

DATE OF PREPARATION: 5-JUN-15  
DEVELOPMENT: GRAND AVENUE LIFT STATION MODIFICATION SECTION 21, TOWNSHIP 34 SOUTH, RANGE 29 EAST

OWNER: CITY OF SEBRING  
POLSTON ENGINEERING, INC.  
SEBRING, FL 33870  
863-471-5100

ENGINEER: ROGER DALE POLSTON, P.E.  
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PIPE SPECIFICATION:  
SEWER FORCE MAIN  
FORCE MAINS = 4", 6", 8", 10" and 12" AWWA APPROVED DUCTILE IRON  
ASTM D1784 (GREEN COLOR)

FITTINGS  
4" AND LARGER= CLASS 250 (MINIMUM)  
DUCTILE IRON MED-A-LUG ACCESSORIES

1. ALL PIPE MATERIAL WILL BE AWWA OR ASTM STANDARD.  
2. ALL FORCE MAIN 4" - 12" WILL BE AWWA APPROVED DUCTILE IRON.  
3. ALL MEGA-LUG RESTRAINTS WILL BE DOMESTIC EBAA ONLY.  
4. ALL MATERIALS WILL BE FROM THE CITY OF SEBRING APPROVED MATERIALS LIST.  
5. ALL FITTINGS WILL BE MEGA-LUG.

NOTE: EACH SUBCONTRACTOR WILL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL UTILITIES EFFECTED BY HIS WORK.

INSTALLATION INSTRUCTIONS:  
--THE SUBCONTRACTOR WILL BE RESPONSIBLE FOR TAKING ALL STEPS NECESSARY INCLUDING SHORING TO INSURE THE INTEGRITY OF THE ALL EXISTING PAVEMENTS, UTILITIES AND STRUCTURES ARE BE RESPONSIBLE FOR REPLACEMENT OR REPAIR OF ANY DAMAGE CAUSED BY OR RELATED TO CONSTRUCTION OF WATERLINE.  
--THE PIPE SHALL BE BEDDED IN COMPACTED CLEAN SAND WITH ALL ORGANIC MATTER AND DEBRIS REMOVED.  
--BACK FILL SHALL BE OF SIMILAR MATERIAL AND PLACED BY HAND AND COMPACTED BY TAMPING TO AT LEAST 12" OVER THE TOP OF THE PIPE.  
--ALL FILL TO BE CLEAN SAND AND TO BE PLACED IN APPROXIMATE 12" LAYERS AND IS TO BE COMPACTED BY TAMPING.  
--PIPE IS TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS, USING THE MANUFACTURER SPECIFIED JOINT LUBRICANTS AND CEMENTS IF REQUIRED.  
--ALL DISTURBED AREAS WITHIN THE CITY, COUNTY AND STATE R/W ARE TO BE RESTORED AND SODDED.  
--THE CONNECTION TO THE CITY OF SEBRING UTILITIES SEWER COLLECTION SYSTEM WILL BE DONE TO THE CITY OF SEBRING UTILITIES SPECIFICATIONS UNDER THE UTILITY DEPARTMENT SUPERVISION REQUIREMENTS.  
--THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIRING ALL UTILITIES, ROADS AND STRUCTURES DAMAGED DURING THE DIRECTIONAL BORE OR JACK AND BORE CONSTRUCTION PHASE.  
TESTING:  
--ALL TESTS WILL REQUIRE THE PRESENCE OF THE ENGINEER, CONTRACTOR OR HIS DESIGNATED INSPECTOR.  
--A SOD PRESENT WILL BE A DESIGNATED INSPECTOR FROM THE CITY OF SEBRING UTILITIES.  
--THE SUBCONTRACTOR SHALL TAKE ALL PRECAUTIONS TO SECURE A WATERTIGHT SEWER LINE UNDER ALL CONDITIONS.  
--ALL VISIBLE DAMAGE FLAWS SHALL BE REPAIRED OR REPLACED REGARDLESS OF THE OUT COME OF ANY TESTING PERFORMED.  
--TEST SHALL BE PERFORMED PRIOR TO CONNECTION TO THE CITY OF SEBRING UTILITIES SEWER COLLECTION SYSTEM.

FORCE MAIN LINES:  
--THE FORCE MAIN LINES SHALL BE TESTED UNDER A HYDROSTATIC PRESSURE OF 150 PSI FOR AT LEAST 2 HOURS.  
--THE SUBCONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT TO PERFORM ALL TESTS.

HYDROSTATIC TESTS  
1) ALL COMPONENTS OF THE FORCE MAIN SYSTEM, INCLUDING FITTINGS, SERVICES, CONNECTIONS, AND VALVES SHALL BE HYDROSTATIC TESTED. SPECIFIC DISTRIBUTION SYSTEM COMPONENTS INCLUDING FITTINGS AND VALVES, SHALL REMAIN UNCOVERED UNTIL TESTED AND APPROVED. HOWEVER, THAT PIPE TRENCHES UNDER TRAVELED STREETS OR ROADS MAY BE BACKFILLED WITH THE PERMISSION OF THE PROJECT ENGINEER. NO TESTING SHALL BE DONE UNTIL ALL CONCRETE THRUST BLOCKING IS IN PLACE AND SET. IF HIGH EARLY STRENGTH CONCRETE IS USED, TESTING MAY BE CONDUCTED 48 HOURS AFTER CONCRETE IS PLACED; OTHERWISE, THRUST BLOCK CONCRETE MUST CURE 5 DAYS BEFORE PRESSURE TESTING COMMENCES. IN TESTING, THE PART OF THE SYSTEM UNDER TEST SHALL BE FILLED WITH POTABLE WATER AND SUBJECTED TO A SUSTAINED PRESSURE OF 150 PSI. THE PIPING SHALL BE TESTED IN SECTIONS, THEREBY TESTING EACH VALVE FOR SECURE CLOSURE. WHILE THE SYSTEM IS BEING FILLED, AIR SHALL BE CAREFULLY AND COMPLETELY EXHAUSTED. IF PERMANENT AIR VENTS ARE NOT LOCATED AT ALL HIGH POINTS, THE CONTRACTOR SHALL INSTALL CORPORATION STOPS OR FITTINGS AND VALVES AT SUCH POINTS SO THE AIR CAN BE EXPELLED AS THE PIPE SYSTEM IS SLOWLY FILLED WITH WATER.  
2) TEST PRESSURE SHALL BE MAINTAINED BY PUMPING FOR AT LEAST TWO HOURS AND UNTIL ALL SECTIONS UNDER TEST HAVE BEEN CHECKED FOR EVIDENCE OF LEAKAGE. RATE OF LOSS SHALL NOT EXCEED THAT SPECIFIED BELOW, "ALLOWABLE LIMITS FOR LEAKAGE," VISIBLE LEAKS SHALL BE CORRECTED REGARDLESS OF TOTAL LEAKAGE SHOWN BY TEST.  
3) THE SYSTEM AS A WHOLE, OR ANY PART, SHALL BE TESTED PRIOR TO CONSTRUCTION OF ANY SUBDIVISION ROADWAY OR PAVEMENT OVER THE WATER SYSTEM.  
4) THE SYSTEM AS A WHOLE, OR ANY PART, SHALL BE RETESTED AFTER COMPLETION OF BACKFILLING WHEN IT IS BELIEVED NECESSARY, AS DIRECTED BY THE PROJECT ENGINEER. THE SYSTEM SHALL ALSO BE RETESTED UPON COMPLETION OF SUBDIVISION ROADWAY OR OTHER PAVEMENT CONSTRUCTION THAT IS CONSTRUCTED OVER THE WATER SYSTEM.  
5) ALL PUMPS, GAUGES, AND MEASURING DEVICES SHALL BE FURNISHED, INSTALLED, AND OPERATED BY THE CONTRACTOR AND ALL SUCH EQUIPMENT AND DEVICES AND THEIR INSTALLATION SHALL BE APPROVED BY THE PROJECT ENGINEER. ALL PRESSURES AND LEAKAGE TESTING SHALL BE DONE IN THE PRESENCE OF A REPRESENTATIVE OF THE ENGINEER.  
6) WATER FOR TESTING SHALL BE POTABLE WATER PROVIDED BY THE CONTRACTOR FROM A SOURCE APPROVED BY THE PROJECT ENGINEER.

THE HYDROSTATIC PRESSURE TESTS SHALL BE PERFORMED AS SPECIFIED AND NO INSTALLATION, OR SECTION THEREOF, WILL BE ACCEPTABLE UNTIL THE LEAKAGE IS LESS THAN THE NUMBER OF GALLONS PER HOUR AS DETERMINED BY THE FORMULA:  
$$L = \frac{ND}{7400}$$
  
IN WHICH,  
L = ALLOWABLE LEAKAGE, IN GALLONS PER HOUR  
N = APPROXIMATE NUMBER OF JOINTS IN THE SECTION OF MAIN BEING TESTED  
D = PIPE DIAMETER, IN INCHES  
P = THE AVERAGE TEST PRESSURE DURING THE TEST, IN GAUGE PSI

SCOPE OF WORK:  
RENOVATED AN EXISTING LIFT STATION WITH  
1. NEW SEWAGE PUMPS (INCLUDING PUMP BASE, PUMP GUIDE RAILS, LIFTING CABLES, BASE PLATE)  
2. NEW DISCHARGE PIPING FROM THE PUMPS THROUGH THE VALVE BOX TO THE FORCE MAIN EXITING THE VALVE BOX  
3. NEW FLOATS FOR CONTROLLING PUMPS  
4. NEW DRAIN PIPE BETWEEN VALVE BOX AND LIFT STATION  
5. REPLACE VALVES/MANIFOLD/ELBOWS/BLIND FLANGE WITHIN THE VALVE BOX  
6. NEW JUNCTION BOX  
7. NEW ELECTRICAL CONDUIT FROM THE LIFT STATION TO THE NEW JUNCTION BOX  
8. MODIFY THE PANEL BOX (WIRING/CONDUIT BETWEEN THE NEW JUNCTION BOX TO PANEL BOX, REMOVE/RELOCATE/REWIRE (WIRING AND CONDUIT) "DATAFLOW" CONTROLLER TO NEW "DATAFLOW" CONTROLLER BOX ATTACHED TO THE TELEMETRY ANTENNA, PAINT PANEL BOX EXTERIOR WHITE OR REPLACE PANEL BOX IF REQUIRED FOR ALTERNATE PUMPS, ADD FLOOD LIGHT)  
9. ADD 31" OF TYPE "D" CURBING AROUND GRAND AVENUE  
10. REPLACE THE EXISTING LIFT STATION LID AND RAISE THE NEW LID 8"  
11. REPLACE THE EXISTING VALVE BOX LID AND RAISE THE NEW LID 8"  
12. ADD 5'x5'x8" CONCRETE SLAB ADJACENT TO THE LIFT STATION  
13. RAISE ADJACENT GRADE TO SLOPE AWAY FROM NEW FINISHED CONCRETE GRADES  
14. CLEAN AND LINE THE INTERIOR OF THE EXISTING LIFT STATION WITH GML SEWPER COAT OR OTHER APPROVED EQUIVALENT  
15. REGRADE AND SOD ROAD SIDE SWALES 50' MINIMUM PARALLEL WITH GRAND AVENUE TO ACCOMMODATE ROAD RUNOFF

LIFT STATION SCOPE OF WORK  
1. THE CONTRACTOR WILL SUPPLY THE PUMPS, BASE FLANGES, DISCHARGE PIPES, RAILS, LIFTING CHAIN, ELECTRICAL COMPONENTS, JUNCTION BOX, PIPING, VALVES, FLANGES, FLOATS, ETC. THE CONTRACTOR WILL BE REQUIRED TO SUPPLY ALL SUPPLIES, MATERIALS AND EQUIPMENT FOR A FULLY OPERATIONAL LIFT STATION. CONTRACTOR WILL NEED THE SERVICES OF A LICENSED ELECTRICIAN. THE ENGINEER OF RECORD MUST BE NOTIFIED ON ANY CHANGES OR MODIFICATIONS FOR APPROVAL.  
2. THE SYSTEM IS ACTIVE. THE CONTRACTOR WILL BE RESPONSIBLE FOR KEEPING THE SYSTEM FUNCTIONING DURING CONSTRUCTION. THIS MAY INCLUDE BYPASS PUMPING.  
3. ALL WORK MUST BE COORDINATED WITH THE ENGINEER OF RECORD AND THE CITY OF SEBRING PRIOR TO ANY CONSTRUCTION.  
4. THE CONTRACTOR WILL CONSTRUCT THE MODIFICATIONS TO THE GRAND AVE LIFT STATION WITHIN THE GRAND AVENUE ROAD RIGHT-OF-WAY.  
5. CONCRETE SHALL BE 4000 PSI COMPACTED WITH TYPE II CEMENT. CONCRETE SURFACES SHALL RECEIVE A LINER AS STATED.  
6. ALL REINFORCED CONCRETE STRUCTURES SHALL BE IN ACCORDANCE WITH ACI CODE 318. STEEL YIELD STRENGTH SHALL BE 60,000 PSI (GRADE 60). WET WELL WALL SHALL CONFORM TO EITHER:  
A. CAST IN PLACE #5 RE-BAR@12" O.C.B.W. IN THE CENTER 1/3 OR  
B. PRE-CAST SECTIONS: ASTM C478  
5. UPPER SLABS SHALL BE POSITIVELY JOINED TO WET WELL WALL.  
6. CAST IRON SADDLE IN THE DISCHARGE PIPING SHALL SUPPORT A 2.5" MINIMUM SIZE LIQUID FILLED PRESSURE GAUGE INSTALLED WHERE INDICATED.  
7. BY-PASS CONNECTION TO BE BRASS QUICK-DISCONNECT TYPE, PART "D" FEMALE COUPLER AND PART "W" PLUG.  
8. NON-SHRINK GROUT SHALL SEAL AROUND ALL PIPE UNLESS SPECIFIED OTHERWISE BY THE CITY.  
9. GROUNDING SHALL BE TWO 3/4" COPPER-CLAD GROUNDING RODS, MINIMUM 8 FEET LONG AND 6 FEET APART, CONNECTED 12" BELOW GROUND LEVEL. CONDUCTORS SHALL BE #4 SOLID COPPER AND CONNECTORS SHALL BE CADWELD, BOLT CLAMP OR SPLIT CLAMP.  
10. TOP OF SLAB TO BE A MINIMUM OF 6" ABOVE FINISH GRADE, AND DRAINAGE SHALL BE AWAY FROM THE LIFT STATION.  
11. PUMP BASE ANCHOR BOLT LOCATION AND SIZE SHALL BE PER MANUFACTURER'S SHOP DRAWING.  
12. FACE AND TOP OF POWER PANEL AND RTU TO BE FLUSH.  
13. CONDUITS (ALL 2") SHALL HAVE A MINIMUM 24" OF COVER, WITH THE EXCEPTION OF POWER SUPPLY CONDUIT, IN WHICH CASE THE COVER SHALL BE MINIMUM 42".  
14. CONDUIT SHALL BE AS FOLLOWS:  
ABOVE GRADE= RIGID ALUMINUM  
BELOW GRADE= RIGID ALUMINUM OR SCH 80 PVC  
15. ALL ANCHORS SHALL BE HILTI TYPE 316 SS OR APPROVED EQUAL WITH TYPE 316 SS FASTENERS.  
16. ALL APPROVALS AND SUBMISSIONS SHALL BE TO THE ENGINEER AND THE CITY OF SEBRING, WITH FINAL AUTHORITY RESING WITH THE CITY OF SEBRING.

NOTE:  
GML AND GREEN MONSTER LINER IS A TRADEMARK LINER AND IS USED ON THIS PLAN AS AN IDENTIFIER. SEWPER COAT LINING IS AN ALTERNATE LINING SYSTEM. A PRODUCT EQUIVALENT IN NATURE AND QUALITY MAY BE USED AS A SUBSTITUTE WITH THE PRIOR APPROVAL OF THE CITY OF SEBRING AND THE ENGINEER OF RECORD.

-THIS PROJECT IS NOT SUBJECT TO FLOODING IN A 25-YEAR OR 100-YEAR RECURRENTANCE INTERVAL STORM.  
-DEWATERING MAY BE REQUIRED, THE CONTRACTOR SHALL PROVIDED DEWATERING AS NECESSARY FOR THIS PROJECT.  
-THE SYSTEM IS ACTIVE SO THE CONTRACTOR WILL PROVIDE BYPASS PUMPING AS REQUIRED TO COMPLETE THE PROJECT WITHOUT INTERRUPTING TRAFFIC.  
-THE CONTRACTOR WILL PROVIDE A MAINTENANCE OF TRAFFIC PLAN TO HIGHLANDS COUNTY AS APPROPRIATE FOR CONSTRUCTION WITHIN THE RIGHT-OF-WAYS.  
-THE CONTRACTOR WILL CONSTRUCT A COMPLETE FUNCTIONING PROJECT.

GREEN MONSTER™LINER SYSTEM  
111.1. GENERAL  
THE WORK SHALL INCLUDE THE FURNISHING AND INSTALLATION OF AN INTERIOR PROTECTIVE COATING SYSTEM INCLUDING ALL NECESSARY MATERIALS, EQUIPMENT AND TOOLS AS REQUIRED FOR A COMPLETE INSTALLATION. COATING SHALL BE MANUFACTURED BY GML COATINGS, LLC, OR PRE-APPROVED EQUAL. THE COMPLETED SYSTEM SHALL PROVIDE A WATERPROOF, CORROSION RESISTANT LINER TO PREVENT ANY DETEIORATION OF CONCRETE SURFACES FROM HYDROGEN SULFIDE AND OTHER CORROSIVE GASES/AODS PRODUCED BY WASTEWATER AND TO PREVENT INFILTRATION. TO ENSURE TOTAL UNIT RESPONSIBILITY, ALL MATERIALS AND INSTALLATION THEREOF SHALL BE APPROVED AND FURNISHED BY, AND COORDINATED WITH GML COATINGS LLC.  
111.2. MATERIALS AND EQUIPMENT  
2.1. ALL MATERIALS USED WITHIN THE GREEN MONSTER™SYSTEM SHALL BE HIGHLY RESISTANT TO HYDROGEN SULFIDE IN THE WASTEWATER ENVIRONMENT. WATER-RESISTING EQUIPMENT SHALL BE NO LESS THAN 4000 PSI AND SANDBLASTING EQUIPMENT SHALL DELIVER ENOUGH PRESSURE TO REMOVE ALL CORROSION FROM THE SURFACES OF THE STRUCTURE PROVIDING A SUBSTRATE FREE OF LOOSE MATERIAL.  
2.1.1. GML 30/60 WHICH IS HIGH EARLY STRENGTH CALCIUM ALUMINATE BLEND CEMENTITIOUS MORTAR SHALL BE USED TO STRUCTURALLY REBUILD SUBSTRATES ALSO PROVIDING AN ESTHETICALLY SMOOTH BRUSH FINISHED SURFACE.  
2.1.2. ALL SPRAY EQUIPMENT SHALL BE OF PLURAL CONSTRUCTION, BE GRADED AND BE CAPABLE OF MONITORING PRESSURES AND TEMPERATURES OF THE COATING PROCESSING. A GREEN MONSTER™LINER SHALL ONLY BE APPLIED WITH A MINIMUM OUTPUT PRESSURE OF 2,500 PSI.  
2.1.3. ALL PRODUCTS USED IN THE GREEN MONSTER™SYSTEM SHALL BE APPROVED AND INSTALLED BY ONLY GML COATINGS TRAINED PERSONNEL. NEW PRODUCT SPECIFICATIONS BELOW.  
2.1.6. GML 30 AND GML 60 CEMENTITIOUS MORTAR SPECIFICATIONS  
TYPICAL PROPERTIES  
COMPACT POINT, STRENGTH, PSI ASTM C928 6500  
FREEZE THAW RESISTANCE ASTM C666 18 LOSS  
SHEAR BOND STRENGTH, PSI ASTM C682 1650  
FLEXURAL STRENGTH, PSI ASTM C348 1190  
2.7. PRIMER SPECIFICATIONS  
TENSILE STRENGTH, PSI ASTM D638 4500  
TEAR STRENGTH, PLI ASTM D695 9800  
SHRINKAGE, % NONE  
HARDNESS, SHORE D ASTM D4541 7200  
HARDNESS, SHORE P ASTM D2240 42  
VISCOSITY, CPS, NEAT 20 MIN  
FINAL COAT, CPS, NEAT 20 MIN  
2.8. PRIMER SHALL HAVE AN EXTREMELY LOW VISCOSITY ALLOWING IT TO PENETRATE DEEP INTO THE POURS OF THE BRUSHED CONCRETE FOR PERMANENT BONDING.  
2.9. SHALL ONLY BE SPRAY-APPLIED AND FULLY CURE IN 20 MINUTES OR LESS WITHOUT EXPANDING OR ANY SHRINKAGE.  
2.10. CONCRETE SUBSTRATE SHALL BE HEATED AND SURFACE TEMPERATURE DECREASING DURING THE APPLICATION OF GREEN MONSTER™PRIMER.  
2.11. GREEN MONSTER™LINER SHALL DISPLAY EXCELLENT CHEMICAL RESISTANCE, THERMAL STABILITY, AND MAINTAIN FLEXIBLE CHARACTERISTICS PREVENTING CRACKING WHICH MAY ALLOW WATER GASES TO ATTACK THE SUBSTRATE.  
TYPICAL PHYSICAL PROPERTIES:  
TENSILE STRENGTH, PSI ASTM D412 4500  
ELONGATION, % ASTM D412 460  
TEAR STRENGTH, PLI ASTM D624 570  
HARDNESS, SHORE D ASTM D2240 98  
HARDNESS, SHORE P ASTM D2240 52  
FLEXIBILITY, 1/8" MANIREL ASTM D1737 PASS  
ADHESION TO CONCRETE, PSI PENSKY-MARTIN 1400  
TAPER ABRASION, MC LOSS ASTM D4660 17.0  
A-SIDE HOSE TEMPERATURE °K, 1000 REPS 140-160  
B-SIDE HOSE TEMPERATURE °K, 1000 REPS 140-160  
BULGE TEST, PSI 160  
ADHESION RESULTS: ASTM D-4541 PATTI TESTER 600 PSI  
CONCRETE GREEN MONSTER PRIMER -EPOXY GUE FAILURE 900 PSI  
CARBON STEEL (DIRECT) 600 PSI  
TYPICAL PROCESSING PROPERTIES:  
GEL TIME SECONDS 20  
TACK FREE TIME SECONDS 45  
VOLUME RATIO 1:1  
2.12. CONCRETE RESTORATION SHALL BE BETWEEN .25 AND 3 INCHES WHICHEVER IS REQUIRED TO RETURN THE DETEIORATED SUBSTRATE TO THE ORIGINAL THICKNESS. IN THE CASE OF MINOR DETEIORATION AND SPALLING, A GREEN MONSTER™SYSTEM APPROVED CEMENTITIOUS CONCRETE SHALL BE USED AS A REPAIRER. AFTER THE PROPER CONCRETE RESTORATION HAS BEEN ACHIEVED, GREEN MONSTER™SHALL BE APPLIED AT 125 MILS. PRODUCT SHALL BE GREEN MONSTER™LINER BY GML COATINGS, LLC, OR PRE-APPROVED EQUAL.  
111.3. SURFACE PREPARATION  
3.1. PREPARATION WILL BEGIN BY SANDBLASTING THE ENTIRE SUBSTRATE PREPARING THE SURFACE SO THAT IT IS STRUCTURALLY INTACT, CLEAN OF ALL CORROSION, AND PROVIDED WITH A MINIMUM OF A 5 MIL PROFILE.  
3.2. AFTER SANDBLASTING IS COMPLETE, THE SURFACE AREA WILL BE WATERBLASTED AT 4000 PSI RIDDING THE SUBSTRATE OF ALL DUST, SAND, AND LOOSE DEBRIS.  
3.3. ALL SOLIDS AND WATER ARE TO BE REMOVED FROM THE WORK SITE ALONG WITH OTHER DEBRIS.  
3.4. ACTIVE INFILTRATION WILL BE INJECTION GROUTED.  
3.5. CEMENTITIOUS CALCIUM ALUMINATE CONCRETE BLEND (GML 30/60) WILL BE APPLIED TO THE ENTIRE SUBSTRATE TO BE COATED. IN MOST CASES THE ENTIRE SURFACE WILL BE STRUCTURALLY BUILT UP .25 TO 3 INCHES THICK PROVIDING A SMOOTH BRUSHED FINISH. THICKER APPLICATIONS MAY BE WARRNE WHERE THERE IS MORE DETEIORATION OF THE EXISTING STRUCTURE.  
3.6. WORK AREA TO BE COMPLETELY DRIED USING IN-DIRECT HEAT LOWERING THE MOISTURE CONTENT OF THE SUBSTRATE.  
3.7. GREEN MONSTER™PRIMER IS TO BE APPLIED TO THE DRY AND COOLING SUBSTRATE PROVIDING MAXIMUM ADHESION AND SEALING THE PORES OF CONCRETE.  
3.8. GREEN MONSTER™LINER SHALL BE SPRAY APPLIED AT A 125 MIL THICKNESS. THE SPRAY SHALL COVER THE ENTIRE SURFACE OF THE STRUCTURE, THE COATING OF THE BENCH IN MANHOLES AND THE ENTIRE BOTTOM OF OTHER STRUCTURES.  
111.4. MATERIAL INSTALLATION  
4.1. THE LIMITS OF THE CORROSION PROTECTION SYSTEM SHALL BE ALL EXPOSED CONCRETE SURFACES INCLUDING WALLS, PIPE PENETRATIONS, RISERS, ETC., UNLESS OTHERWISE APPROVED BY ENGINEER.  
4.2. THE APPLICATION OF THE SUPPLY MONSTER™LINER SYSTEM SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.  
4.3. ALL MATERIALS AND INSTALLATION MUST BE HIGHLY TESTED FOR PINHOLES. EITHER A GML COATINGS REPRESENTATIVE SHALL APPROVE THE TEST OR AN ON-SITE INSPECTOR EMPLOYED BY THE OWNER.  
111.5. INSPECTION AND REPAIRS  
5.1. FINAL CONCRETE STRUCTURE CORROSION PROTECTION SYSTEM SHALL BE COMPLETELY FREE OF PINHOLES OR VOID. ENTIRE EXPOSED CONCRETE SURFACE SHALL BE PROTECTED WITH CORROSION PROTECTION SYSTEM. LINER PREPARATION AND THICKNESS SHALL MEET WHAT IS STATED ABOVE. ALL DEFECTS IDENTIFIED DURING INSPECTION SUCH AS PINHOLES, THIN FILM MILLAGE, ETC., SHALL BE REPAIRED WITH SAME MATERIAL AND TO SAME THICKNESS AS REQUIRED OF ORIGINAL INSTALLATION.  
5.2. WARRANTY: 10 YEAR UNCONDITIONAL WARRANTY ON WORKMANSHIP AND MATERIAL. THIS WOULD INCLUDE ALL MATERIALS INCLUSIVE OF THE LINER SYSTEM APPLICATION.

1. GENERAL CHARACTERISTICS  
SEMPERCOAT®PG IS A MORTAR THAT IS DESIGNED TO COAT BOTH NEW AND EXISTING MUNICIPAL WASTEWATER STRUCTURES INCLUDING MANHOLES, LIFT STATIONS, WET WELLS, ETC. IT IS DESIGNED SPECIFICALLY TO PROVIDE AN ABRASION AND CORROSION-RESISTANT, PROTECTIVE LINING THAT CAN WITHSTAND SEVERE BIOGENIC CORROSION CAUSED BY THE HYDROGEN SULFIDE (H2S) FOUND IN WASTEWATER ENVIRONMENTS.  
THE UNIQUE PROPERTIES OF SEMPERCOAT®RESULT FROM THE CHEMICAL AND MINERAL PHASES FORMED DURING THE HYDRATION PROCESS. SEMPERCOAT IS UNIQUE WHEN COMPARED TO OTHER MATERIALS SUCH AS ORDINARY PORTLAND CEMENT (OPC) CONCRETE, EPOXIES, POLY-VINYL CHLORIDE (PVC) OR POLYETHYLENE, BECAUSE OF ITS CAPACITY TO INHIBIT BACTERIAL ACTIVITY BY EFFECTIVELY NEUTRALIZING SULFURIC ACID PRODUCTION.  
SEMPERCOAT®AN ADHESIVE MORTAR THAT POSSESSES THIN SECTION TOUGHNESS AS WELL AS HIGH COMPRESSIVE AND FLEXURAL STRENGTHS. ADDITIONAL FEATURES INCLUDE HIGH EARLY STRENGTH, FREEZE-THAW RESISTANCE AS WELL AS HIGH TEMPERATURE RESISTANCE (UP TO 1,000°F). SEMPERCOAT®IS ALSO RESISTANT TO MANY OTHER TYPES OF CORROSION INCLUDING SULFATES, SEAWATER, OILS, GASES, AND DILUTE ACIDS (PH RANGE 3.5 -11).  
SEMPERCOAT®PG DOES NOT RELEASE CALCIUM HYDROXIDE AS A HYDRATION PRODUCT. THIS IMPARTS GOOD CHEMICAL RESISTANCE AND ELIMINATES THE MAJOR CAUSE OF EFFLORESCENCE.  
SEMPERCOAT®PG IS A VERY DARK GRAY COLOR.  
SEMPERCOAT®PG DOES NOT CONTAIN CRYSTALLINE SILICA.  
TYPICAL MATERIAL PROPERTIES (OBTAINED BY AN INDEPENDENT TESTING LABORATORY)  
ASTM C 109 24 HRS 28 DAYS  
ASTM C 293 COMPRESSIVE STRENGTH, PSI 24,500 27,000 28,000  
ASTM C 596 FLEXURAL STRENGTH, PSI 2,500 2,400 2,600  
ASTM C 666 SHRINKAGE AT 50% HUMIDITY, % < 0.04 < 0.06 < 0.08  
ASTM C 666 FREEZE-THAW AFTER 300 CYCLES NO DAMAGE  
ASTM C 486 SPLITTING TENSILE STRENGTH 900 PSI  
ASTM C 666 TENSILE STRONG BY DIRECT SHEAR > 2,300 PSI AT 28 DAYS  
ASTM C 457 AIR VOID CONTENT (7 DAYS) 2-4%  
ASTM C 642 SPECIFIC GRAVITY (ABSORPTION TEST (7 DAYS) 71 x 106 PSI  
STATISTICAL ANALYSIS OF FACTORIAL EXPERIMENTAL DATA  
\*THE TEST RESULTS ABOVE WERE OBTAINED UNDER STANDARD LABORATORY CONDITIONS AND ARE PRESENTED AS TYPICAL MATERIAL PROPERTIES ONLY. THOSE PROPERTIES'S PRESENTED HEREIN ARE NOT WARRANTED OR GUARANTEED BY KERNEOS. PROPERTIES OBTAINED FROM FIELD CAST SPECIMENS MAY RESULT IN VALUES LOWER THAN THOSE LISTED ABOVE. THE WARRANTED MATERIAL PROPERTIES ARE PRESENTED IN SECTION TWO OF THIS PRODUCT DATA SHEET.

2. SPECIFICATIONS  
SEMPERCOAT®PG SOLD AND DISTRIBUTED BY KERNEOS INC. ADHERES TO THE FOLLOWING SPECIFICATIONS:  
SEMPERCOAT®PG MIN (%) MAX (%)  
# 8 (2.36 mm) 15 9.5  
# 10 (1.18 mm) 15 9.5  
# 30 (160 mm) 22 32  
# 50 (200 mm) 22 32  
# 100 (150 mm) 48 62  
# 200 (75 mm) 52 68  
# 400 (37.5 mm) 52 68  
MORTAR PROPERTIES (USING 14.5% WATER)  
[ ] VIBRATION (10 MIN, 120 - 160°)  
[ ] 15 MIN, 120 - 160°  
[ ] PENETROMETER FINAL SET  
[ ] 4 - 10 HOURS  
[ ] COMPRESSIVE STRENGTH @ 24 HOURS  
1500 - 11000 PSI  
FOR DETAILED TEST PROCEDURES, PLEASE CONTACT A KERNEOS TECHNICAL OR QUALITY MANAGER.

3. TECHNICAL PERFORMANCE  
SEMPERCOAT®PG HAS BEEN SHOWN TO WITHSTAND CORROSIVE ENVIRONMENTS CONTAINING H2S GAS, WHICH SHOW STRONG THIOBACILLUS BACTERIAL ACTIVITY. DUE TO ITS HIGH NEUTRALIZATION CAPACITY, SEMPERCOAT®HAS BEEN SHOWN TO LOCALLY RAISE THE SURFACE PH FOUND ON THE SURFACE OF WASTEWATER STRUCTURES AND PREVENTS THE SUCCESSFUL COLONIZATION OF THE MOST AGGRESSIVE STRAINS OF BACTERIA.  
ABRASION RESISTANCE: U.S. ARMY CORPS OF ENGINEERS TEST CRD #63-60 TEST METHOD FOR ABRASION-EROSION RESISTANCE OF CONCRETE, RESULTED IN 0.5% WEIGHT LOSS AFTER 12 HOURS OF TESTING AND 2.0% WEIGHT LOSS AFTER 12 HOURS OF TESTING. TYPICAL 5,000-PSI HIGH-PERFORMANCE OPC CONCRETE EXPERIENCED A 3.8% WEIGHT LOSS AFTER ONLY 12 HOURS OF TESTING. SEMPERCOAT®IS APPROXIMATELY SEVEN TIMES MORE RESISTANT TO THIS TYPE OF ABRASION THAN HIGH-PERFORMANCE OPC CONCRETE.  
AGGREGATE SIZE: #4 MESH AND FINER (0 -1.4MM)  
WATER REDUCER: 10%  
WET DENSITY AT 68°F: 148-155 LB./FT3 (2.4 -2.5 G/CC)  
COEFFICIENT OF THERMAL EXPANSION: 5 x 10-6 in/in/°F (68°F TO 1832°F)

4. CHEMICAL COMPOSITION  
SEMPERCOAT®PG IS A BLEND OF CALCIUM SULFATE, CALCIUM CHLORIDE, TRICALCIUM ALUMINATE, LIME HYDRATES OR AGGRESSIVE AGENTS THAT ATTACK REINFORCING STEEL. THE HIGH-PERFORMANCE PROPERTIES OF SEMPERCOAT®ARE ACHIEVED THROUGH A BLEND OF MINERAL ELEMENTS.  
CHEMICAL ANALYSIS MAIN COMPONENTS  
Al2O3 41% - 46% CaO 33% - 38% FeO+Fe2O3 8% - 13% SiO2 4% - 9%

5. INSTALLATION  
CLEAN, POTABLE WATER SHOULD BE USED FOR MIXING. THE WATER REQUIREMENT IS PROVIDED ON EACH INDIVIDUAL BAG AND IS CRITICAL TO OBTAIN THE SPECIFIED PERFORMANCE PROPERTIES. ALWAYS STAY WITHIN THE RECOMMENDED SPECIFICATIONS FOR MIXING WATER.  
SEMPERCOAT®PRODUCTS ARE NOT DESIGNED TO BE HANDAPPLIED. SEMPERCOAT®IS DESIGNED TO BE APPLIED WITH LOW-PRESSURE, WET-SPRAY EQUIPMENT.  
PREPARATION OF THE SURFACE TO BE COATED SHOULD BE PERFORMED IN ACCORDANCE WITH APPLICABLE INDUSTRY STANDARDS AND SPECIFIC PROJECT SPECIFICATION REQUIREMENTS. SANDBLASTING AND/OR HYDRO-DEMOLITION WITH HIGH-PRESSURE WATER MAY BE USED TO REMOVE EXISTING DETEIORATION AND DEBRIS. THE IMMEDIATE BONDING OF SEMPERCOAT®PRODUCTS TO THE SUBSTRATE WILL BE ENHANCED BY THE PRESENCE OF A CLEAN, DRY, AND PROPERLY PREPARED SURFACE.  
SEMPERCOAT®PRODUCTS ARE TO BE USED ONLY AS SUGGESTED SEMPERCOAT®SPECIFICATION LANGUAGE FOR DETAILED SURFACE PREPARATION RECOMMENDATIONS.  
SEMPERCOAT®SHOULD NOT BE USED AS A BUILD-OUT MIX OR UNDERLAYMENT FOR ANY OTHER PRODUCT. SEMPERCOAT®SHOULD NOT BE USED IN CONJUNCTION WITH OR ADJACENT TO ANY INERT OR ORGANIC COATINGS, INCLUDING BUT NOT LIMITED TO EPOXY, POLYURETHANE, POLYUREA, AND FIBERGLASS. CURING SHOULD BE IMPLEMENTED AS SOON AS THE SURFACE BEGINS TO HARDEN AND DRY (AS EARLY AS ONE HOUR AFTER APPLICATION). SEVERAL LAYERS OF ASTM C309 LIQUID MEMBRANE CURING COMPOUND OR A 100%-LIMO MOISTURE CURE MAY BE USED.  
EQUIPMENT USED MUST ALWAYS BE CLEAN AND FREE OF PORTLAND CEMENT BUILD-UP TO AVOID ACCELERATED SET.  
GENERALLY ACCEPTED CONCRETING PRACTICES (WATER RATIO PER BAG, COMPACTION, CURING, ETC.) SHOULD BE EMPLOYED TO OBTAIN THE BEST QUALITY INSTALLATION WITH RESPECT TO MECHANICAL STRENGTH AND CORROSION RESISTANCE.

6. AVAILABILITY  
SEMPERCOAT®IS AVAILABLE IN NORTH AMERICA DIRECTLY THROUGH KERNEOS INC. MAIN OFFICE AND WAREHOUSES.  
SEMPERCOAT®IS PACKAGED IN VARIOUS BAG SIZES DEPENDING UPON APPLICATION AND INSTALLATION METHODS. SEMPERCOAT®PG IS TYPICALLY SUPPLIED PALLETIZED IN 65-LB BAGS.  
FOR MORE INFORMATION ABOUT SEMPERCOAT®, INCLUDING A LIST OF INSTALLERS, PLEASE CONTACT KERNEOS INC. AT 1-800-524-8463.

7. TECHNICAL ASSISTANCE  
A LICENSED PROFESSIONAL ENGINEER IS RESPONSIBLE FOR THE DETERMINATION OF SUITABILITY, OVERALL DESIGN, SPECIFICATIONS AND FOLLOW UP FOR EACH PROJECT.  
KERNEOS INC. HAS A TECHNICAL ASSISTANCE DEPARTMENT WITH ON-SITE LABORATORY FACILITIES AVAILABLE TO PROVIDE CUSTOMER SUPPORT.  
KERNEOS ASSISTANCE IN TECHNICAL PLANNING AND INSTALLATION OF A PROJECT DOES NOT WARRANT THE SUCCESS OF ANY APPLICATION AND IS NOT A SUBSTITUTE FOR PROFESSIONAL ENGINEERING JUDGMENT.

8. PACKAGING & SHELF LIFE  
SEMPERCOAT®PG IS AVAILABLE PALLETIZED IN 65-LB BAGS. SEMPERCOAT®PG PACKAGING IS DESIGNED TO PROTECT IT FROM HUMIDITY. HOWEVER, AS WITH ALL PREPACKAGED CONCRETES, SEMPERCOAT®PG SHOULD REMAIN UNOPENED UNTIL READY FOR USE. IF OPENED, IT SHOULD BE USED WITHIN 30 DAYS OF OPENING. IF NOT USED WITHIN 30 DAYS, IT SHOULD BE DISCARDED.  
SEMPERCOAT®PG SHOULD REMAIN WITHIN SPECIFICATION LIMIT FOR AT LEAST 6 MONTHS. IN MOST CASES, ITS PROPERTIES WILL BE REPAIRED FOR OVER A YEAR.

SEMPERCOAT®10 YEAR LIMITED WARRANTY (OWNER)  
THIS WARRANTY EXTENDS TO THE OWNER OF THE STRUCTURE TO WHICH SEMPERCOAT®IS APPLIED, EFFECTIVE AS OF THE OWNER'S ACCEPTANCE OF THE WORK. KERNEOS WARRANTS TO THE OWNER THAT SEMPERCOAT®, WHEN INSTALLED IN COMPLIANCE WITH THE RECOMMENDED INSTALLATION GUIDELINES PUBLISHED BY KERNEOS, WILL PROTECT SANITARY WASTEWATER STRUCTURES FROM BIOGENIC CORROSION CAUSED BY EXPOSURE TO SANITARY SEWAGE ENVIRONMENT TO BE HONORED. CLAIMS MUST BE FILED BY THE OWNER WITHIN 10 YEARS OF ACCEPTANCE OF THE WORK BY OWNER. KERNEOS OBLIGATIONS HEREUNDER EXTEND ONLY TO PROVIDING LABOR AND MATERIAL TO REPLACE THE DETECTION OF OTHER WARRANTIES.  
THIS WARRANTY EXCLUDES CONSEQUENTIAL AND INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGE TO EQUIPMENT AND PERIPHERAL FACILITIES, SERVICE INTERRUPTION, AND LOSS OF BUSINESS). KERNEOS WILL NOT BE RESPONSIBLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO, LOSS OF BUSINESS, LOSS OF PROFITS, OR LOSS OF INCOME, ARISING OUT OF OR FROM THE USE OF SEMPERCOAT®.  
SEMPERCOAT®LIMITED WARRANTY (BUYER)  
KERNEOS WARRANTS TO THE BUYER OF THIS PRODUCT THAT, AT THE TIME OF SHIPMENT, THE PRODUCT CONFORMS TO THE SPECIFICATIONS SET FORTH IN SECTION 2 OF THE APPLICABLE PRODUCT DATA SHEET. TO BE HONORED, CLAIMS UNDER THIS WARRANTY MUST BE FILED BY THE BUYER WITHIN 30 DAYS OF USE OF THE PRODUCT OR 6 MONTHS OF DELIVERY TO ITS BUYER, WHICHEVER COMES FIRST. KERNEOS'S OBLIGATION AND THE SOLE AND EXCLUSIVE REMEDY OF BUYER UNDER THIS WARRANTY SHALL BE THE REPLACEMENT OF ANY NONCONFORMING PRODUCT OR, AT KERNEOS OPTION, THE REFUND OF THE PURCHASE PRICE PAID BY ITS BUYER.  
THERE ARE NO WARRANTIES EXPRESS OR IMPLIED, TO OWNER OR BUYER EXCEPT AS PROVIDED IN THIS LIMITED WARRANTY. ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED. NO WARRANTY IS GIVEN FOR, OR MAY BE IMPLIED FROM, ANY TECHNICAL ADVICE, OR RECOMMENDATIONS PROVIDED BY KERNEOS.  
WARRANTY CLAIM PROCEDURE  
KERNEOS RESERVES THE RIGHT TO INSPECT AND DETERMINE WHETHER ANY CLAIM IS THE RESULT OF A BREACH OF A WARRANTY SET FORTH HEREIN OR IS RELATED TO ANOTHER CAUSE (ALL OTHER CAUSES ARE EXPRESSLY EXCLUDED FROM COVERAGE BY THE WARRANTIES CONTAINED HEREIN).  
ANY CLAIM UNDER THIS LIMITED WARRANTY REQUIRING AN INVESTIGATION BY KERNEOS MAY REQUIRE EXTENSIVE LABORATORY TESTING. IT IS THE RESPONSIBILITY OF ANY PARTY MAKING A CLAIM TO MAKE ANY PRODUCT OR STRUCTURE REQUIRING TESTING ACCESSIBLE AND AVAILABLE TO KERNEOS WITHIN A REASONABLE PERIOD OF TIME AFTER A CLAIM ARISES. INSPECTION, INCLUDING THICKNESS VERIFICATION AND THE GATHERING OF SPECIMENS FOR TESTING MAY REQUIRE THE REMOVAL OF A PORTION OF THE SEMPERCOAT®LINING. IF A QUESTION OR, IF A STRUCTURE REQUIRING INVESTIGATION CANNOT BE MADE READILY ACCESSIBLE, THE REMOVAL OF ANY FRAMES, COVERS, OR OBSTRUCTIONS AT KERNEOS OPTION. TECHNICAL INVESTIGATIONS AND TESTING MAY BE PERFORMED BY EITHER KERNEOS INTERNAL FACILITIES OR BY AN INDEPENDENT AGENCY.  
IT IS THE RESPONSIBILITY OF THE CUSTOMER TO MAINTAIN AND DOCUMENT PRODUCT INSTALLATION AND JOB ACCEPTANCE REPORTS IN ACCORDANCE WITH ALL APPLICABLE INSTRUCTIONS INCLUDING, WITHOUT LIMITATION, THE LOCATION AND DATE, THE QUANTITIES INSTALLED, THE MIXING METHODS, SURFACE PREPARATION PROCEDURES USED, THE PERSONNEL INVOLVED, AND EXISTING CONDITIONS OF THE STRUCTURE INCLUDING H2S CONCENTRATIONS AND INITIAL SURFACE PH. KERNEOS WILL PROVIDE INSTALLATION REPORT FORMS UPON REQUEST.

APPROVED BY:  
POLSTON ENGINEERING, INC.  
2925 KENILWORTH BLVD.,  
SEBRING, FL 33870  
863-385-5564 FAX  
863-385-2462 FAX

DATE:  
7-JUN-15

JOB #  
15055

SCALE  
1"= 40'

BID SET

SEBRING, FL 33870  
POLSTON ENGINEERING, INC.  
2925 KENILWORTH BLVD.,  
SEBRING, FL 33870  
863-385-5564 FAX  
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MARVIN LUTHER WOLFE, P.E. # 48030  
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DR CH  
MLW

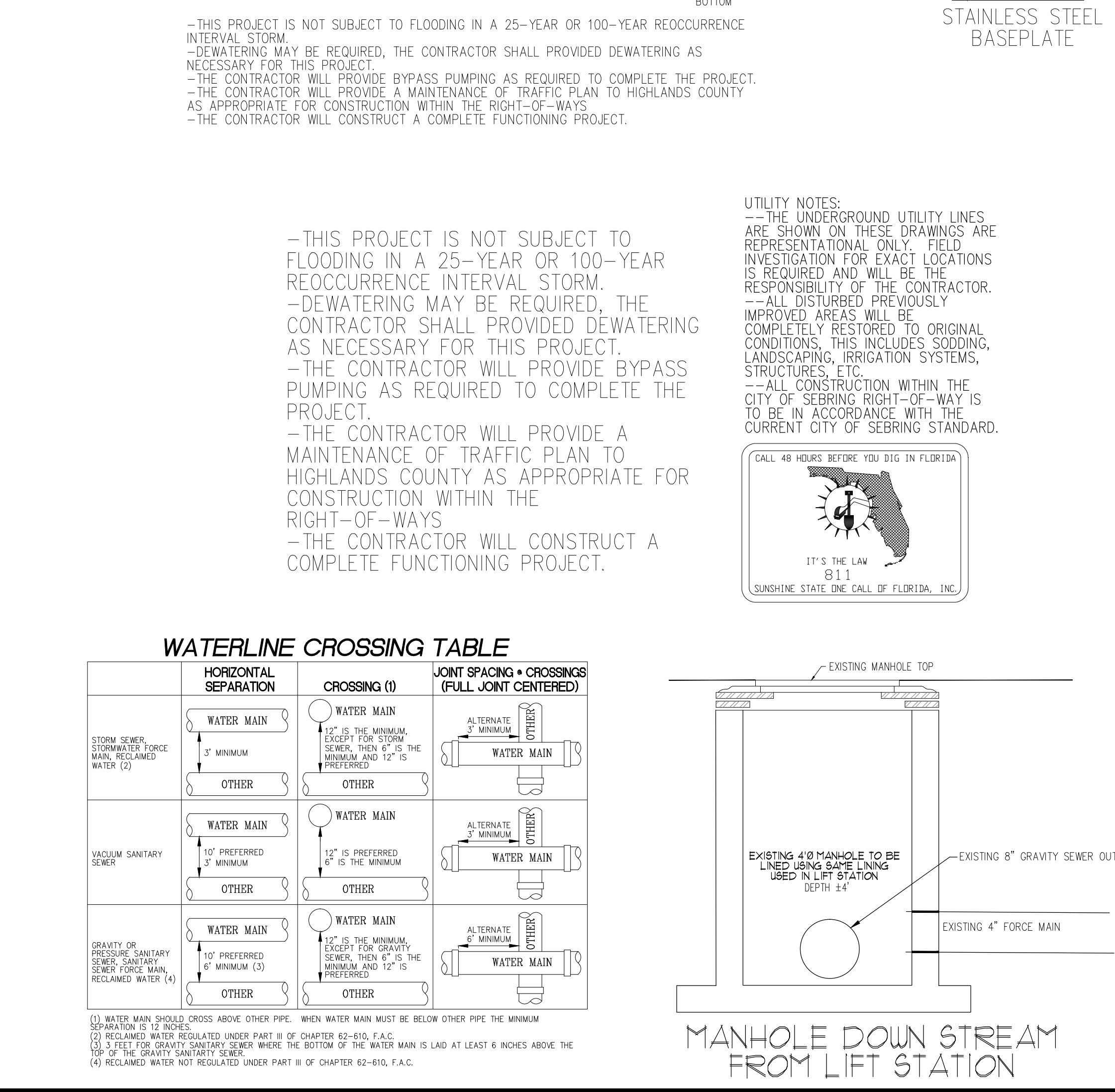
REMARK  
INITIAL SUBMITTAL


SHEET  
1 OF 2

GRAND AVENUE

LIFT STATION RENOVATION IMPROVEMENTS  
FOR THE CITY OF SEBRING





<b>GRAND AVENUE</b> <b>LIFT STATION RENOVATION IMPROVEMENTS</b> <b>FOR THE CITY OF SEBRING</b>		APPROVED BY: SIGNATURE AND RAISED SEAL		JOB # <b>15055</b>		DATE 7-JUN-15		REMARK INITIAL SUBMITTAL		DR	CH
		BID SET SIGNED: _____ DATE: _____		SCALE <b>1"=NTS</b>							