit and the pipe will be pulled back to the starting pit. The reamer must also be capable of discharging liquid clay to facilitate the installation of the pipe into a stabilized and lubricated tunnel.

The Contractor shall provide all material, equipment, and facilities required for directional drilling. Proper alignment and elevation of the borehole shall be consistently maintained throughout the directional drilling operation. The method used to complete the directional drill shall conform to the requirements of all applicable permits.

The entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If Contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

Contractor shall place silt fence between all drilling operations and any drainage, well-fields, wetland, waterway or other area designated for such protection necessary by documents, state, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Fuel may not be stored in bulk containers within 200 feet of any water body or wetland.

Readings shall be recorded after advancement of each successive drill pipe, (no more than 15') and the readings plotted on a scaled drawing of 1" = 5', both vertical and horizontal. Access to all recorded readings and plan and profile information shall be made available to the Engineer, or his representative, at all times. At no time shall the deflection radius of the drill pipe exceed the deflection limits of the carrier pipe as specified herein.

A complete list of all drilling fluid additives and mixtures to be used in the directional operation will be submitted to the Engineer, along with their respective Material Safety Data Sheets. All drilling fluids and loose cuttings shall be contained in pits or holding tanks for recycling or disposal, no fluids shall be allowed to enter any unapproved areas or natural waterways. Upon completion of the directional drill project, the drilling mud and cuttings shall be disposed of by the Contractor at an approved dumpsite.

The pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100-feet. In the event that pilot does deviate from the bore path more than 5-feet of depth in 100-feet, Contractor will notify Engineer and Engineer may require Contractor to pullback and re-drill from the location along bore path before the deviation. In the event that a drilling fluid fractures, inadvertent returns or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a Marsh funnel and wait another 30 minutes. If mud fracture or returns loss continues, Contractor will discuss additional options with the Engineer and work will then proceed accordingly.

Flange/MJ Adapter Installation: Flanges/MJ Adapters shall be attached to pipe and fittings using butt fusion. The flanges/MJ adapters shall be aligned and centered relative to the pipe. Flanges/MJ adapters should be square with the valve or other flange before tightening of bolts. Bolts should not be used to draw flanges into alignment. Bolt threads shall be lubricated, and flat washers shall be used under flange nuts. Bolts shall be tightened using a "star tightening pattern". See manufacturers recommendations. Twenty-four hours after first tightening the flange-bolts, they must be re-tightened using the same "star tightening pattern" used above. The final tightening torque shall be as indicated by the manufacturer.

On each day butt fusions are to be made, the first fusion of the day shall be a trial fusion. The trial fusion shall be allowed to cool completely, then fusion test straps shall be cut out. The test strap shall be 12" or 30 times the wall thickness in length (minimum) and 1" or 1.5 times the wall thickness in width (minimum). Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new trial fusion shall be made, cooled completely and tested. Butt fusion of pipe to be installed shall not commence until a trial fusion has passed the bent strap test.

Socket and saddle fusions shall be tested by a bent strap test as described by the pipe manufacturer. The pipe manufacturer shall provide visual guidelines for inspecting the butt, saddle and socket fusions joints.

The Contractor shall be liable for retrieving or sealing any pipe that becomes lodged in the drill hole.

PIPE PULLING OPERATIONS

The full length of the pipe to be installed shall be laid out, welded and tested in one complete unit before being pulled back through the drilled hole. Once started, pipeline pullback shall be continuous unless approved otherwise in writing by the Owner or Owner's designated representative.

The pulling head shall be designed by the Contractor to withstand the continuous tensile pull stresses with intermittent sudden occasional surges. The Contractor shall be responsible for determining the pulling loads.

The pipe shall be continuously lubricated with a bentonite slurry and the assembled pipeline shall be laid on rollers, or other apparatus, to facilitate pullback and prevent damage to pipe.

The Contractor shall continue pull back until 10 linear feet (minimum) of pipe is above ground for the purpose of pipe inspection.

A blind flange shall be bolted to the fusion welded flange and the pipe shall be marked and buried with a minimum cover of 36-inches. Connections, which will be made under another contract, will require the removal of the blind flange and a flanged ductile iron adapter shall be bolted to the fusion welded flange suitable for the transitional material. Provide restrained joints or Megalug joint restraint as required.

DAMAGED OR IMPROPERLY INSTALLED PIPE

If the pipe is damaged before installation, or does not meet the specifications, it shall be replaced at no expense to the Owner. If the pipe is damaged during installation by the Contractor's operations, placed at the improper grade or line, or cannot be advanced because of an unseen obstruction or any other reason, it shall, at the discretion of the Engineer, be retrieved or abandoned in place and the void filled with concrete by pressure grouting as soon as possible. If it becomes necessary to drill another hole, an alternate installation shall be made as directed by the Engineer. The Contractor shall re-drill the hole and furnish all additional labor and materials required to complete the job as indicated on the plans and specifications at no additional cost to the Owner. The cost for retrieval or abandonment of pipe shall be at the expense of the Contractor. No additional payment shall be made for pipe which is retrieved, abandoned, or damaged beyond use, including dewatering, excavation, drilling, backfilling, etc.

Sections of pipe having been discovered with cuts or gouges in excess of 10% of the pipe wall thickness shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using one of the joining methods allowed in the Section.

END OF SECTION 15130



PREBLE-RISH INC
CONSULTING ENGINEERS AND SURVEYORS
CIVIL • SURVEYING • SITE PLANNING
203 ABERDEEN PKWY, PANAMA CITY, FL 32405
(850) 522-0644

Quina Grundhoefer Architects

• • •

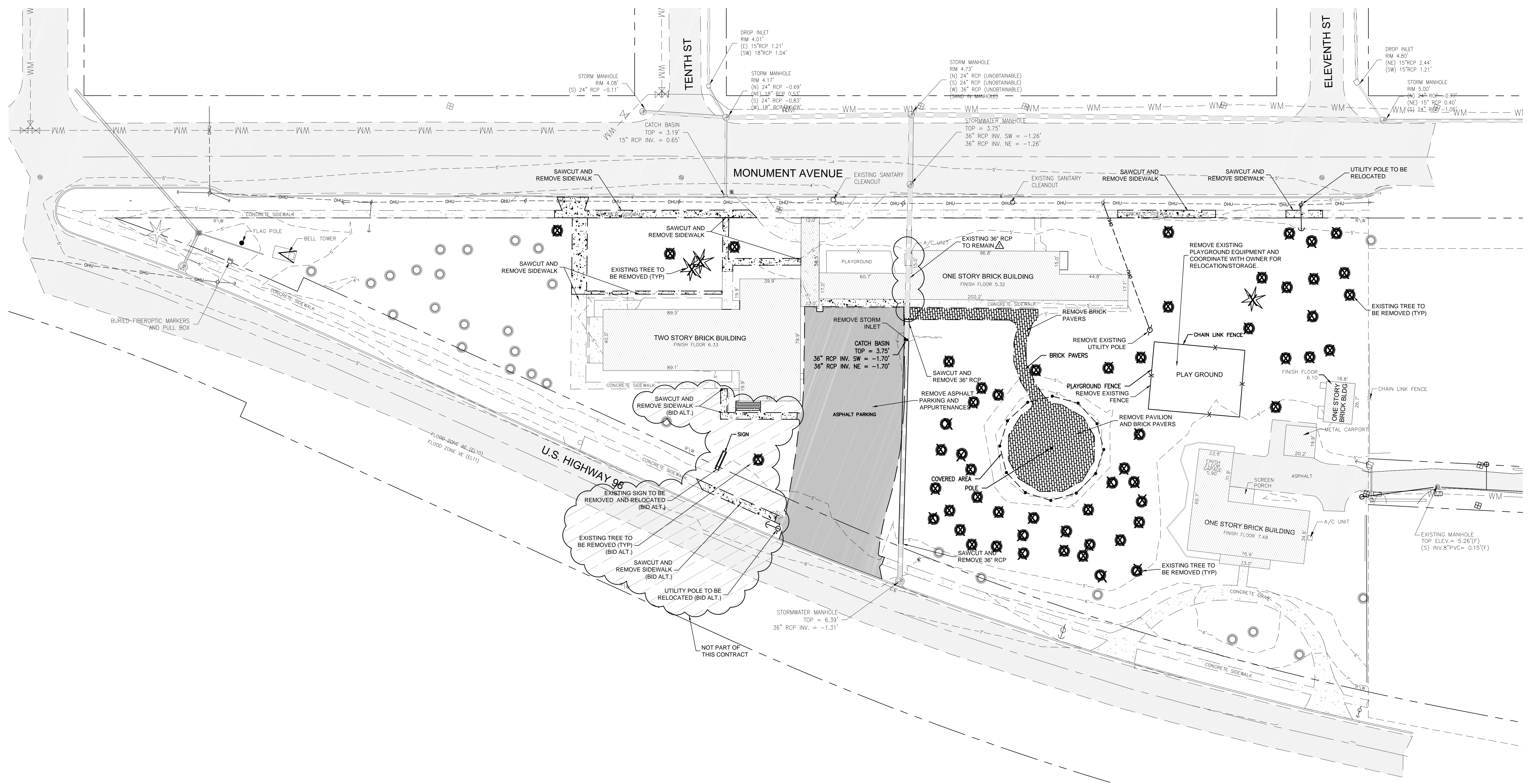
400 West Romana Street Pensacola, FL 32502
850 433-5575 Fax 850 433-5366
E-mail: qg@qgarchitects.com

Project
FUMC
Port St. Joe
Great Hall
GEN. NOTES & SPECS

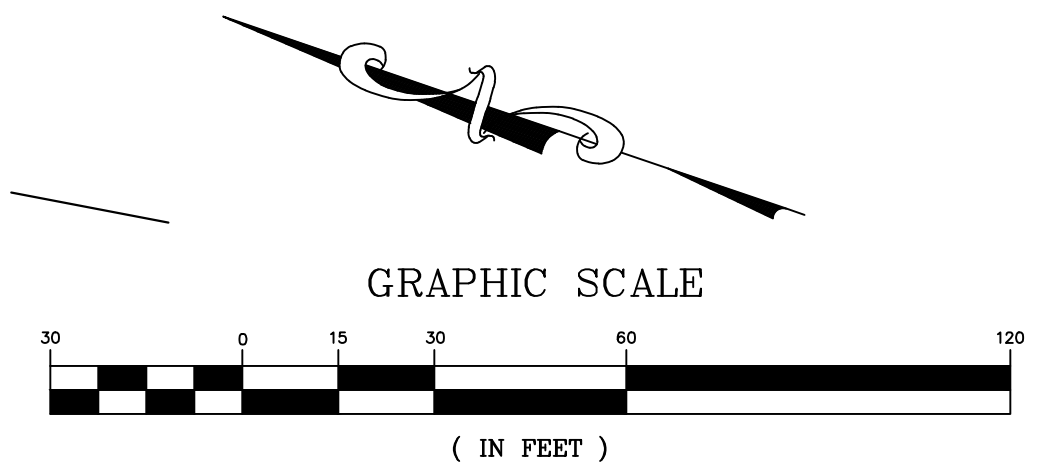
Port St. Joe, Florida

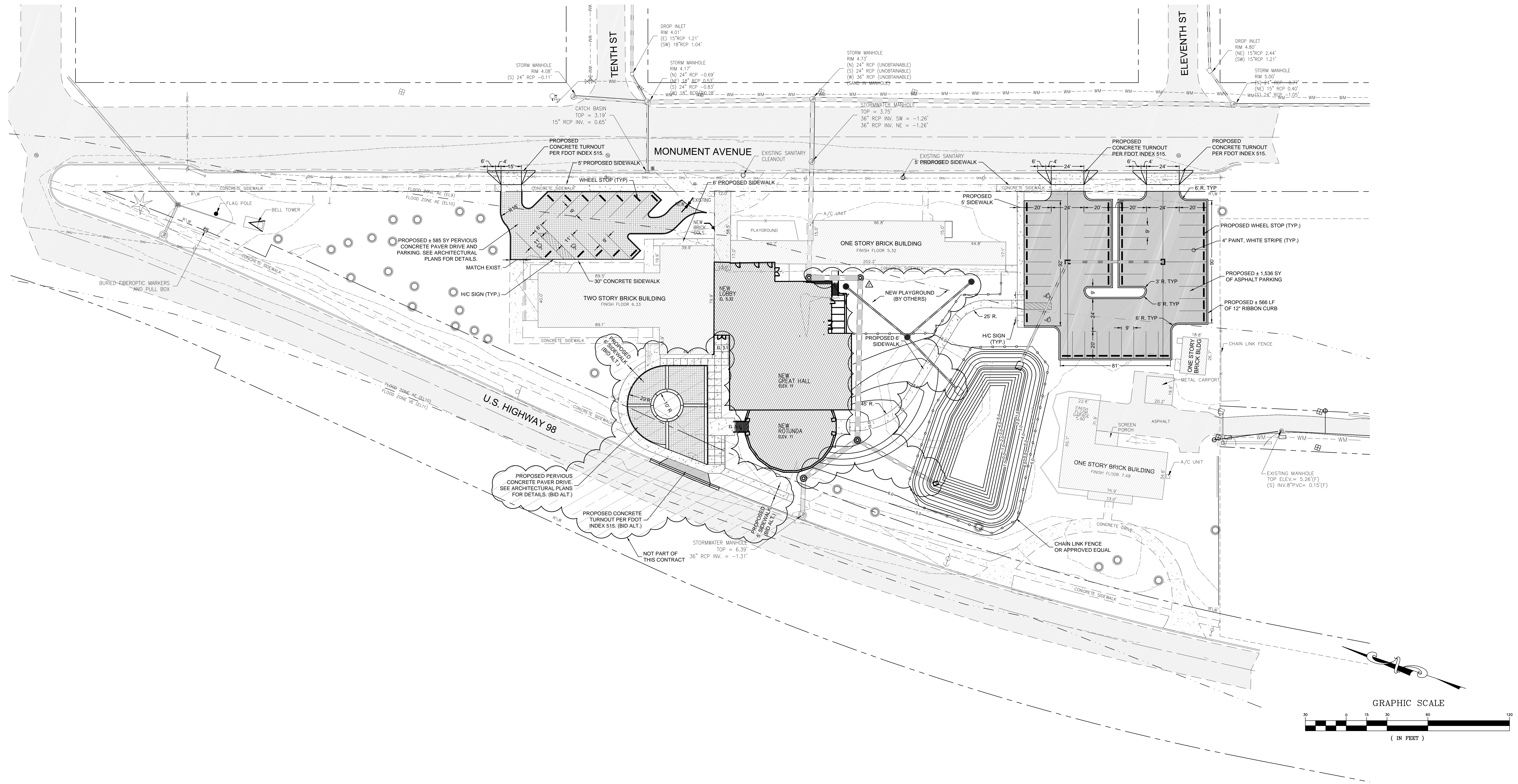
Date:
9-28-15
Project No.
0615

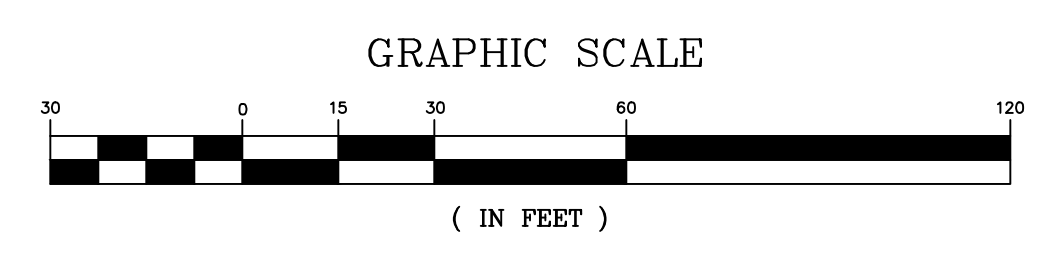
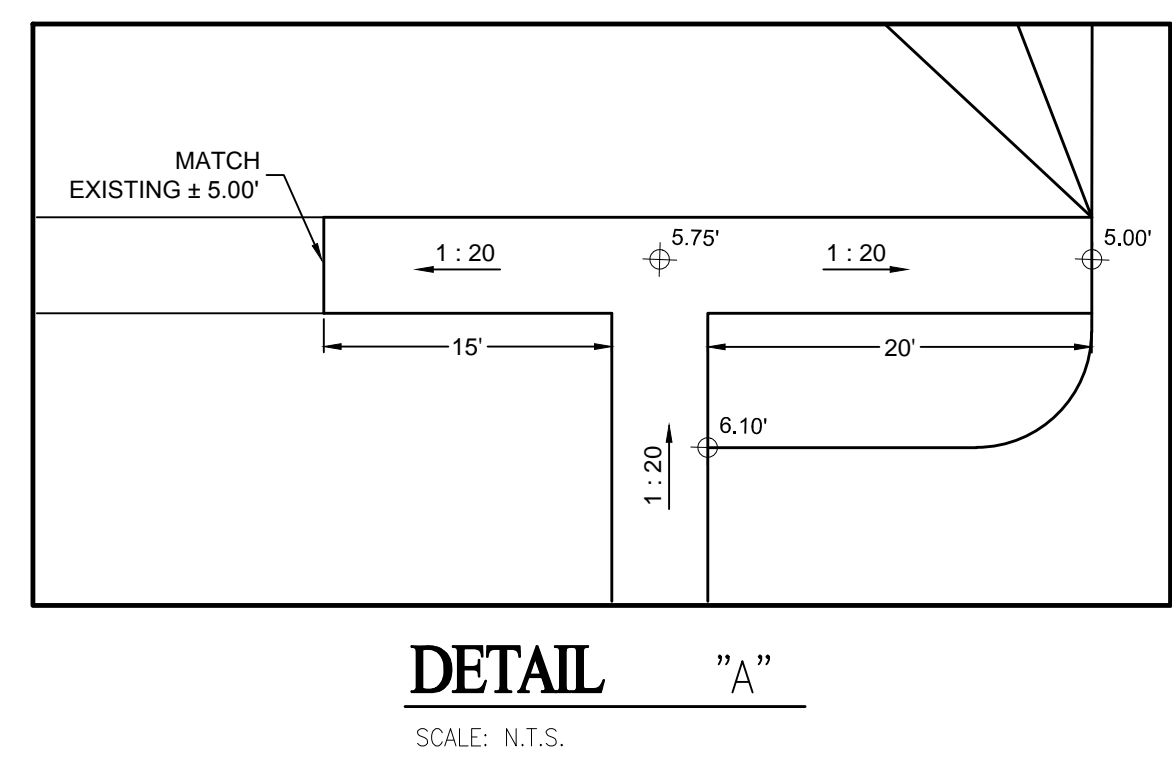
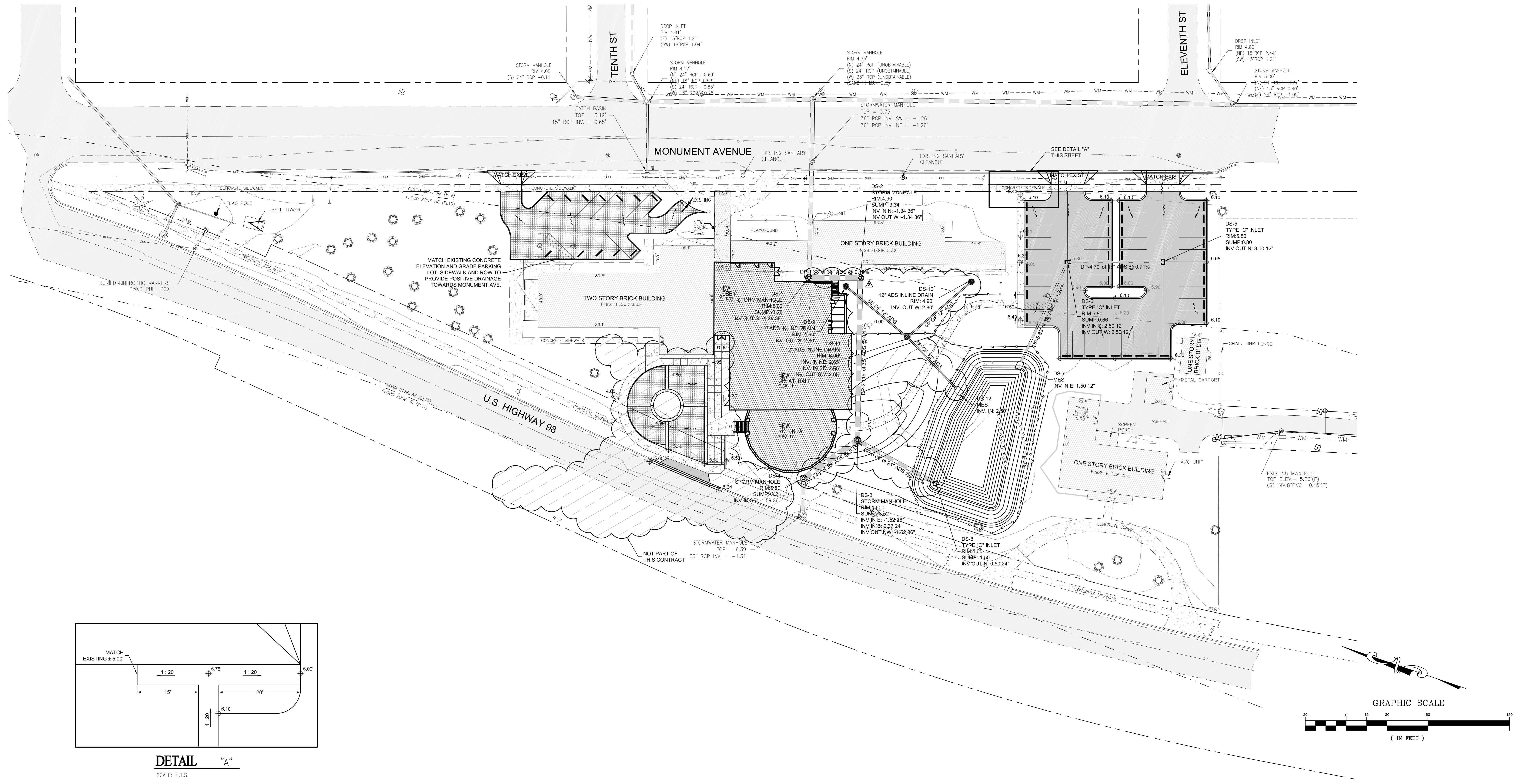
Sheet No.
C1.3

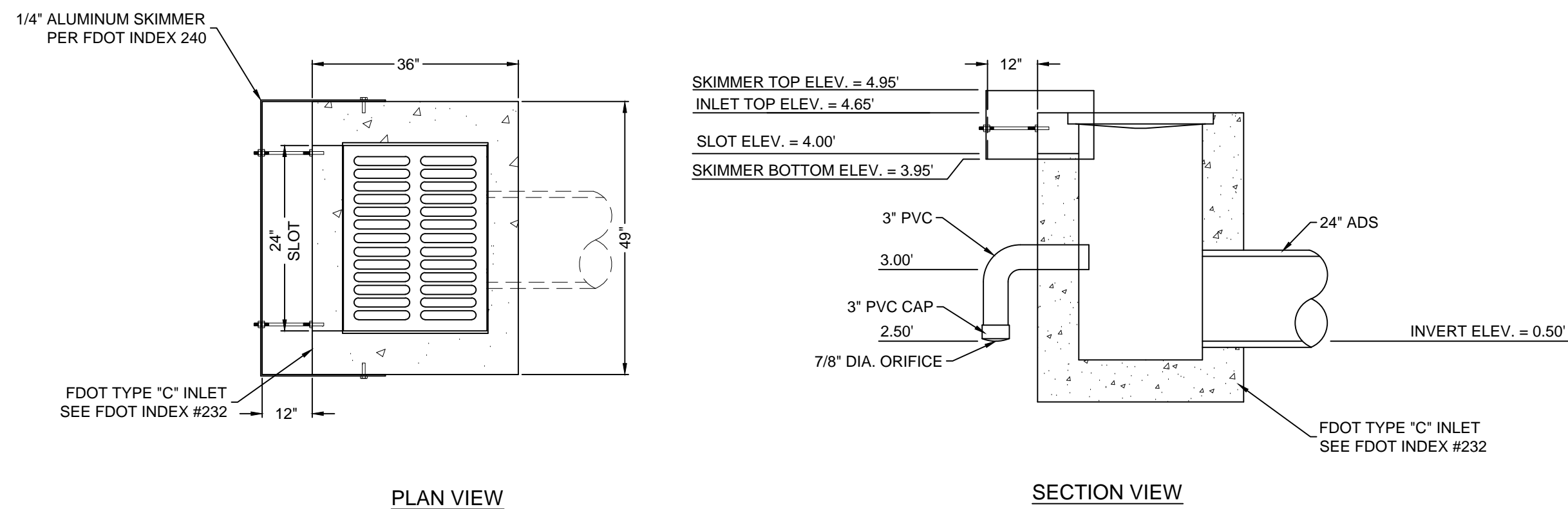


- SYMBOLS & ABBREVIATIONS
- ⊗ = STORM MANHOLE
 - ⊕ = SEWER MANHOLE
 - = PILING
 - ☐ = PALM TREE
 - ☐ = PINE TREE
 - ⊙ = GUY ANCHOR
 - ⊕ = UTILITY POLE
 - OHU — = OVERHEAD UTILITY LINES
 - R/W = RIGHT OF WAY
 - ▨ = BRICK PAVERS
 - ▨ = CONCRETE
 - ▨ = ASPHALT

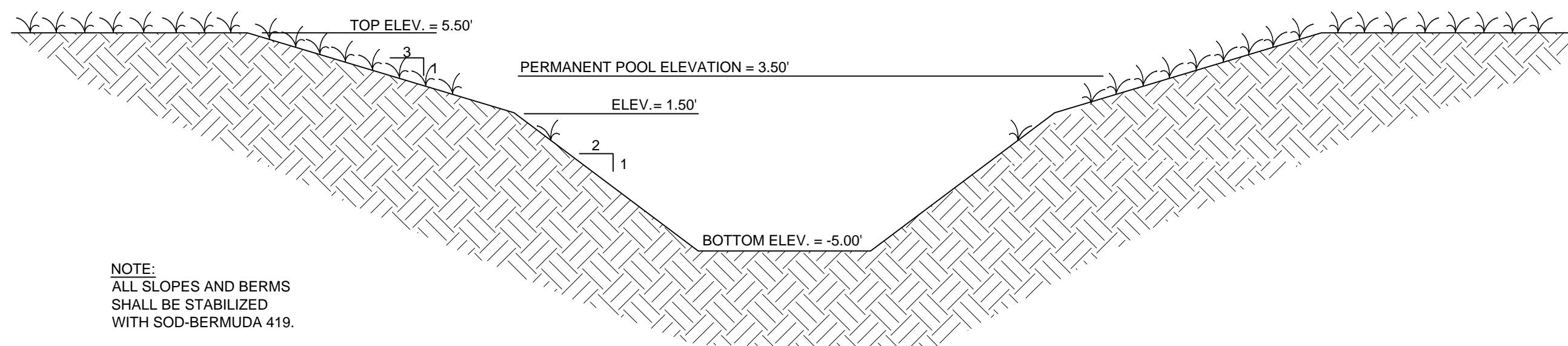








DETAIL CONCRETE DISCHARGE STRUCTURE (DS-9)
SCALE: N.T.S.



SECTION TYPICAL POND SECTION
SCALE: N.T.S.

STORMWATER OPERATION/MAINTENANCE PLAN
OPERATION AND MAINTENANCE ENTITY IS FIRST UNITED METHODIST CHURCH.
AFTER EACH RAINFALL EVENT

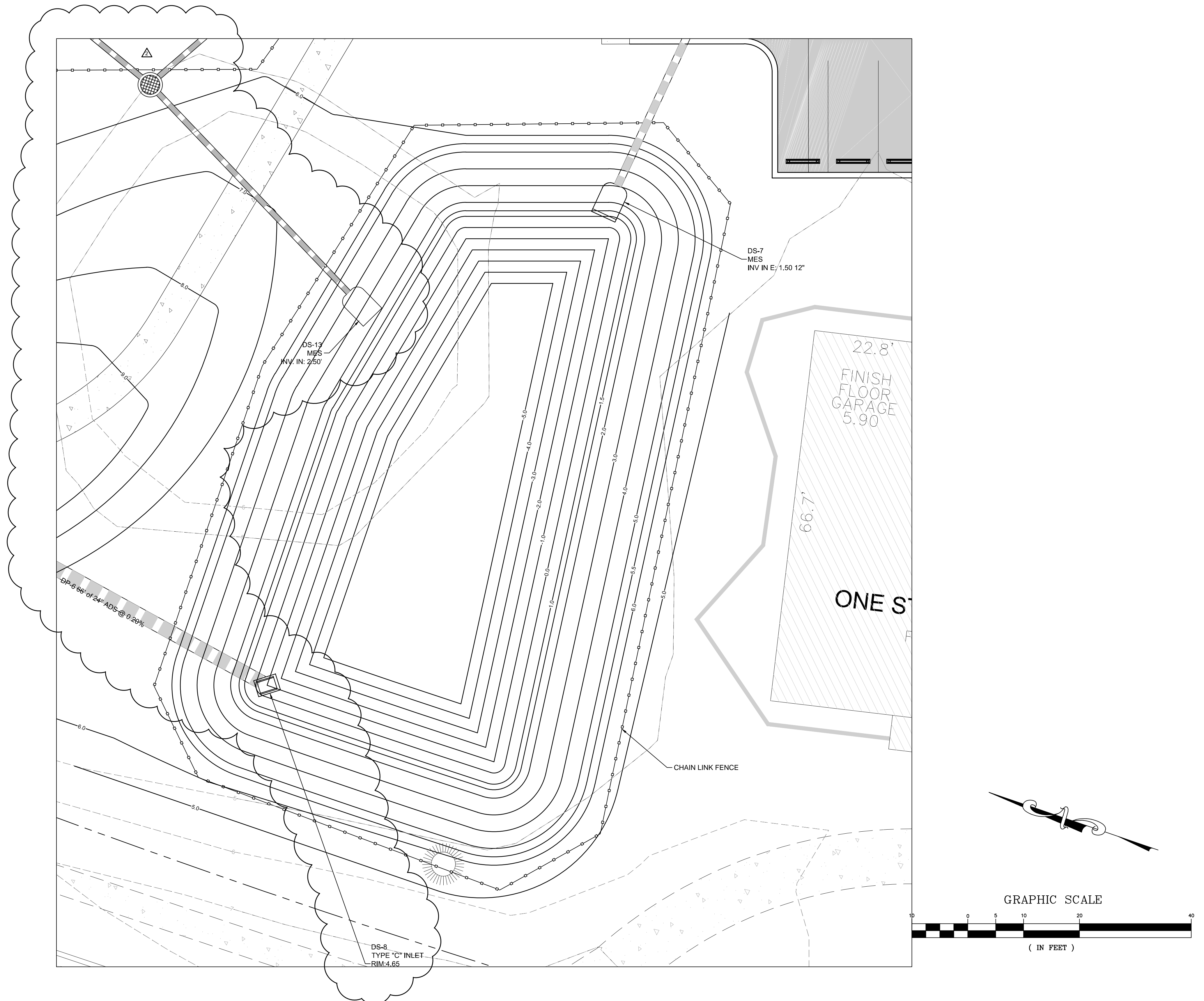
1. PAVEMENT AREAS - CLEANSWEEP DEBRIS AND DIRT FROM PAVEMENT AREAS.
2. SEDIMENTS IN RETENTION/DETENTION AREAS - REMOVED IMMEDIATELY.
3. DEBRIS IN RETENTION/DETENTION AREAS - ALL DEBRIS AND FOREIGN MATERIAL SHALL BE REMOVED IMMEDIATELY.
4. YARD INLETS, CATCH BASINS, ETC. - ALL DEBRIS AND FOREIGN MATERIALS SHALL BE REMOVED IMMEDIATELY.

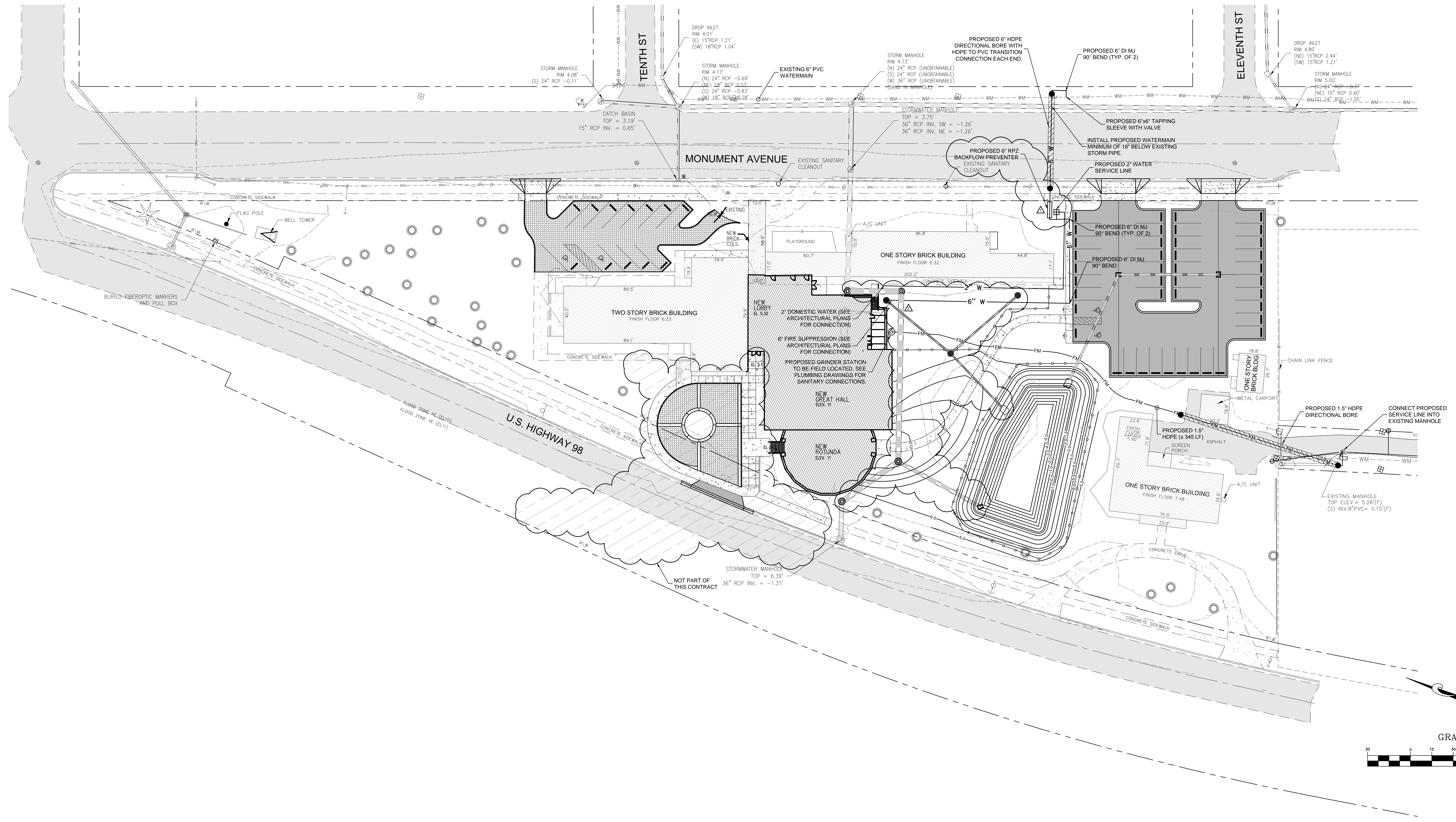
PERIODIC POND/SYSTEM MAINTENANCE

1. CLEANING/SWEEPING OF PAVEMENT AREAS SHALL BE ACCOMPLISHED WEEKLY OR AS REQUIRED.
2. INSPECT POND PERIODICALLY FOR ACCUMULATION OF TRASH AND DEBRIS AND REMOVE IT UPON DISCOVERY.
3. MOWING AND LANDSCAPING MAINTENANCE SHOULD BE DONE ON A MONTHLY BASIS DURING THE ACTIVE GROWING SEASON FOR THE AREA. INSPECT AND MAINTAIN AS REQUIRED DURING THE GROWING SEASON.
4. WEEDS OR UNDESIRABLE GROWTH SHALL BE REMOVED UPON DISCOVERY.
5. CATCH BASINS SHALL BE FLUSHED AS NECESSARY (IF ANY).
6. THE OWNER SHALL RE-GRADE AND RE-STABILIZE SWALE/RETENTION/DETENTION AREAS AS REQUIRED TO MAINTAIN THE APPROVED DESIGN, CROSS-SECTION, LINE, AND GRADE.
7. REMOVE SEDIMENT FROM POND WHEN ACCUMULATION REACHES FOUR (4) INCHES. MEASURE ACCUMULATION ONCE A YEAR.

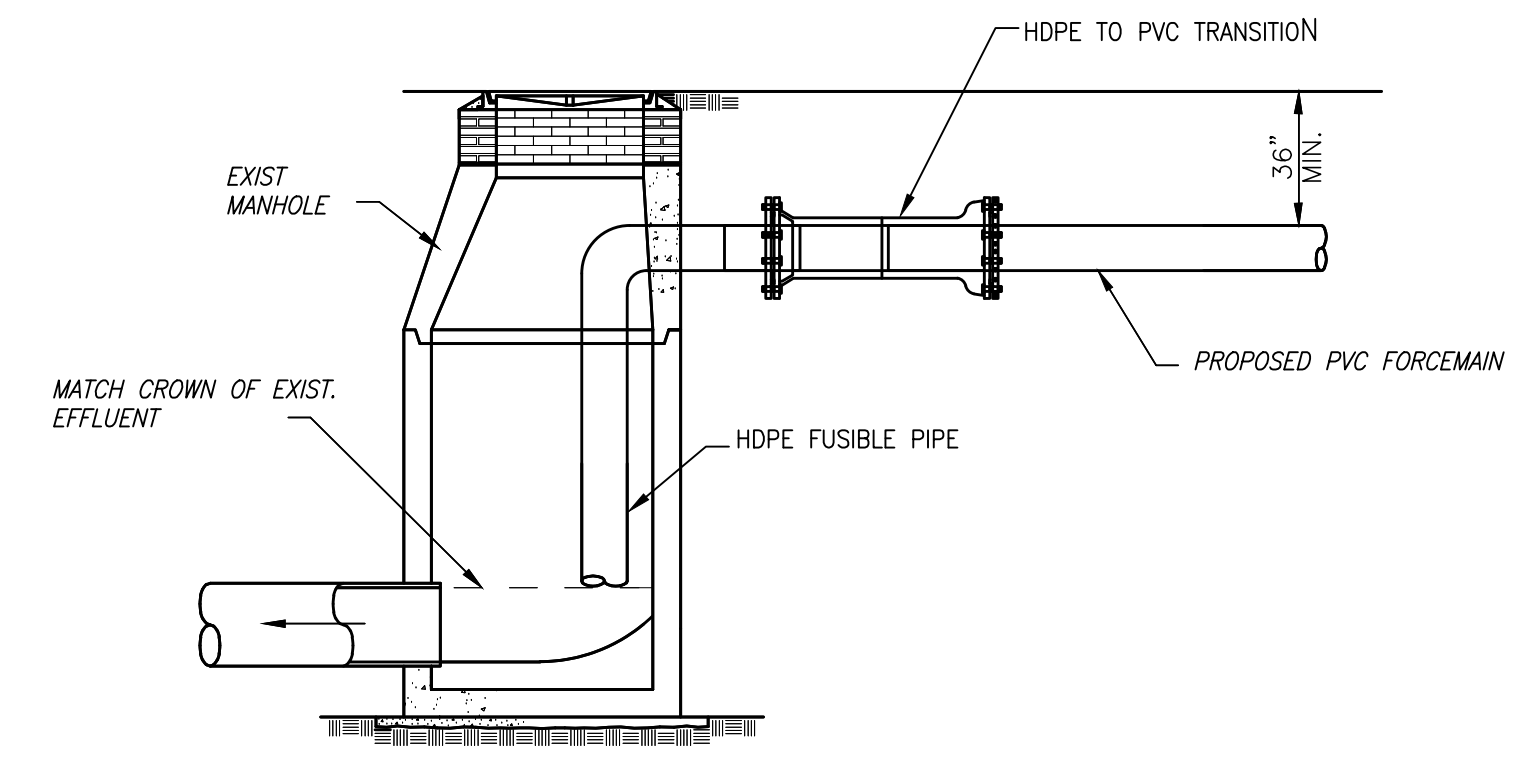
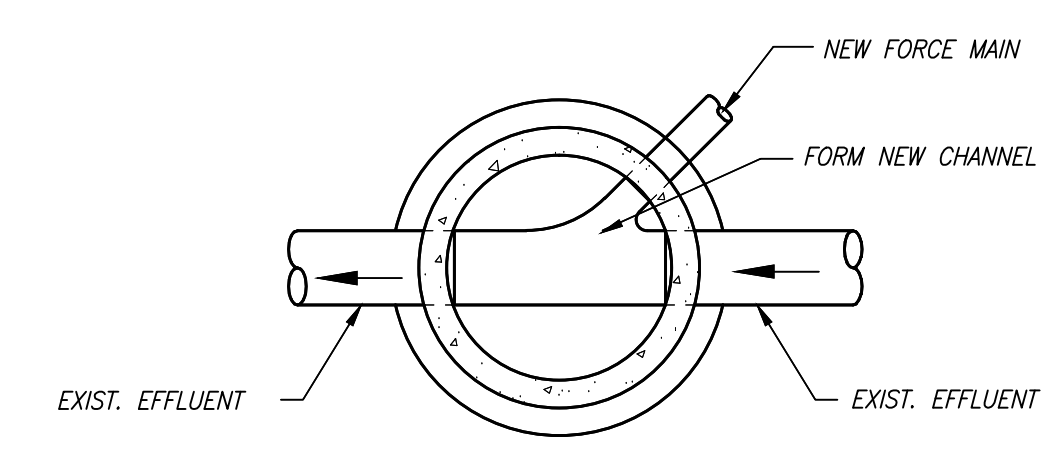
INSPECTIONS

1. A MAINTENANCE INSPECTION MUST BE PERFORMED EVERY THIRD YEAR BY A REGISTERED PROFESSIONAL.
2. THE MAINTENANCE INSPECTION MUST BE DOCUMENTED ON THE FDEP AND/OR NWFWMD STANDARD INSPECTION FORM 62-350.311(1).
3. THE INSPECTION MUST BE SIGNED, SEALED, AND DATED BY THE REGISTERED PROFESSIONAL.
4. THE INSPECTION MUST BE CONDUCTED USING THE PLANS, CALCULATIONS AND SPECIFICATIONS APPROVED BY THE FDEP AND/OR NWFWMD.

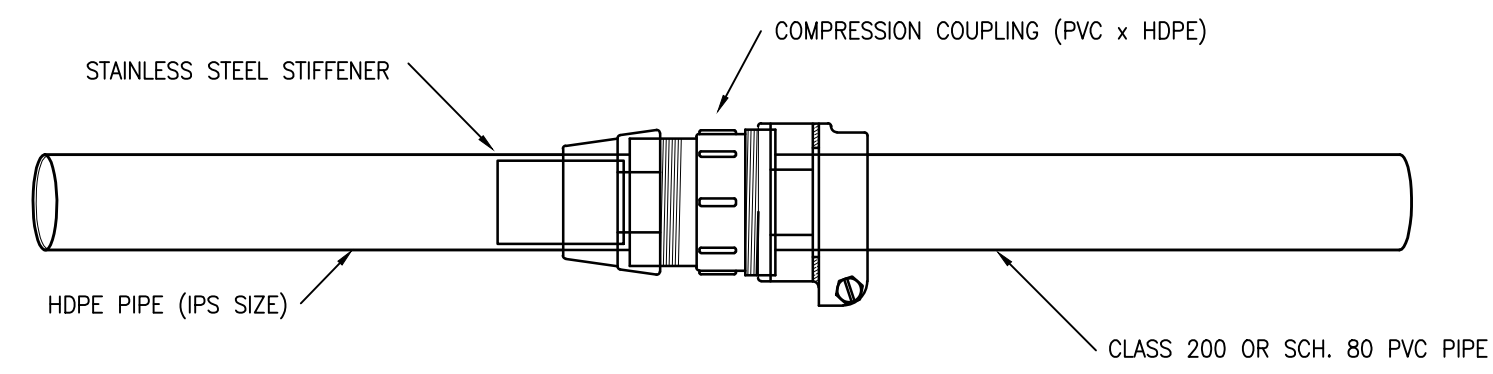




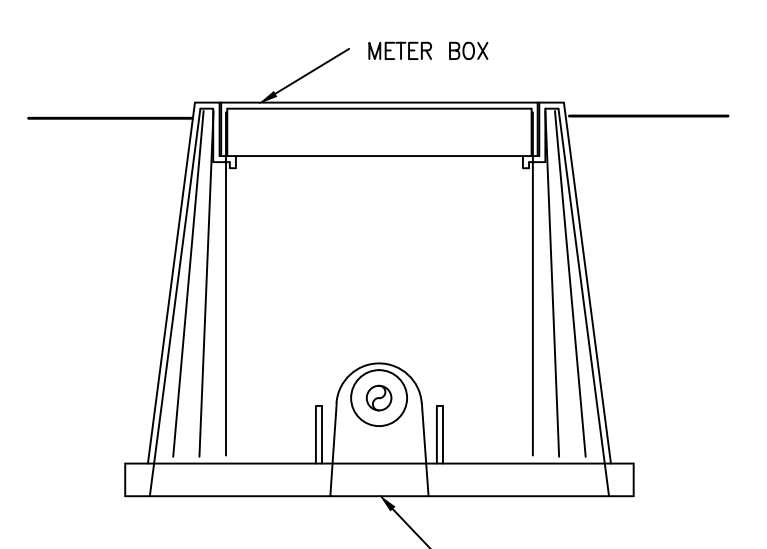
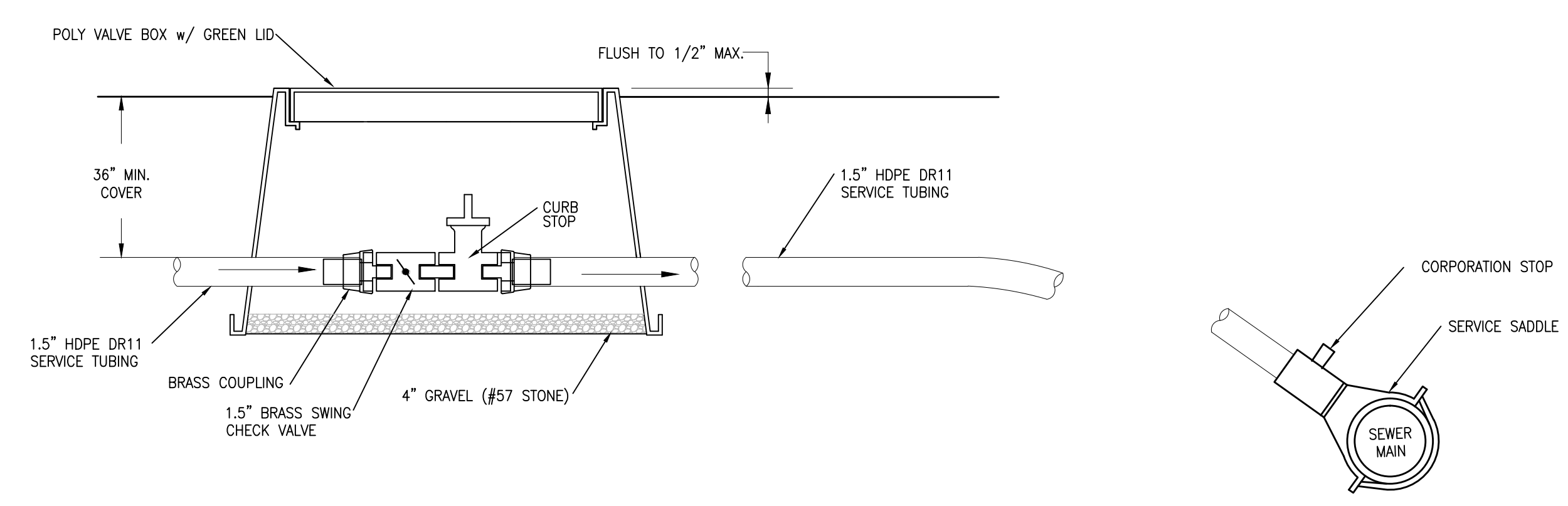
February 5, 2015 14:57:05 EDT
K:\500\544 METHODIST CHURCH IMPROVEMENTS\DWG\FOLDER PRODUCTION\50044 SITE CONFORMED.DWG



DETAIL FORCEMAIN CONNECTION TO MANHOLE
SCALE: N.T.S.



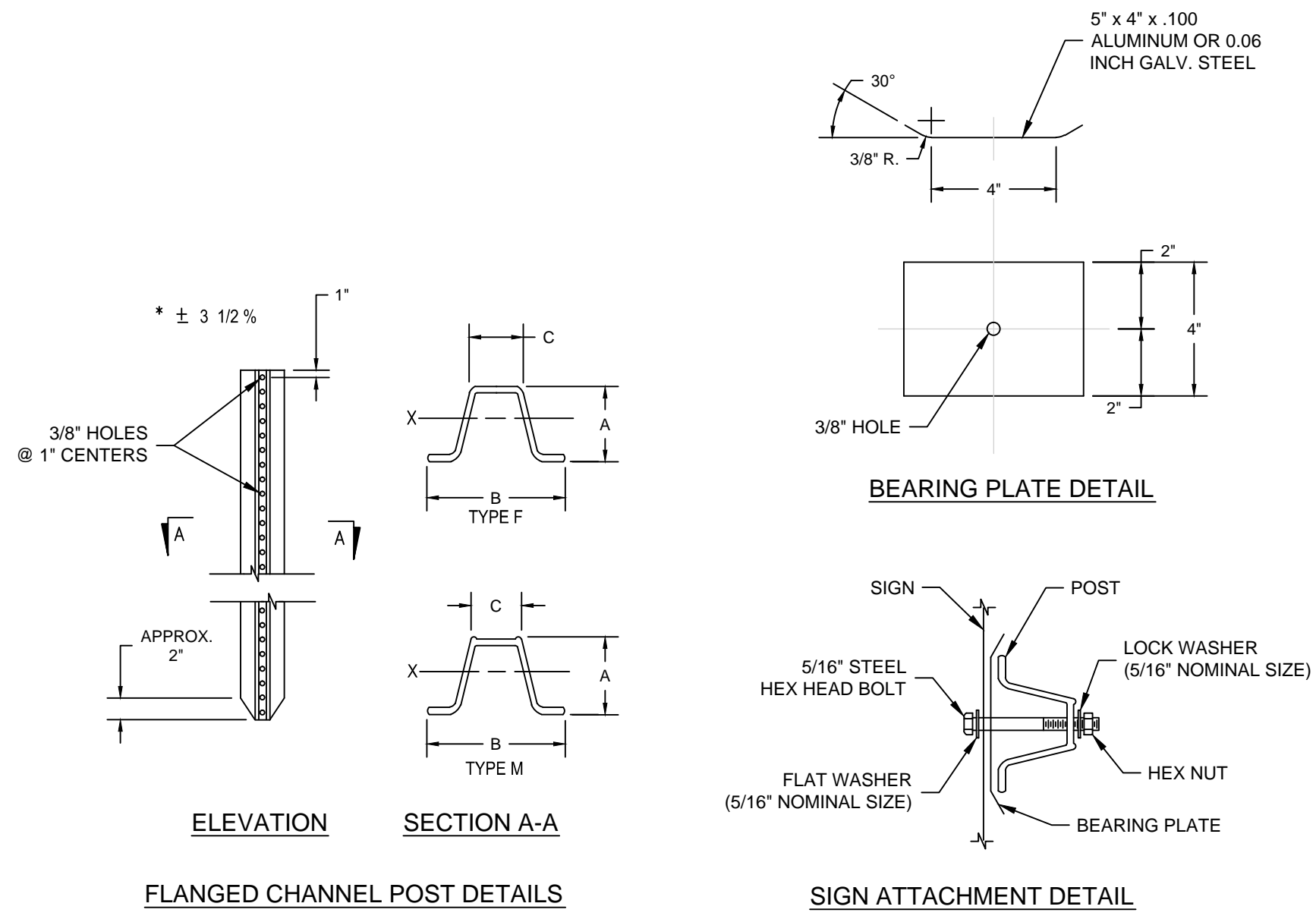
DETAIL-HDPE TO PVC TRANSITION
SCALE: N.T.S.
(3" DIAMETER AND SMALLER)



ITEM #	DESCRIPTION	MANUFACTURER
1	SERVICE SADDLE	1.5" ELECTROFUSION CORP. SADDLE BY CENTRAL PLASTICS OR APPROVED EQUAL ON HDPE PIPE; 1.5" SMITH-BLAIR 317 SERVICE SADDLE OR APPROVED EQUAL ON PVC PIPE
2	CORPORATION STOP	1.5" FORD FB 1000
3	SERVICE TUBING	1.5" (SINGLE SERVICE), DR11 POLYETHYLENE TUBING WITH STAINLESS STEEL INSERTS (STIFFENERS) AT EACH END
4	CURB STOP	1.5" FORD w/ 1.5" FEMALE IPS BY 1.5" PVC PACK JOINT
5	METER BOX	STANDARD 12" METER BOX WITH GREEN FLUSH COVER

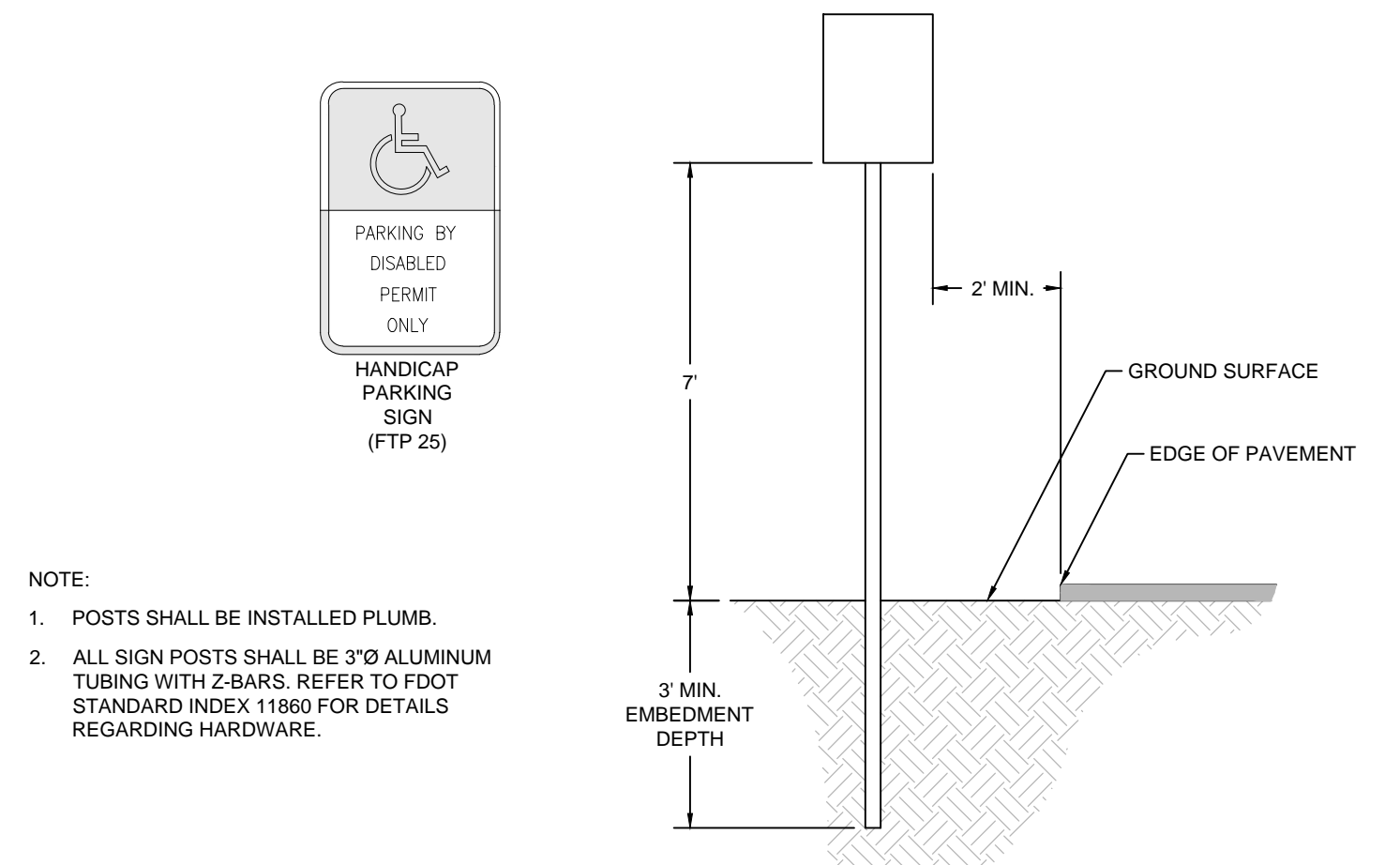
NOTE:
1. ALL SERVICE TUBING SHALL BE GREEN OR GREEN STRIPED
2. ALL ASPHALT, CONCRETE, AND STREAM CROSSINGS SHALL BE DIRECTIONAL BORED. NO OPEN CUTS ALLOWED

DETAIL - PRESSURE SEWER SERVICE LINE
SCALE: N.T.S.



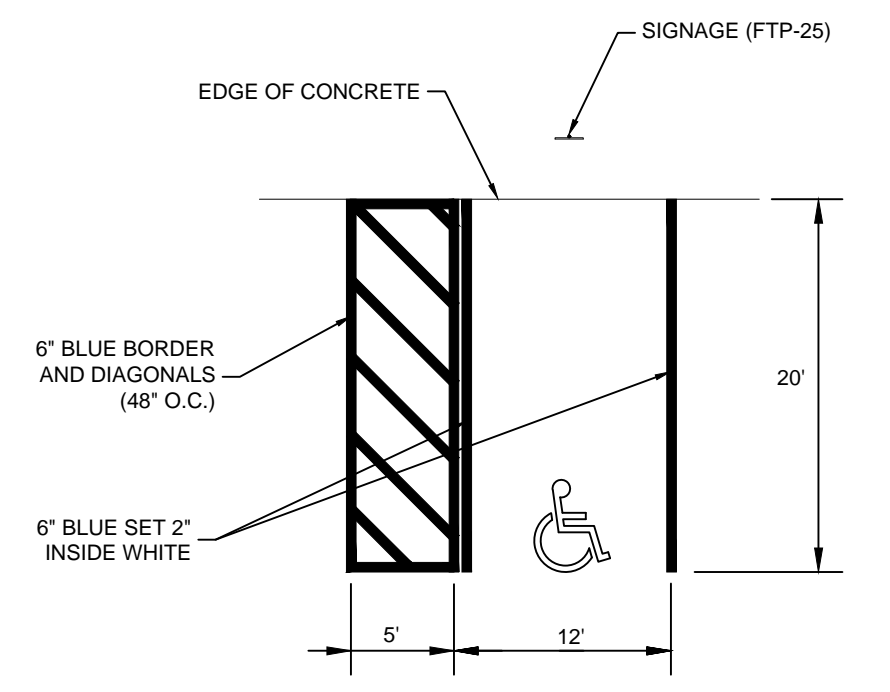
FLANGED CHANNEL POST DETAILS

DETAIL SIGN POST
SCALE: N.T.S.



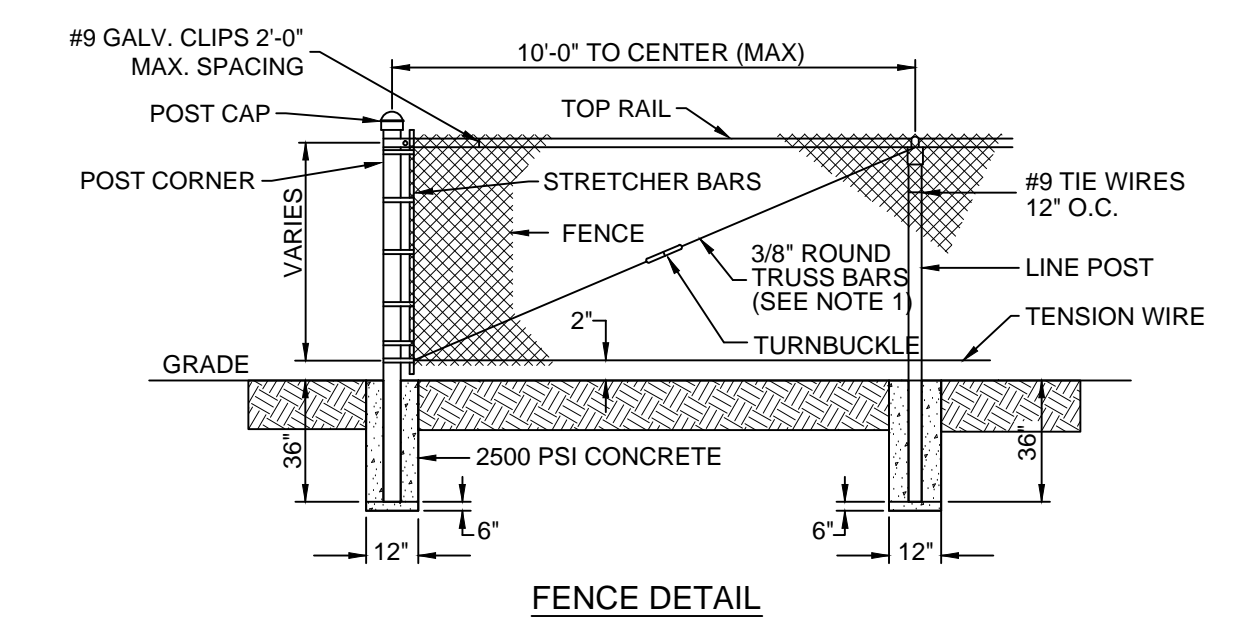
NOTE:
1. POSTS SHALL BE INSTALLED PLUMB.
2. ALL SIGN POSTS SHALL BE 3/8" ALUMINUM TUBING WITH Z-BARS. REFER TO FDOT STANDARD INDEX 11860 FOR DETAILS REGARDING HARDWARE

DETAIL SIGN (TYPICAL)
SCALE: N.T.S.

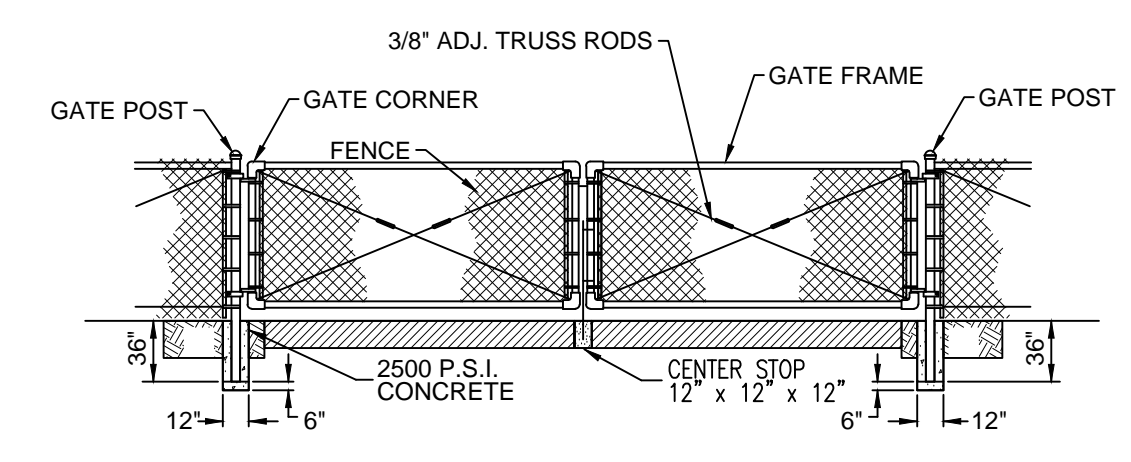


1. BLUE PAVEMENT MARKINGS SHALL BE TINTED TO MATCH SHADE 15180 OF FEDERAL STANDARDS 595A.
2. SIGNAGE SHALL BE PLACED CENTER OF THE PARKING SPACE IN THE GREEN SPACE BEYOND THE WALK.
3. HANDICAP PAVEMENT SYMBOL SHALL BE IN ACCORDANCE WITH FDOT INDEX 17346.

DETAIL HANDICAPPED PARKING
SCALE: N.T.S.



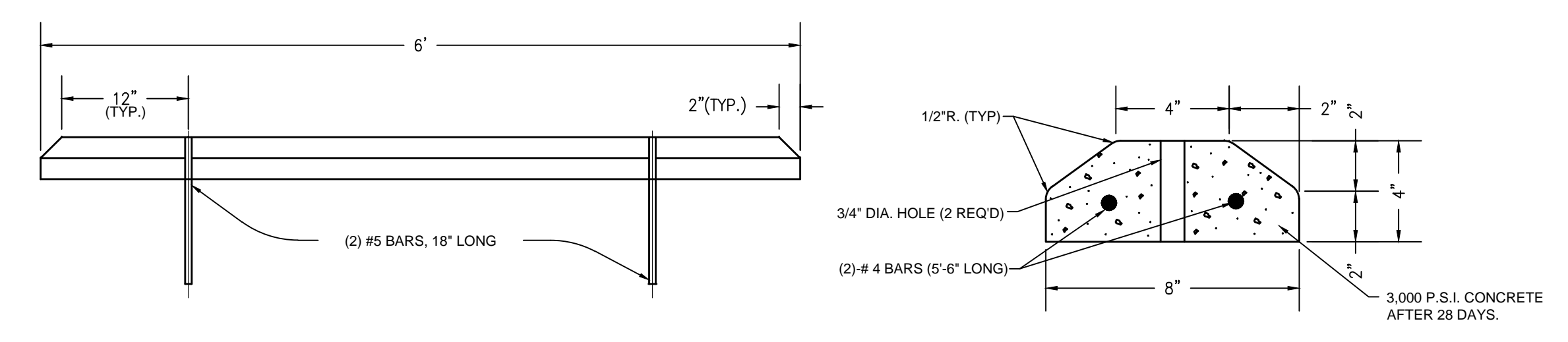
FENCE DETAIL



DOUBLE SWING GATE DETAIL

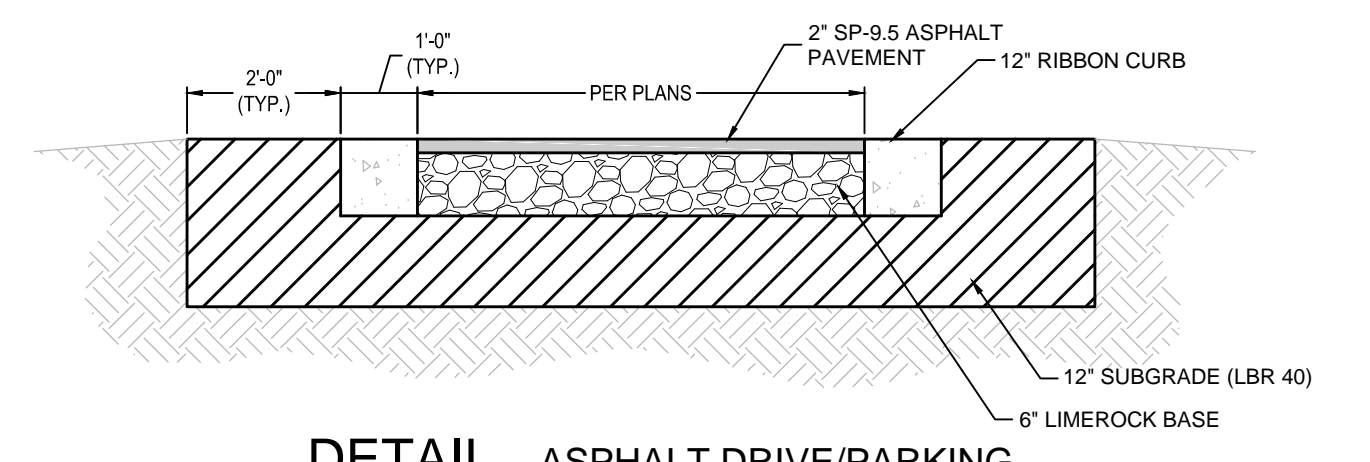
NOTES:
1. TRUSS BARS ARE REQUIRED FOR EACH GATE SECTION AND THE FIRST SPAN ON EACH SIDE OF A CORNER POST ONLY.
2. CHAIN LINK FENCE SHALL BE BLACK VINYL COATED.

DETAIL FENCE
SCALE: N.T.S.

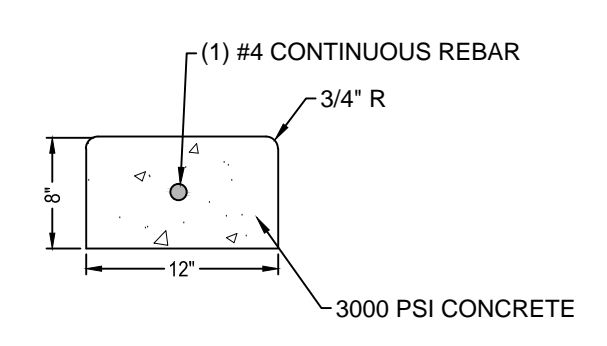


DETAIL TYPICAL PRECAST CONCRETE WHEEL STOP
SCALE: N.T.S.

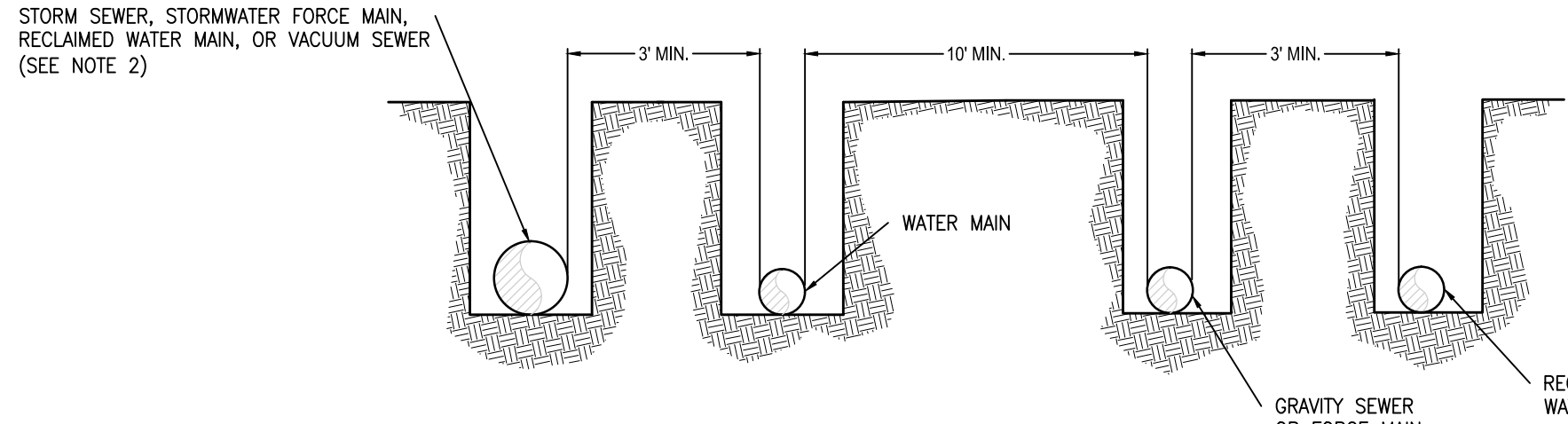
NOTES:
1. FILL SOILS TO BE SANDS CONTAINING NO MORE THAN 12% FINER THAN NO. 200 MESH SIEVE.
2. FILL TO BE FREE OF ORGANICS, RUBBLE, CLAY BALLS, AND OTHER DELETERIOUS MATERIALS.
3. PLACE FILL IN LEVEL LIFTS COMPACTED TO A 95% DENSITY OF THE MODIFIED PROCTOR AASHTO T-180 MAX. DRY DENSITY FULL DEPTH.
4. SUBGRADE PREPARATION TO EXTEND MIN. 3 FT. BEYOND EDGE OF PAVEMENT.
5. ALL MATERIALS TO BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF LATEST ADDITION FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.



DETAIL ASPHALT DRIVE/PARKING
SCALE: N.T.S.



DETAIL RIBBON CURB
SCALE: N.T.S.

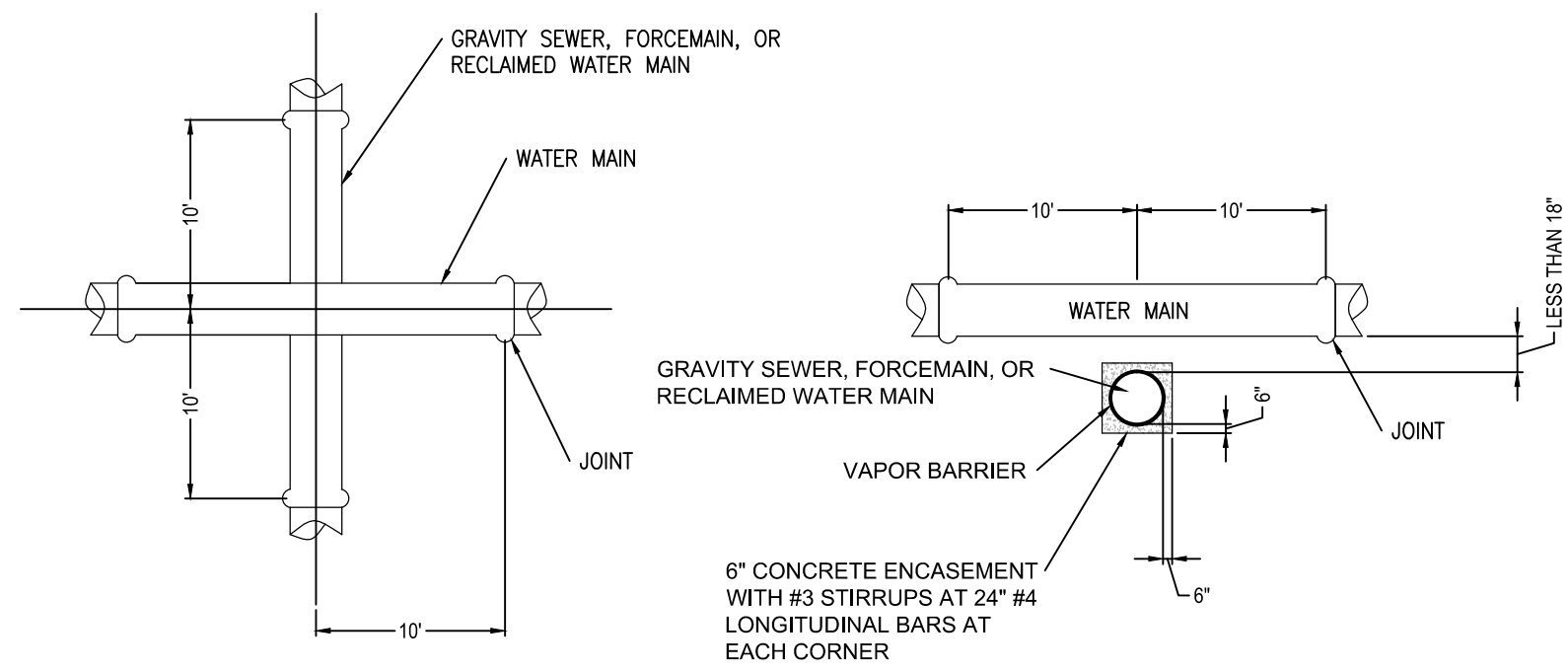


NOTES:

- 1.) WATER MAIN SEPARATION FROM GRAVITY SEWER MAINS AND FORCEMAINS: THE MINIMUM HORIZONTAL DISTANCE BETWEEN THE OUTSIDE OF A WATERMAIN AND SEWER MAIN SHALL BE 10', WHERE A 10' PARALLEL SEPARATION CANNOT BE MAINTAINED BETWEEN A WATER MAIN AND A SEWER MAIN, THE WATER MAIN SHALL BE LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF AT LEAST 18" ABOVE THE TOP OF THE SEWER MAIN, THE HORIZONTAL SEPARATION SHALL BE NO LESS THAN 3'.
- 2.) WATER MAIN SEPARATION FROM VACUUM SEWER: THE DISTANCE BETWEEN A WATER MAIN AND A VACUUM SEWER LINE SHALL BE A MINIMUM OF 3' BUT A SEPARATION OF 10' IS PREFERRED.

DETAIL WATER / SEWER HORIZONTAL & VERTICAL SEPARATION

SCALE: N.T.S.

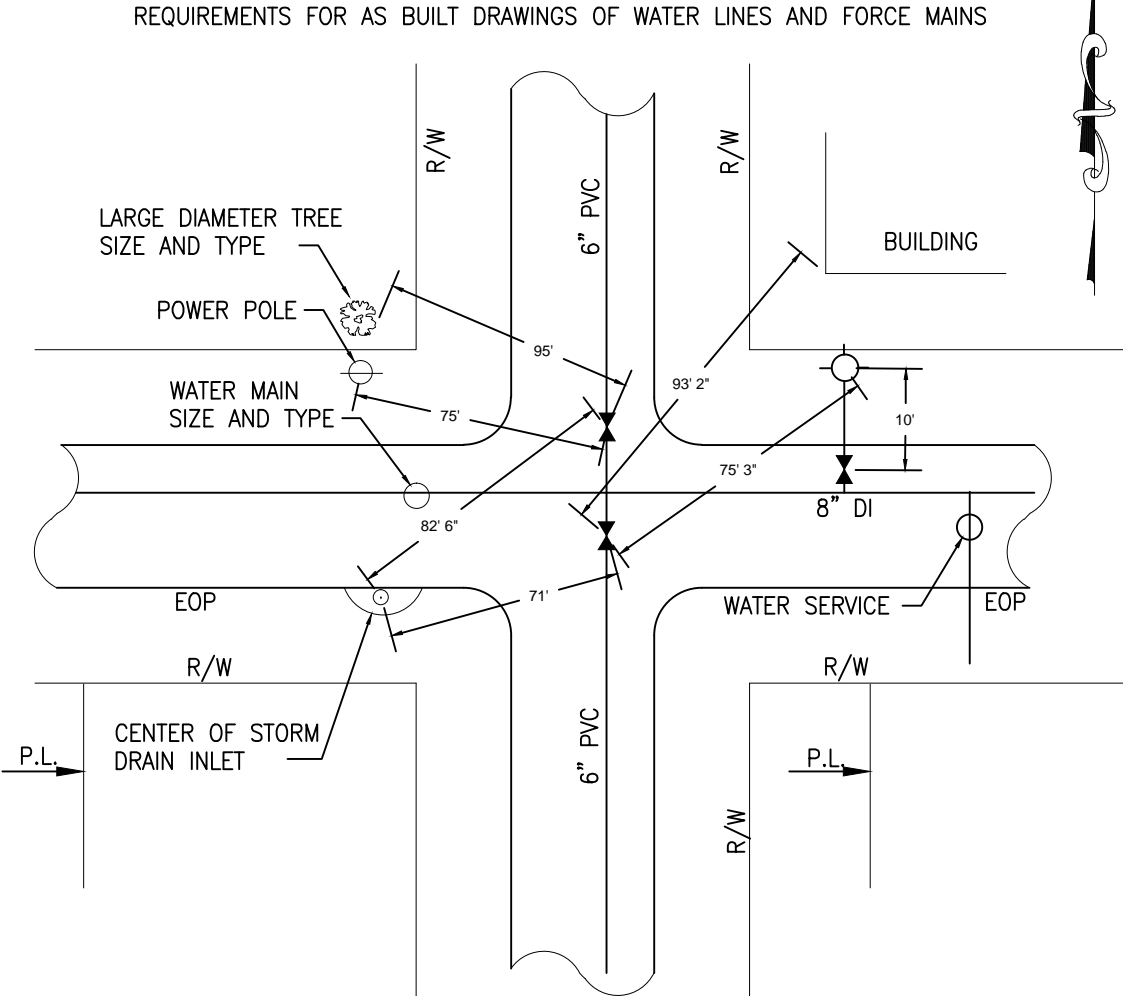


NOTES:

- 1.) CONCRETE ENCASMENT IS TO BE USED SUBJECT TO APPROVAL BY THE FDEP AND THE CITY OF PORT ST. JOE.
- 2.) WHERE AN 18" VERTICAL SEPARATION DISTANCE CANNOT BE MAINTAINED BETWEEN A WATER MAIN AND A GRAVITY SEWER, FORCEMAIN, OR RECLAIMED WATER MAIN, THEN THE GRAVITY SEWER, FORCEMAIN, OR RECLAIMED WATER MAIN SHALL BE CONCRETE ENCASED 6" AND PASS UNDER THE WATERMAIN.
- 3.) THE PIPE JOINTS SHALL BE ARRANGED SO THAT ALL PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN FEET BETWEEN ANY TWO JOINTS. ALTERNATELY, CROSSING SHALL BE ENCASED IN CONCRETE TO OBTAIN THE EQUIVALENT OF THE TEN FOOT SEPARATION BETWEEN JOINTS.

DETAIL WATER/SEWER CROSSING

SCALE: N.T.S.

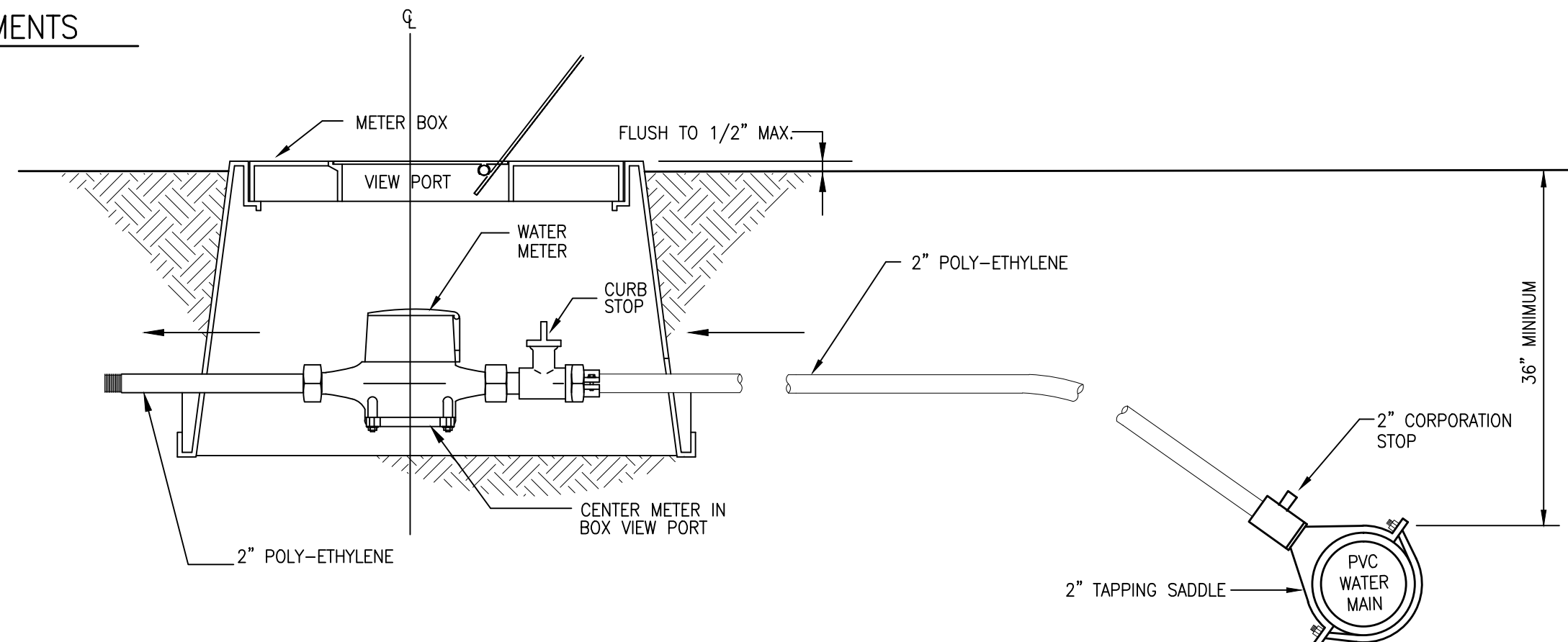


NOTES:

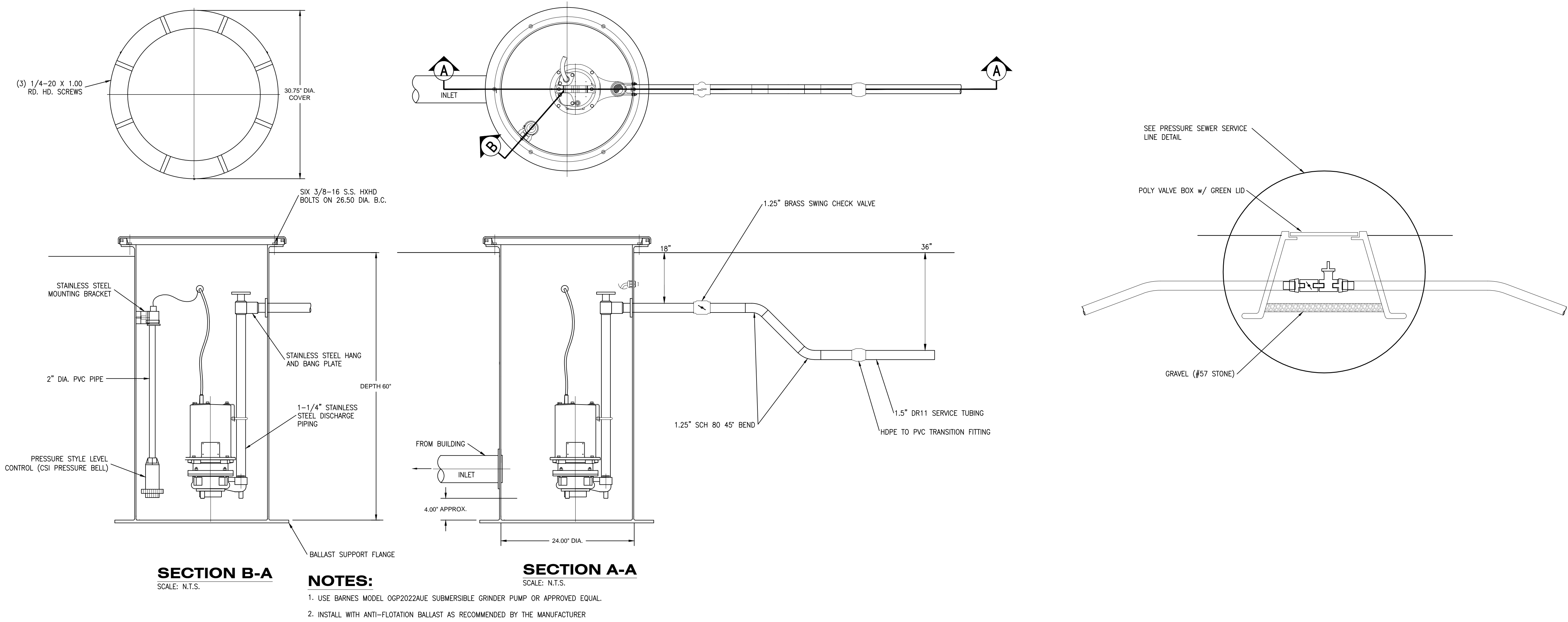
1. AS-BUILT DRAWINGS WILL BE PREPARED INDICATING LOCATIONS OF ALL SERVICES, LOCATIONS AND TYPES OF ALL FITTINGS, WITH RESPECT TO LOT CORNERS, LOCATIONS OF ALL VALVE AND DEAD END RUNS WITH THREE (3) TIES TO PHYSICAL FEATURES (BUILDING CORNERS, MAN HOLES, EXISTING STRUCTURES, POWER POLES, STORM DRAIN INLETS, CENTER OF FIRE HYDRANTS, FACE OF LARGE DIAMETER TREES >18").
2. AS-BUILT DRAWINGS MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE A LETTER OF ACCEPTANCE WILL BE ISSUED.

DETAIL AS-BUILT REQUIREMENTS

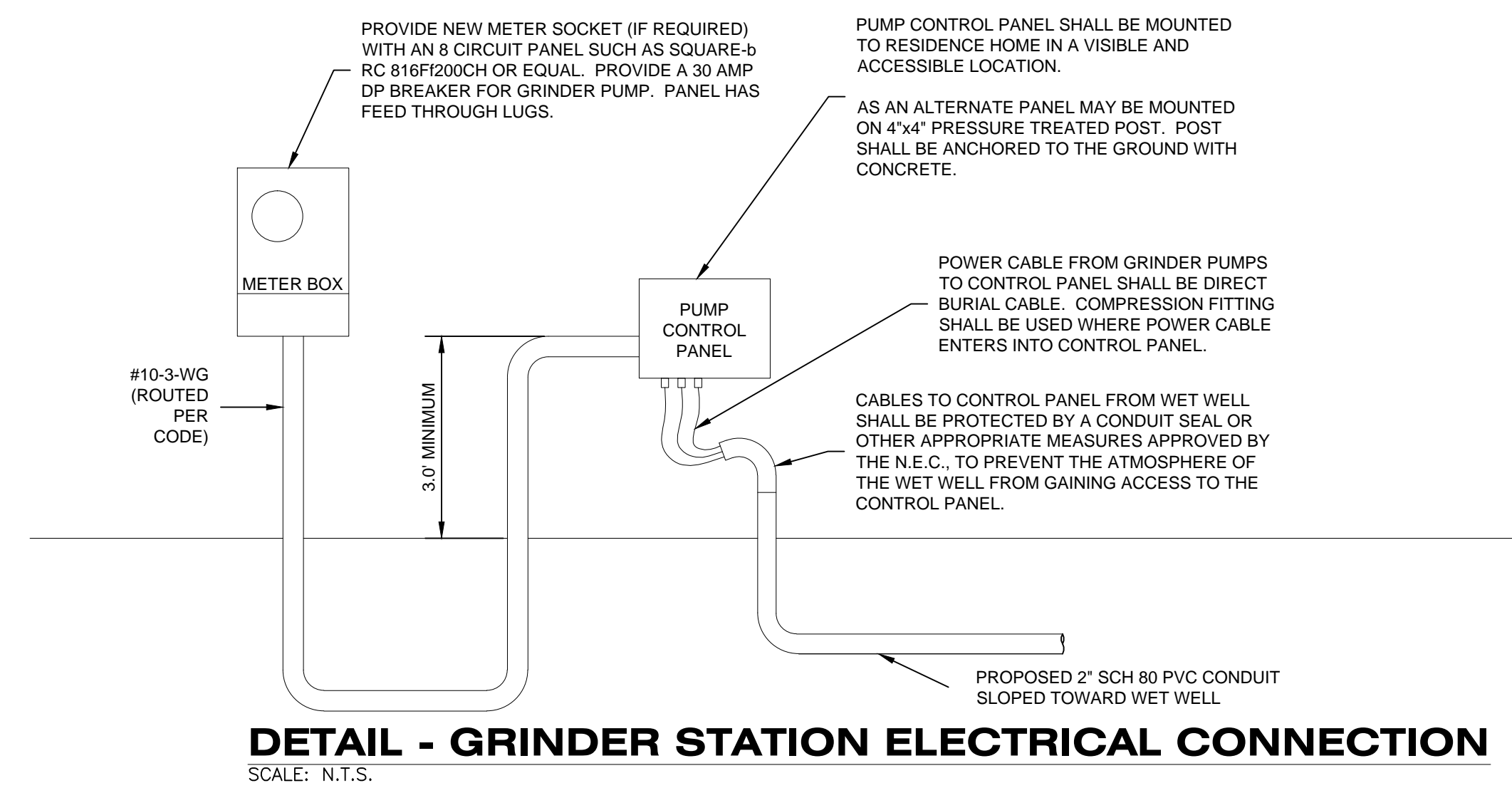
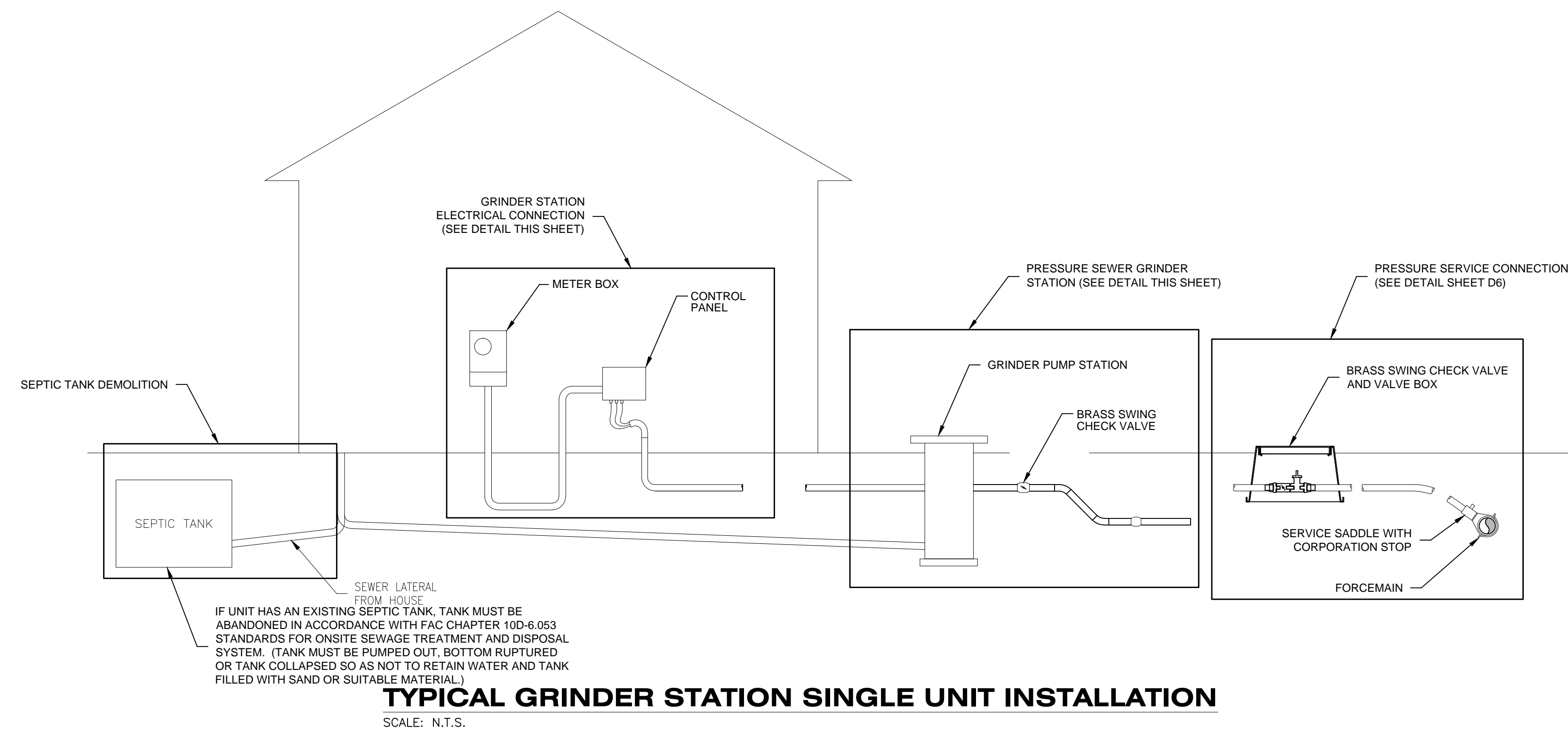
SCALE: N.T.S.



	RESTRAINT LENGTH REQUIREMENTS FOR FITTINGS							
FITTING	RESTRAINT LENGTH REQUIRED 4"	RESTRAINT LENGTH REQUIRED 6"	RESTRAINT LENGTH REQUIRED 8"	RESTRAINT LENGTH REQUIRED 10"	RESTRAINT LENGTH REQUIRED 12"	RESTRAINT LENGTH REQUIRED 14"	RESTRAINT LENGTH REQUIRED 16"	RESTRAINT LENGTH REQUIRED 18"
11 1/4" BEND	10'	10'	10'	10'	10'	10'	10'	10'
22 1/2" BEND	10'	10'	20'	20'	20'	20'	20'	20'
45° BEND	20'	20'	40'	40'	40'	40'	40'	40'
90° BEND	40'	40'	40'	40'	40'	90'	90'	100'
REDUCER	4X3 = 35'	6X4 = 35'	8X6 = 40'	10X8 = 39'	12X10 = 50'	14X12 = 50'	16X14 = 50'	18X16 = 50'
45° VERTICAL OFFSET	UPPER 30'	UPPER 30'	UPPER 40'	UPPER 48'	UPPER 68'	UPPER 78'	UPPER 88'	UPPER 98'
DEAD END	60'	70'	80'	80'	108'	132'	190'	210'



DETAIL PRESSURE SEWER GRINDER STATION
SCALE: N.T.S.



STORMWATER POLLUTION PREVENTION PLAN:

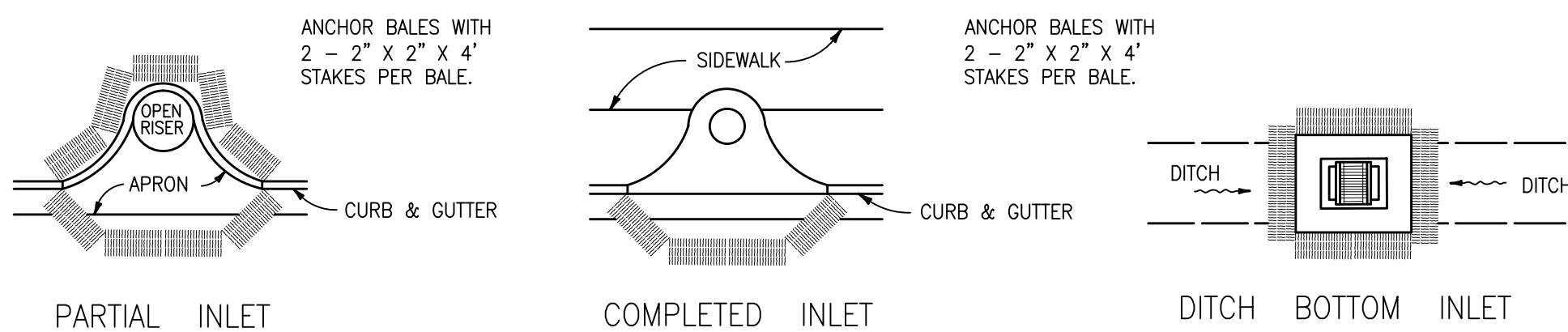
1. **SITE DESCRIPTION:**
A. CONSTRUCTION ACTIVITY: FIRST UNITED METHODIST CHURCH
PROJECT LIMITS: SEE SHEET C1.6
PROJECT DESCRIPTION: CONSTRUCTION OF NEW BUILDING, PARKING AND STORMWATER
MAJOR SOIL DISTURBING ACTIVITIES: CLEARING AND GRUBBING OVER PROJECT LIMITS, EXCAVATION OF STORMWATER FACILITIES
B. TOTAL PROJECT AREA: 70,132 SQUARE FEET OR 1.61 ACRES
C. TOTAL SOIL AREA TO BE DISTURBED: SAME AS ABOVE
D. (1) RUNOFF COEFFICIENTS BEFORE: .84, DURING: .86, AND AFTER: .89
(2) DESCRIPTION OF SOIL OR QUALITY OF DISCHARGE: N/A
(3) ESTIMATES OF SIZE OF DRAINAGE AREA FOR EACH OUTFALL: N/A
E. FOR LOCATIONS OF DRAINAGE AREAS AND OUTFALLS: SEE SHEET C1.6
F. (1) NAME OF RECEIVING WATERS: ST. JOSEPH BAY

2. **CONTROLS:**
NARRATIVE - SEQUENCE OF SOIL DISTURBING ACTIVITIES AND IMPLEMENTATION OF CONTROLS
THE SOIL DISTURBING ACTIVITIES FOR THIS PROJECT ARE AS FOLLOWS: ONLY UPON PROPER PLACEMENT OF ALL EROSION
CONTROLS CAN SOIL DISTURBING ACTIVITIES TAKE PLACE. HAY BALES AND SILT FENCE WILL BE USED LATERALLY AT SPECIFIED
INTERVALS. HAY BALES SHALL BE USED TO PREVENT SEDIMENTATION FROM ESCAPING PROJECT LIMITS.

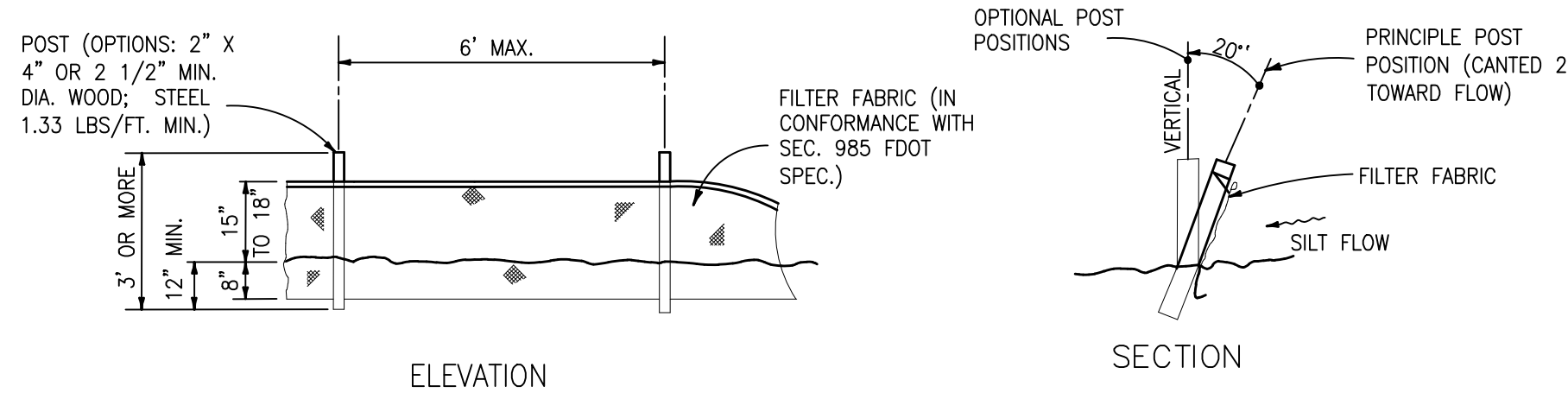
- A. **EROSION AND SEDIMENT CONTROLS:**
(1) **STABILIZATION PRACTICES:**
TEMPORARY SODDING
TEMPORARY GRASSING
X PERMANENT PLANTING, SODDING, OR SEEDING
TEMPORARY MULCHING
ARTIFICIAL COVERING
BUFFER ZONES
PRESERVATION OF NATURAL RESOURCES
(2) **STRUCTURAL PRACTICES:**
SAND BAGGING
X SILT FENCES
X HAY BALES
BERMS
DIVERSION, INTERCEPTOR, OR PERIMETER DITCHES
PIPE SLOPE DRAINS
FLUMES
ROCK BEDDING AT CONSTRUCTION EXIT
TIMBER BEDDING AT CONSTRUCTION EXIT
DITCH LINER
SEDIMENT TRAPS
SEDIMENT BASINS
STORM INLET SEDIMENT TRAP (ROCK BAGS)
STONE OUTLET STRUCTURES
CURBS AND GUTTERS
STORM SEWERS
VELOCITY CONTROL DEVICES
TURBIDITY BARRIER
RIP RAP
B. DESCRIPTION OF STORMWATER MANAGEMENT: ERP STANDARDS WILL BE MET BY TREATING THE FIRST 0.50" OF STORMWATER RUNOFF.
C. **OTHER CONTROLS:**
(1) WASTE DISPOSAL: NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE
(2) OFF SITE VEHICLE TRACKING:
HAUL ROADS DAMPENED FOR DUST CONTROL
X LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
X EXCESS DIRT ON ROAD REMOVED DAILY
X STABILIZED CONSTRUCTION ENTRANCE
(3) SANITARY WASTE: N/A
(4) FERTILIZERS AND PESTICIDES: FERTILIZERS AND/OR PESTICIDES SHALL BE APPLIED ACCORDING TO MANUFACTURERS
RECOMMENDATIONS BY A LICENSED OR CERTIFIED APPLICATOR AS DIRECTED BY THE PROJECT ENGINEER.
(5) NON-STORMWATER DISCHARGE (INCLUDING SPILL REPORTING): NO NON-STORMWATER DISCHARGES ARE ANTICIPATED.
D. APPROVED STATE, LOCAL PLANS, OR STORMWATER PERMITS: NFWMD GENERAL STORMWATER PERMIT

3. **MAINTENANCE:**
ALL OF THE CONTROLS SHALL BE MAINTAINED AT ALL TIMES. IF A REPAIR IS NECESSARY, IT WILL BE DONE AT THE EARLIEST DATE
POSSIBLE, BUT NO LATER THAN (7) CALENDAR DAYS AFTER THE SURROUNDING EXPOSED AREA HAS DRIED SUFFICIENTLY TO
PREVENT FURTHER DAMAGE FROM HEAVY EQUIPMENT.
4. **INSPECTION:**
ALL CONTROLS SHALL BE INSPECTED WEEKLY BY THE CONTRACTOR AS WELL AS AFTER 0.25" OR MORE OF RAIN, AN INSPECTION
AND MAINTENANCE REPORT WILL BE MADE PER EACH INSPECTION. BASED ON INSPECTION RESULTS THE CONTROLS SHALL BE
REVISED PER THE INSPECTION REPORTS.

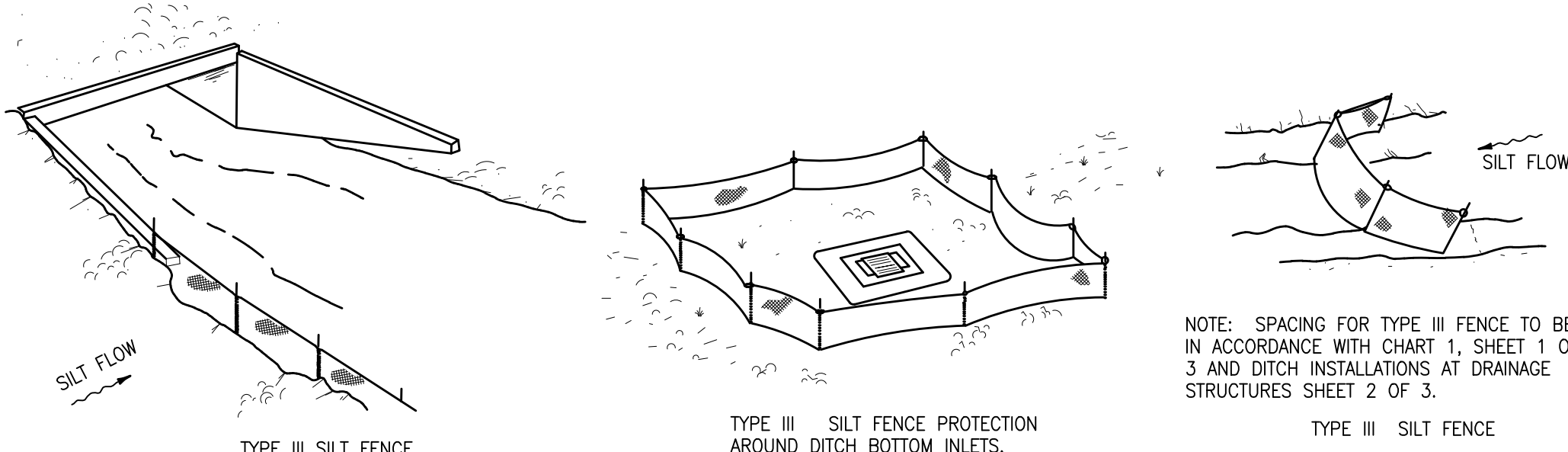
- A. THE CONTRACTOR SHALL INITIATE REPAIRS WITHIN 24 HOURS OF INSPECTION THAT INDICATE ITEMS ARE NOT IN GOOD
WORKING ORDER. TO COMPLY, THE CONTRACTOR SHALL INSTALL AND MAINTAIN RAIN GAGES AND DAILY RAINFALL
RECORDS. WHERE SITES HAVE BEEN PERMANENTLY STABILIZED, INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE
EVERY MONTH. THE CONTRACTOR SHALL ALSO INSPECT AND CERTIFY THAT CONTROLS INSTALLED IN THE FIELD AGREE
WITH THE LATEST STORMWATER POLLUTION PREVENTION PLAN.
B. IF INSPECTIONS INDICATE THAT THE INSTALLED STABILIZATION AND STRUCTURAL PRACTICES ARE NOT SUFFICIENT TO
MINIMIZE EROSION, RETAIN SEDIMENT, AND PREVENT DISCHARGING POLLUTANTS, THE CONTRACTOR SHALL PROVIDE
ADDITIONAL MEASURES, AS NEEDED.
C. RECORDS OF THE INSPECTION AND THE CONSTRUCTION PERMIT MUST BE MAINTAINED AT THE CONSTRUCTION SITE AND
BE READILY AVAILABLE FOR INSPECTION.
5. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR OBTAINING COVERAGE UNDER THE GENERAL PERMIT FOR STORMWATER
DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES PRIOR TO START OF CONSTRUCTION OR ANY DISTURBANCE OF LAND
GREATER THAN ONE ACRE. ALL REQUIRED ELEMENTS OF THE STORMWATER POLLUTION PREVENTION PLAN MUST BE IN PLACE PRIOR
TO COMMENCEMENT OF CONSTRUCTION. FAILURE TO COMPLY COULD RESULT IN CODE ENFORCEMENT ACTION AND FINES.



PROTECTION AROUND INLETS OR SIMILAR STRUCTURES

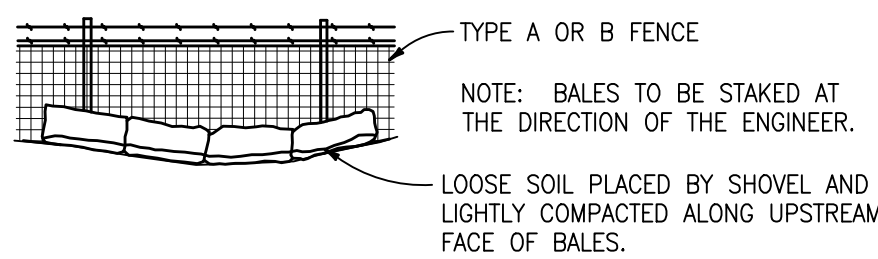


TYPE III SILT FENCE

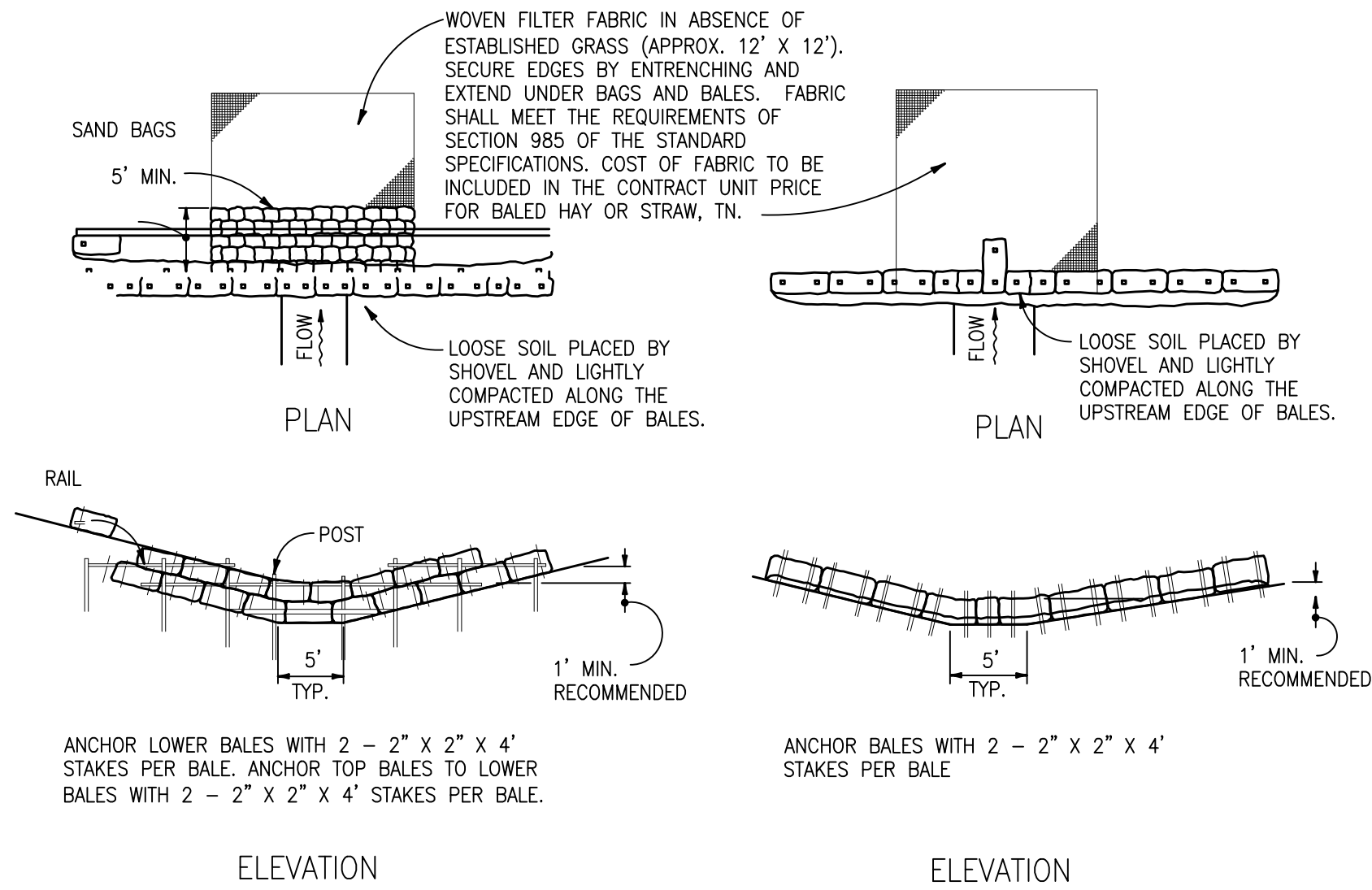


DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

SILT FENCE APPLICATIONS



BALES BACKED BY FENCE

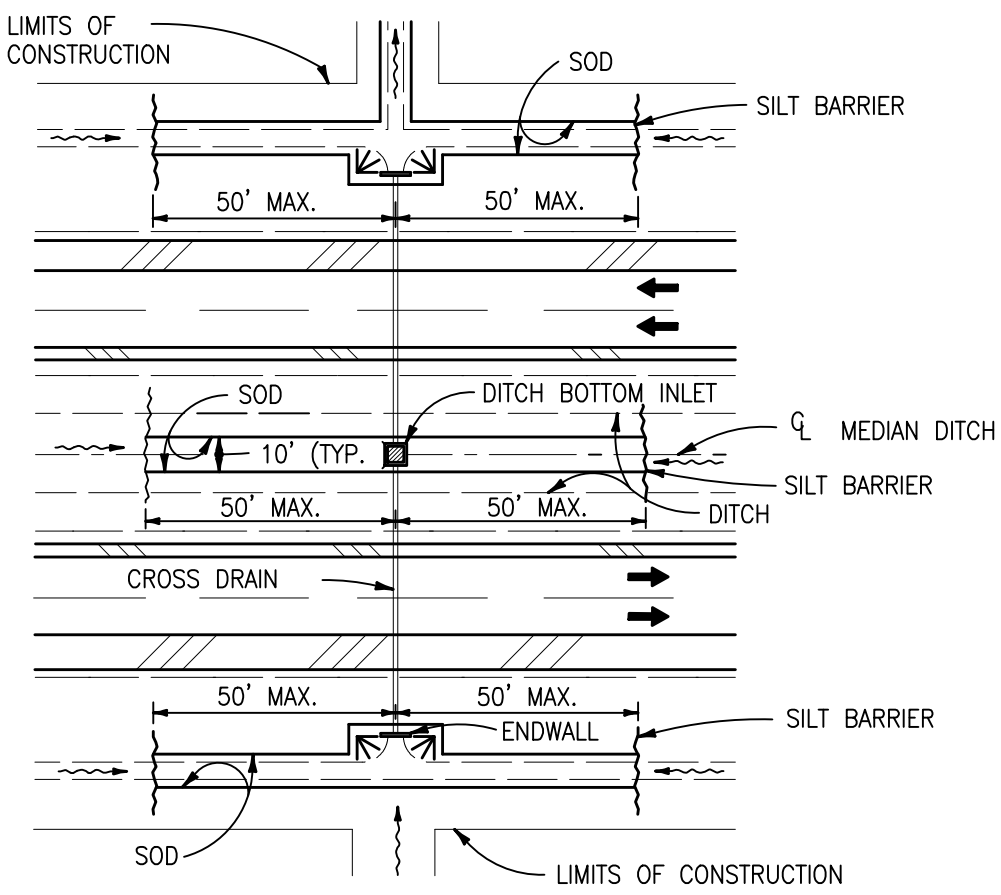


APPLICATION AND SPACING: THE USE OF TYPES I & II BALE BARRIERS SHOULD BE LIMITED TO THE CONDITIONS OUTLINED IN THE CHART BELOW.

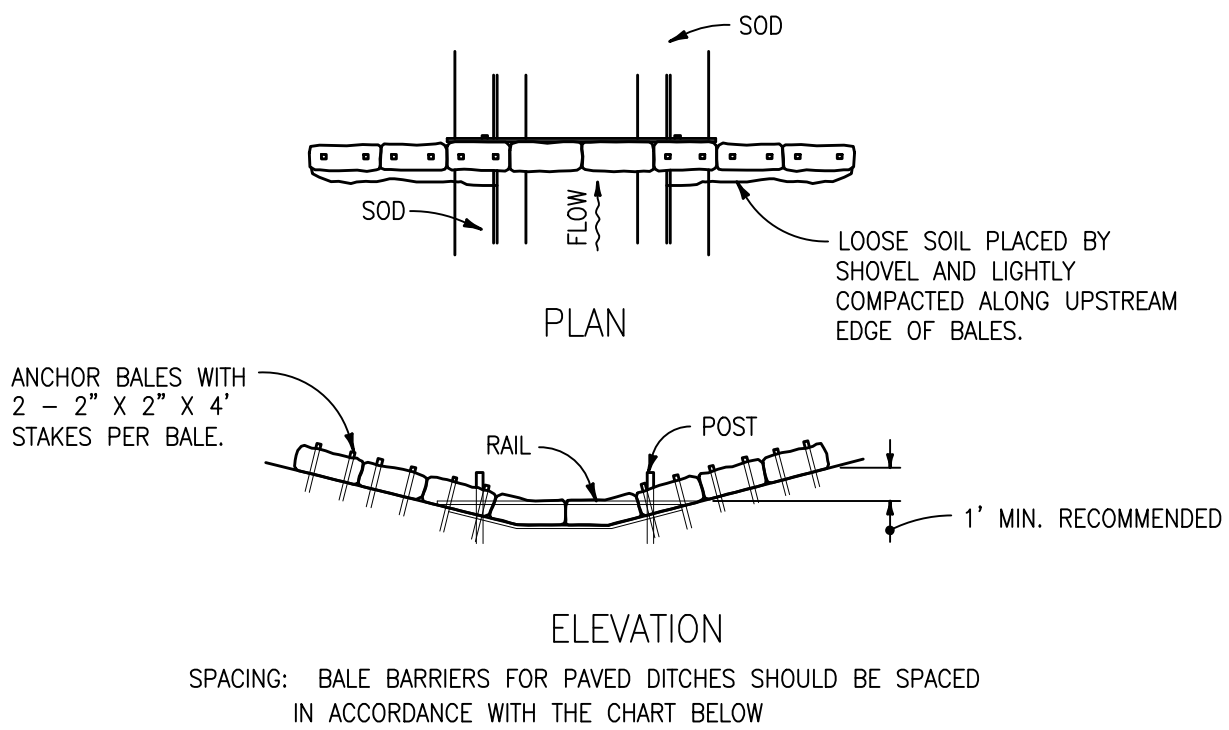
TYPE II

TYPE I

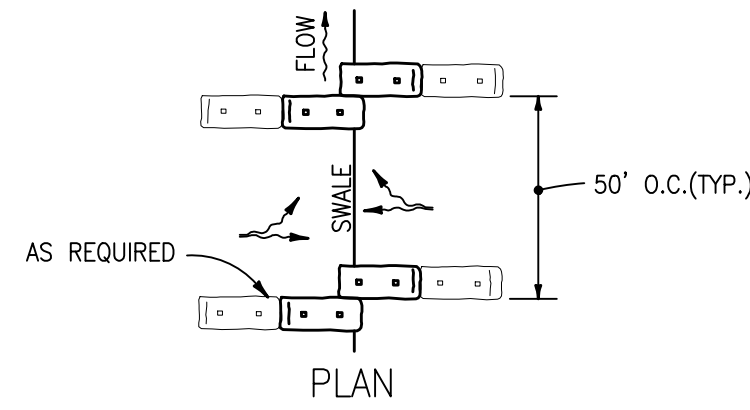
BARRIER FOR UNPAVED DITCHES



DITCH INSTALLATIONS AT DRAINAGE STRUCTURES

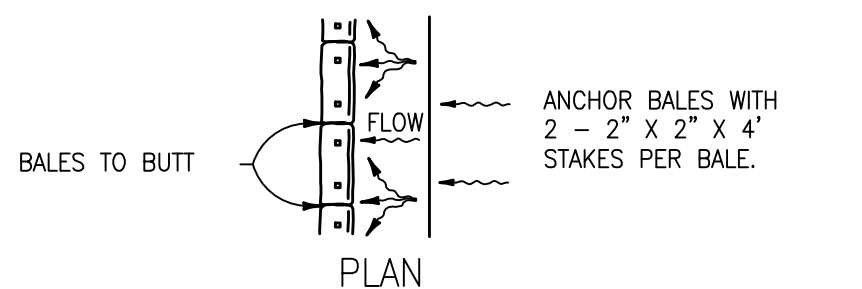


BARRIER FOR PAVED DITCH



ELEVATION

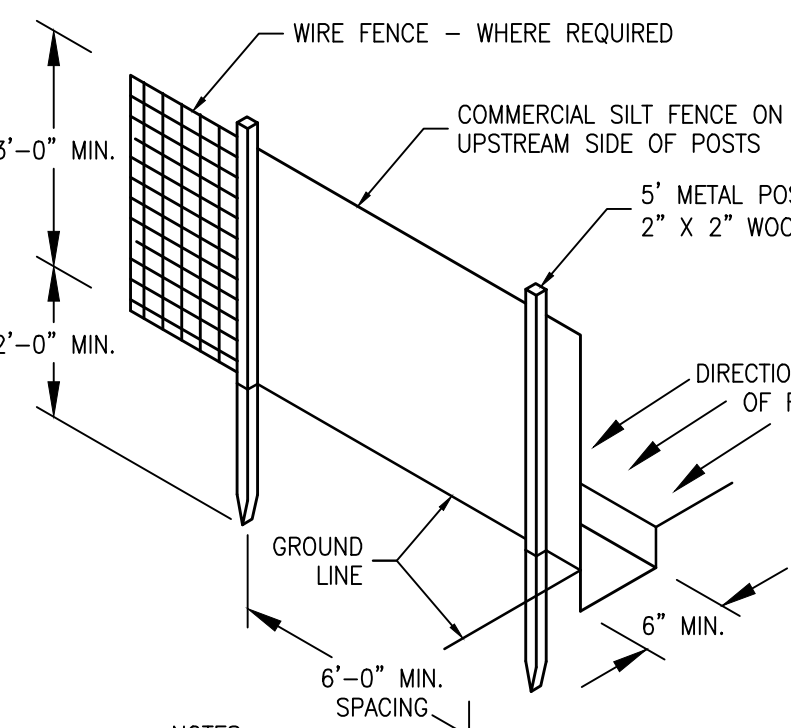
TO BE USED AT SELECTED SITES WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE



ELEVATION

TO BE USED AT SELECTED SITES WHERE THE NATURAL GROUND SLOPES AWAY FROM THE TOE OF SLOPE

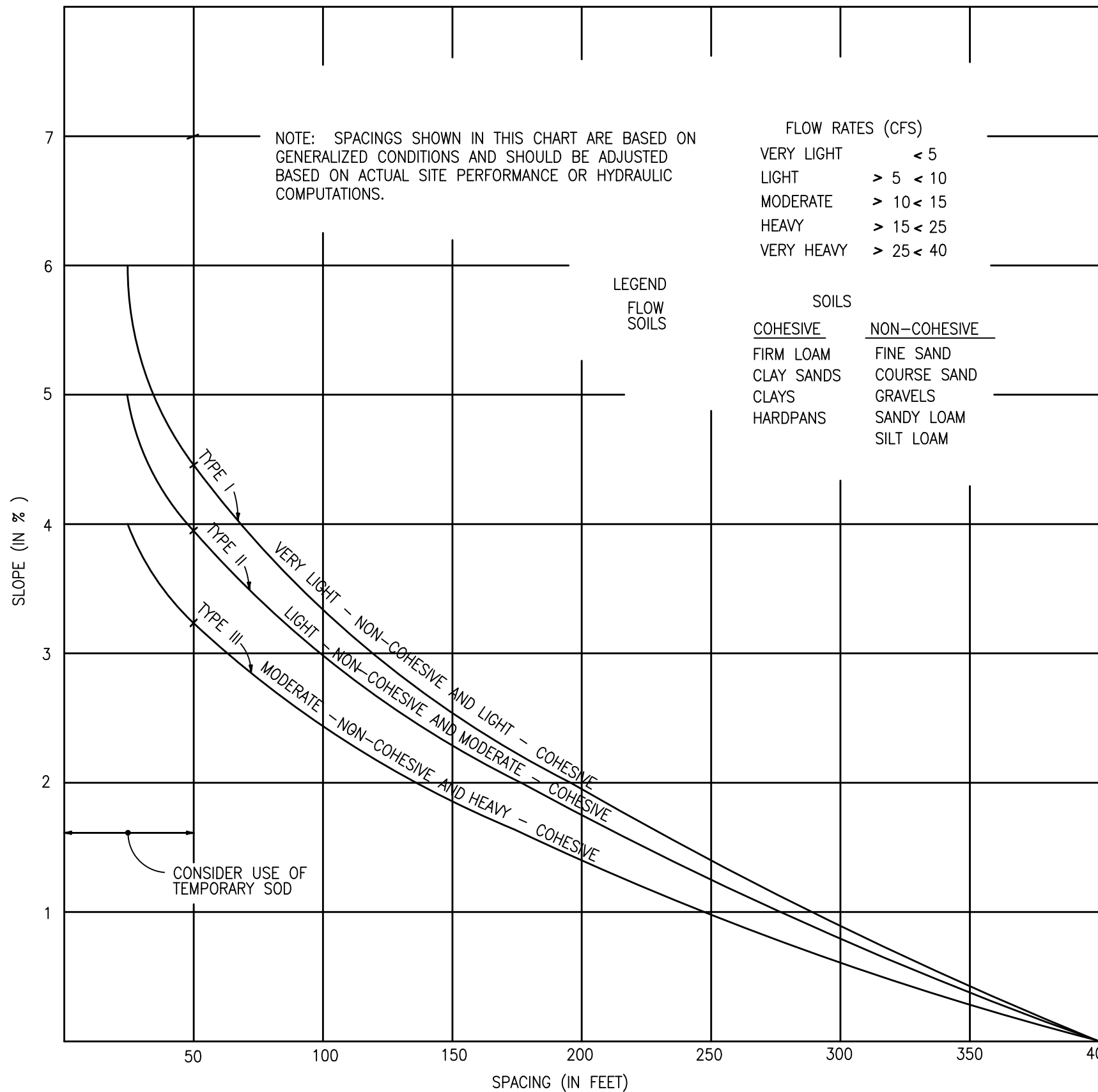
BARRIERS FOR FILL SLOPES



- NOTES:
1. DIG TRENCH 6" DEEP.
2. LAY IN FABRIC TO BOTTOM OF TRENCH.
3. BACK TRENCH, COVERING FABRIC.

DETAIL SILT FENCE

SCALE: N.T.S.



RECOMMENDED SPACING FOR TYPE I AND TYPE II HAY BALE BARRIERS, AND TYPE III SILT FENCES

EROSION AND SEDIMENT CONTROL NOTES:

1. CONTRACTOR SHALL STAGE AND TIME CONSTRUCTION TO MINIMIZE THE SIZE OF EXPOSED SOIL AREAS AND THE TIME BETWEEN EXPOSING THE SOIL AREA AND FINISHING THE SOIL AREA.
2. AS SOON AS GRADING IS COMPLETE IN AN AREA, THE CONTRACTOR WILL STABILIZE THE SOIL. FOR LONG, NARROW AREAS, THE CONTRACTOR SHALL STABILIZE CONTINUOUSLY DURING GRADING OPERATIONS. ROUGH GRADED AREAS SHOULD BE STABILIZED WITH TEMPORARY EROSION CONTROL. IF FINAL GRADING AND STABILIZATION WILL NOT BE PERFORMED WITHIN FIVE (5) DAYS, FAILURE TO STABILIZE EXPOSED SOIL AREAS IN A TIMELY MANNER AFTER GRADING MAY BE CONSIDERED A VIOLATION OF CHAPTERS 62-3, 62-12, AND/OR 62-25, FLORIDA ADMINISTRATIVE CODE, BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) AND SUBJECT TO CORRECTIVE ACTION, PURSUANT TO SECTION 403.121-403.161 FLORIDA STATUTES.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING A TASK TO PROVIDE EROSION CONTROL. UNLESS ANOTHER PARTY HAS BEEN PREVIOUSLY SPECIFIED AS RESPONSIBLE FOR THE EROSION CONTROL ASSOCIATED WITH THAT TASK. IN THE EVENT ANOTHER PARTY IS RESPONSIBLE FOR EROSION CONTROL, THE CONTRACTOR SHALL STILL BE RESPONSIBLE FOR COORDINATION WITH THE PARTY RESPONSIBLE. IN THE EVENT THAT DAMAGE TO THE CONSTRUCTED ITEM RESULTS ARE DUE TO LACK OF EROSION CONTROL, THE CONTRACTOR SHALL REPAIR OR REPLACE THE ITEM AT NO CHARGE TO THE OWNER. TEMPORARY EROSION CONTROL SHALL CONSIST OF TEMPORARY GRASS, TEMPORARY MULCH, TEMPORARY SOD, ARTIFICIAL COVERINGS, BALED HAY OR STRAW, SILT FENCES, AND TURBIDITY BARRIERS.
4. TEMPORARY EROSION CONTROL SHALL BE IN ACCORDANCE WITH SECTION 104 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD SPECIFICATIONS. PERMANENT EROSION CONTROL SHALL CONSIST OF SEED, SEED AND MULCH, HYDRO-SEEDING, SOD, AND/OR ARTIFICIAL COVERINGS.
5. PERMANENT EROSION CONTROL SHALL BE IN ACCORDANCE WITH SECTION 570 OF THE FDOT STANDARD SPECIFICATIONS. SEED OR GRASS TYPE SHALL MATCH EXISTING OR BE AS SPECIFIED BY OWNER UNLESS NOTED OTHERWISE.
6. GRASS BY SEEDING SHALL BE IN ACCORDANCE WITH SECTIONS 104, 570, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. THIS SHALL BE USED ONLY IN AREAS SUBJECT TO LIGHT EROSION SUCH AS FLAT AREAS.
7. GRASS BY HYDRO-SEEDING SHALL BE IN ACCORDANCE WITH SECTIONS 104, 570, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. HYDRO-SEEDING MAY BE USED FOR FLAT AREAS AND SIDE SLOPES WHICH DO NOT EXCEED 2:1. DRAINAGE DITCHES OR LARGE SLOPES MUST HAVE ADDITIONAL PROTECTION BESIDES HYDRO-SEEDING.
8. GRASS AND MULCH SHALL BE IN ACCORDANCE WITH SECTIONS 104, 570, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. GRASS AND MULCH MAY BE USED IN ALL AREAS EXCEPT LARGE SWALES OR DITCHES. MULCH SHALL BE ANCHORED IN ACCORDANCE WITH SECTION 570.
9. SOD SHALL BE IN ACCORDANCE WITH SECTIONS 104, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. SOD MAY BE USED IN ALL AREAS FOR SIDE SLOPES GREATER THAN OR EQUAL TO 2:1. SOD SHALL BE TAGGED SO AS TO AVOID A CONTINUOUS SEAM. IN AREAS WITH SLOPES 4:1 OR STEEPER, EACH PIECE OF SOD SHALL BE PEGGED WITH SOD PEGS. IN DIFFICULT SOIL CONDITIONS WITH STEEP SLOPES, IT MAY BE NECESSARY TO COVER SOD WITH ARTIFICIAL COVERINGS SUCH AS JUTE MESH UNTIL SOD BECOMES ESTABLISHED.
10. TEMPORARY EROSION CONTROL BY ARTIFICIAL COVERINGS SHALL CONSIST OF STRAW BLANKETS, COCONUT FIBER BLANKETS, POLYESTER BLANKETS, JUTE MESH, AND DRAINAGE FABRICS. MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SEEDING SHALL BE INCLUDED IF MATERIAL REQUIRES VEGETATION TO FUNCTION PROPERLY.
11. THE CONTRACTOR IS TO PROVIDE EROSION CONTROL/SEDIMENTATION BARRIER (HAY BALES, SILT FENCE, TURBIDITY BARRIER, OR AS SPECIFIED IN THE CONSTRUCTION DRAWINGS) TO PREVENT SILTATION OF ADJACENT PROPERTY, STREETS, STORM SEWERS, WATERWAYS, AND WETLAND OR JURISDICTIONAL AREAS. IF, IN THE OPINION OF THE ENGINEER, AND/OR REGULATORY AUTHORITIES, EXCESSIVE QUANTITIES OF MATERIAL ARE TRANSPORTED OFF SITE BY EROSION OR STORMWATER RUNOFF, THE CONTRACTOR SHALL IMPROVE CONDITIONS TO THE SATISFACTION OF THE ENGINEER AND/OR AUTHORITIES. IN NO CASE SHALL CONSTRUCTION COMMENCE PRIOR TO INSTALLATION OF EROSION CONTROL/SEDIMENTATION BARRIER.
12. CONTRACTOR SHALL PLACE STRAW, MULCH, OR OTHER SUITABLE MATERIAL ON GROUND IN AREAS WHERE CONSTRUCTION-RELATED TRAFFIC IS TO ENTER AND EXIT SITE.
13. IF WIND EROSION BECOMES SIGNIFICANT DURING CONSTRUCTION, THE CONTRACTOR SHALL STABILIZE THE AREA USING SPRINKLING IRRIGATION OR OTHER ACCEPTABLE METHODS.

DEWATERING NOTES

1. THE FACILITY IS AUTHORIZED TO DISCHARGE PRODUCED GROUND WATER FROM ANY NON-CONTAMINATED SITE ACTIVITY WHICH DISCHARGES BY A POINT SOURCE TO SURFACE WATERS OF THE STATE, AS DEFINED IN CHAPTER 62-620, F.A.C., ONLY IF THE REPORTED VALUES FOR THE PARAMETERS LISTED IN TABLE 1 DO NOT EXCEED ANY OF THE LISTED SCREENING VALUES. BEFORE DISCHARGE OF PRODUCED GROUND WATER CAN OCCUR FROM SUCH SITES, ANALYTICAL TESTS ON SAMPLES OF THE PROPOSED UNTREATED DISCHARGE WATER SHALL BE PERFORMED TO DETERMINE IF CONTAMINATION EXISTS.
2. MINIMUM REPORTING REQUIREMENTS FOR ALL PRODUCED GROUND WATER DISCHARGES. THE EFFLUENT SHALL BE SAMPLED BEFORE THE COMMENCEMENT OF DISCHARGE, AGAIN WITHIN THIRTY (30) DAYS AFTER COMMENCEMENT OF DISCHARGE, AND THEN ONCE EVERY SIX (6) MONTHS FOR THE LIFE OF THE PROJECT. SAMPLES SHALL BE TAKEN PRIOR TO ACTUAL DISCHARGE OR MIXING WITH THE RECEIVING WATERS. THE EFFLUENT SHALL BE SAMPLED FOR THE PARAMETERS LISTED IN TABLE 1.

Table 1

Parameter	Fresh Waters	Coastal Waters
Total Organic Carbon (TOC)	10.0 mg/L	10.0 mg/L
pH, standard units	6.0 - 8.5	6.5 - 8.5
Total Recoverable Mercury	0.012 ug/L	0.025 ug/L
Total Recoverable Cadmium	9.9 ug/L	9.9 ug/L
Total Recoverable Copper	2.9 ug/L	2.9 ug/L
Total Recoverable Lead	0.03 mg/L	5.6 mg/L
Total Recoverable Zinc	86.0 ug/L	86.0 ug/L
Total Recoverable Chromium (Hex)	11.0 ug/L	50.0 ug/L
Benzene	1.0 ug/L	1.0 ug/L
Naphthalene	100.0 ug/L	100.0 ug/L

3. FOR FRESH WATERS AND COASTAL WATERS, THE PH OF THE EFFLUENT SHALL NOT BE LOWERED TO LESS THAN 6.0 UNITS FOR FRESH WATERS, OF LESS THAN 6.5 UNITS FOR COASTAL WATERS, OR RAISED ABOVE 8.5 UNITS, UNLESS NATURAL BACKGROUND DATA CONFIRMING A NATURAL BACKGROUND PH OUTSIDE OF THIS RANGE IS SUBMITTED. IF NATURAL BACKGROUND OF THE RECEIVING WATER IS DETERMINED TO BE LESS THAN 6.0 UNITS FOR FRESH WATERS, OR LESS THAN 6.5 UNITS IN COASTAL WATERS, THE PH SHALL NOT VARY BELOW NATURAL BACKGROUND OR VARY MORE THAN ONE (1) UNIT ABOVE NATURAL BACKGROUND FOR FRESH AND COASTAL WATERS. IF NATURAL BACKGROUND OF THE RECEIVING WATER IS DETERMINED TO BE HIGHER THAN 8.5 UNITS, THE PH SHALL NOT VARY ABOVE NATURAL BACKGROUND OR VARY MORE THAN ONE (1) UNIT BELOW NATURAL BACKGROUND OF FRESH AND COASTAL WATERS. THE CONTRACTOR SHALL INCLUDE THE NATURAL BACKGROUND PH OF THE RECEIVING WATERS WITH THE RESULTS OF THE ANALYSES LISTED IN NOTE 2. FOR PURPOSES OF THIS SECTION ONLY, FRESH WATERS ARE THOSE HAVING A CHLORIDE CONCENTRATION OF LESS THAN 1500 MG/L, AND COASTAL WATERS ARE THOSE HAVING A CHLORIDE CONCENTRATION EQUAL TO OR GREATER THAN 1500 MG/L.
4. IN ACCORDANCE WITH RULE 62-302.500 (1) (A)-(C), F.A.C., THE DISCHARGE SHALL AT ALL TIMES BE FREE FROM FLOATING SOLIDS, VISIBLE FOAM, TURBIDITY, OR VISIBLE OIL IN SUCH AMOUNTS AS TO FORM NUISANCES ON SURFACE WATERS.
5. ALL OF THE GENERAL CONDITIONS LISTED IN RULE 62-621.250, F.A.C., ARE APPLICABLE.
6. A GENERIC PERMIT FOR THE DISCHARGE OF PRODUCED GROUND WATER FROM ANY NON-CONTAMINATED SITE ACTIVITY, DOCUMENT # 62-621.300(2) IS REQUIRED.