

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

OWNER: CITY OF SEBRING 308 COMMERCIAL AVENUE SEBRING, FL 33870 863-471-5100

ENGINEER: ROGER DALE POLSTON, P.E. POLSTON ENGINEERING, INC. 2925 KENILWORTH BOULEVARD SEBRING, FL 33870 (863) 385-5864 FAX (863) 385-2462 FAX

PIPE SPECIFICATION:  
 SEWER FORCE MAIN FORCE MAINS -- 4", 6", 8", 10" AND 12" AWWA APPROVED DUCTILE IRON ASTM D1744 (GREEN COLOR) 4" AND LARGER-- CLASS 250 (MINIMUM) DUCTILE IRON MEG-A-LUG ACCESSORIES

FITTINGS  
 1. ALL PIPE MATERIAL WILL BE AWWA OR ASTM STANDARD.  
 2. ALL FORCE MAIN 4" - 12" WILL BE AWWA APPROVED DUCTILE IRON.  
 3. ALL MEG-A-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 AND 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 ROLLING OR 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.  
 --ALSO 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:  
 --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 THE 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 PUMPING 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 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 TESTED 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:  
 $L = \frac{10 \times D^2 \times P}{17400}$   
 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:  
 RENOVATE 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 EXISTING THROUGH THE VALVE BOX  
 3. NEW FLOATS FOR CONTROLLING PUMPS  
 4. NEW DRAIN PIPE BETWEEN VALVE BOX AND LIFT STATION  
 5. REPLACE VALVES/MANFOLD/ELBOWS/BLIND FLANGE WITHIN THE VALVE BOX AND NEW JUNCTION BOX  
 6. NEW ELECTRICAL CONDUIT FROM THE LIFT STATION TO THE NEW JUNCTION BOX  
 7. MODIFY THE PANEL BOX (WIRING/CONDUIT BETWEEN THE NEW JUNCTION BOX TO PANEL BOX, REMOVE/RELOCATE/WIRE (WIRING AND CONDUIT) "DATAFLOW" CONTROLLER TO NEW "DATAFLOW" CONTROLLER BOX ATTACHED TO THE TELEMETRY ANTENNA, RELOCATE PANEL BOX EXTERIOR WHITE OR REPLACE PANEL BOX IF REQUIRED FOR ALTERNATE PUMPS, ADD FLOOD LIGHT)  
 8. ADD 31" OF TYPE "D" CURBING ALONG GRAND AVENUE  
 9. REPLACE THE EXISTING LIFT STATION LID AND RAISE THE NEW LID 8"  
 10. REPLACE THE EXISTING VALVE BOX LID AND RAISE THE NEW LID 8"  
 11. ADD 5'x5'x8" CONCRETE SLAB ADJACENT TO THE LIFT STATION  
 12. RAISE ADJACENT GRADE TO SLOPE AWAY FROM NEW FINISHED CONCRETE GRADES  
 13. CLEAN AND LINE THE INTERIOR OF THE EXISTING LIFT STATION WITH GML, SEWPER COAT OR OTHER APPROVED EQUIVALENT  
 14. REGRADE AND SOG ROAD SIDE SWALES 5" 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. WITHOUT EXPRESSING ANY SHINKAGE, AND FULLY CURED IN 20 MINUTES OR LESS  
 6. THE CONTRACTOR WILL RESTORE THE RIGHT-OF-WAYS TO EXISTING GRADE AND ALL DISTURBED AREAS ARE TO BE SODDED WITH THE SAME TYPE OF GRASS.  
 7. ALL FITTINGS WILL BE MEGA LUG STYLE AS PER THE CITY OF SEBRING REQUIREMENTS.  
 8. THE CONTRACTOR WILL PROVIDE, FOR APPROVAL, A METHOD OF BYPASSING THE LIFT STATION TO THE ENGINEER OF RECORD AND THE CITY OF SEBRING.

NOTES:  
 1. THE SITE WILL BE GRADED AWAY FROM THE LIFT STATION.  
 2. REFER TO THE CITY OF SEBRING "WASTEWATER MATERIALS SPECIFICATION" LIST FOR APPROVED AND MODIFIED MATERIALS FOR APPROVAL.  
 3. CONCRETE SHALL BE 4000 PSI CONCRETE WITH TYPE II CEMENT. CONCRETE SURFACES SHALL RECEIVE A LINER AS STATED.  
 4. ALL REINFORCED CONCRETE STRUCTURES SHALL BE IN ACCORDANCE WITH ACI CODE 318. STEEL YIELD STRENGTH SHALL BE 60,000 PSI (GRADE 60). WET WALL SHALL CONFORM TO EITHER:  
 OR A. CAST IN PLACE #5 RE-BAR@2" 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 WALL.  
 6. CAST IRON SADDLE IN THE DISCHARGE PIPING SHALL SUPPORT A 2.5" MINIMUM SIZE LIQUID FILL 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 SPUT 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 #4 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 RESTING WITH THE CITY OF SEBRING.

NOTE:  
 QML 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 REOCCURRENCE 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 INTERRUPTION OF SERVICE.  
 --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  
 11.1. 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 POLYMER SYSTEMS, INC. OR PRE-APPROVED EQUIVALENT. THE COMPLETE SYSTEM SHALL PROVIDE A WATERPROOF, CORROSION RESISTANT LINER TO PREVENT ANY DETRIORATION OF CONCRETE SURFACES FROM HYDROGEN SULFIDE AND OTHER CORROSIVE GASES/ACIDS 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, QML COATINGS LLC.  
 11.2. MATERIALS AND EQUIPMENT  
 2.1. ALL MATERIALS USED WITHIN THE GREEN MONSTER SYSTEM SHALL BE HIGHLY RESISTANT TO HYDROGEN SULFIDE IN THE WASTEWATER ENVIRONMENT.  
 2.2. ALL SPRAYING EQUIPMENT SHALL BE LESS THAN 4000 PSI AND SANDBLASTING EQUIPMENT SHALL DELIVER ENOUGH PRESSURE TO REMOVE ALL DETRIORATION FROM THE SURFACE OF THE STRUCTURE PRODUING A SUBSTRATE FREE OF LOOSE MATERIAL.  
 2.3. ALL 30/60 WHOLE STRENGTH CALCIUM ALUMINATE BLEND CEMENTITIOUS MORTAR SHALL BE USED TO STRUCTURALLY REBUILD SUBSTRATES ALSO PROVIDING AN ESTHETICALLY SMOOTH BRUSH FINISHED SURFACE.  
 2.4. ALL SPRAY EQUIPMENT SHALL BE PLURAL COMPONENT MANUFACTURED BY QML AND BE CAPABLE OF MONITORING PRESSURES AND TEMPERATURES OF THE FINISHING ENGINEERING A QUALITY GREEN MONSTER SHALL ONLY BE APPLIED WITH A MINIMUM OUTPUT PRESSURE OF 2400 PSI.  
 2.5. ALL PRODUCTS USED IN THE GREEN MONSTER SYSTEM SHALL BE APPROVED AND INSTALLED BY ONLY QML COATINGS TRAINED PERSONNEL. NEW PRODUCT SPECIFICATIONS BELOW.  
 2.6. QML 30 AND QML 60 CEMENTITIOUS MORTAR SPECIFICATIONS  
 TYPICAL PROPERTIES  

COMPRESSIVE STRENGTH, PSI	ASTM C992	6500
FREEZE THAW RESISTANCE	ASTM C666	12 LOSS
SHEAR BOND STRENGTH, PSI	ASTM C882	1050
FLEXURAL STRENGTH, PSI	ASTM C348	1180

2.7. PRIMER SPECIFICATIONS  
 TYPICAL PROPERTIES (1:1 BY VOL.)  

TENSILE STRENGTH, PSI	ASTM D638	4500
ELONGATION, %	ASTM D638	460
COMPRESSIVE STRENGTH, NEAT	ASTM D695	3800
ADHESION TO CONCRETE	ASTM D4414	1200
HARDNESS, SHORE D	ASTM D2240	AMBR
VISCOSITY, CPS, NEAT		25
FINISH TIME, MIN		30

 2.8. PRIMER SHALL HAVE AN EXTREMELY LOW VISCOSITY ALLOWING IT TO PENETRATE DEEP INTO THE PORES OF THE BRUSHED CONCRETE FOR PERMANENT BONDING.  
 2.9. SHALL ONLY BE SPRAY-APPLIED AND FULLY CURED IN 20 MINUTES OR LESS WITHOUT EXPRESSING ANY SHRINKAGE.  
 2.10. CONCRETE SUBSTRATE SHALL BE HEATED AND SURFACE TEMPERATURE SHALL BE AT LEAST 40°F.  
 2.11. GREEN MONSTER LINER SHALL DISPLAY EXCELLENT CHEMICAL RESISTANCE.  
 2.12. ALL FITTINGS MUST BE MADE OF A MORE DURABLE CHARACTERISTICS PREVENTING CRACKING WHICH MAY ALLOW SEWER GASES TO ATTACK THE SUBSTRATE.  
 TYPICAL PHYSICAL PROPERTIES:  

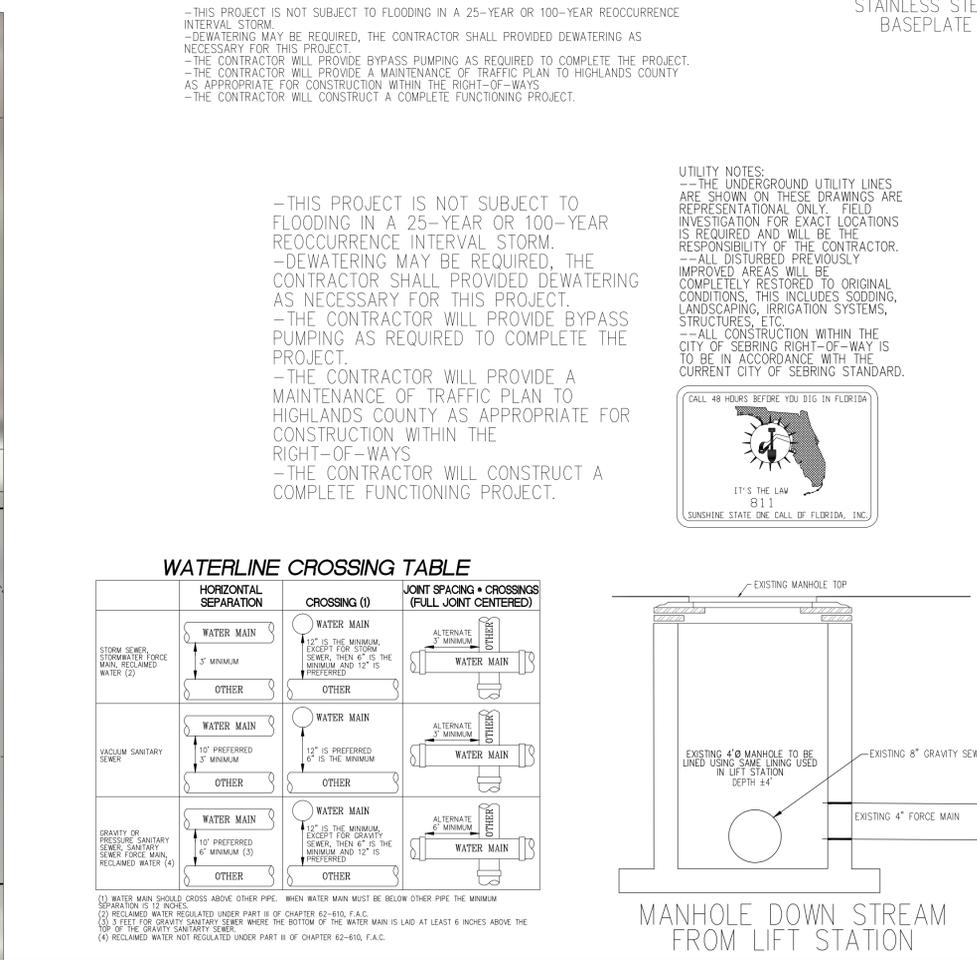
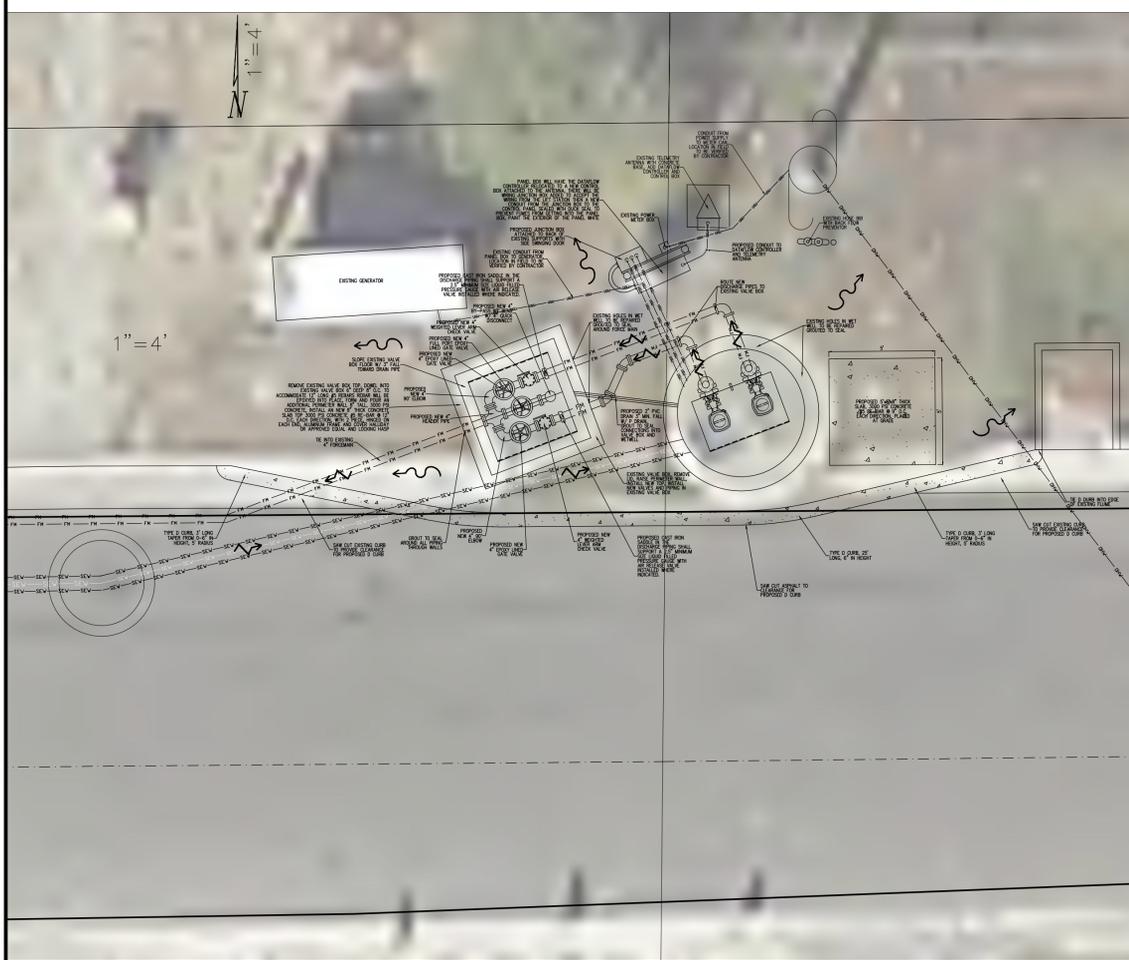
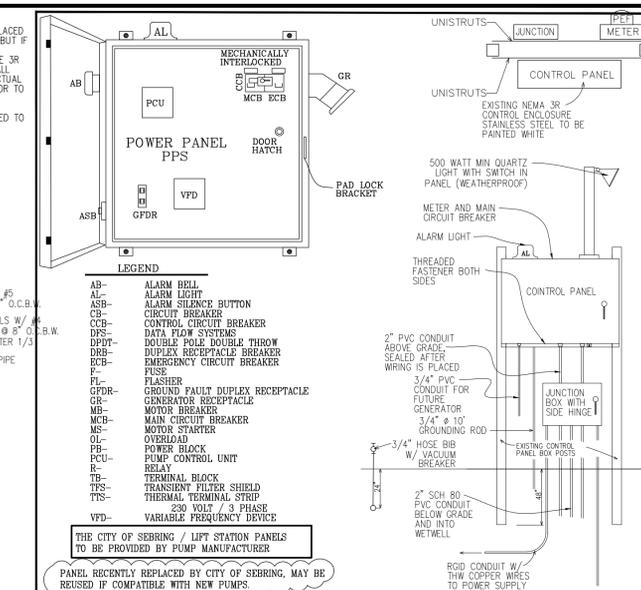
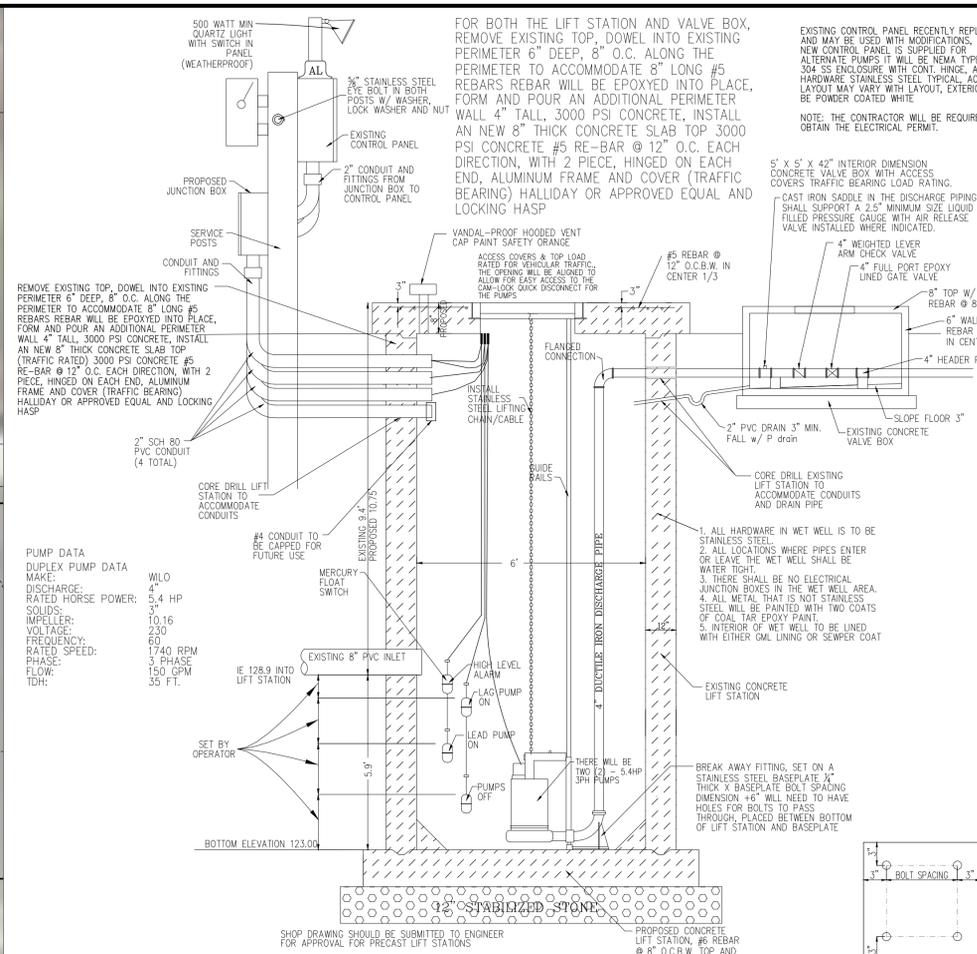
TENSILE STRENGTH, PSI	ASTM D412	4500
ELONGATION, %	ASTM D412	460
TEAR STRENGTH, PLI	ASTM D624	570
HARDNESS, SHORE D	ASTM D2240	52
FLEXIBILITY, 1/8" MANDREL	ASTM D1737	PASS
COEFFICIENT OF THERMAL EXPANSION	ASTM D4060	17.0
TABER ABRASION, MG LOSS	ASTM D4060	17.0
15° WHEELS		10-1400
A-SIDE SHORE TEMPERATURE		10-160
B-SIDE SHORE TEMPERATURE		10-160
BLOCK TEMPERATURE		10-160

ADHESION RESULTS: ASTM D-4541 PATI TESTER  
 CONCRETE GREEN MONSTER PRIMER 600 PSI  
 CARBON STEEL (DIRECT) GREEN MONSTER PRIMER 900 PSI  
 TYPICAL PROCESSING PROPERTIES:  

GEL TIME	SECONDS	20
TACK FREE TIME	SECONDS	45
VOLUME RATIO	P.V.	1:1

 2.12. CONCRETE RESTORATION SHALL BE BETWEEN 25 AND 3 INCHES WHICHEVER IS REQUIRED TO RETURN THE DETERIORATED SUBSTRATE TO THE ORIGINAL THICKNESS. IN THE CASE OF MINOR DETRIORATION AND SPALLING, A GREEN MONSTER SYSTEM REPAIR CEMENTITIOUS CONCRETE SHALL BE USED AS A REPAIRER. AFTER THE PROPER CONCRETE RESTORATION HAS BEEN ACHIEVED, GREEN MONSTER LINER SHALL BE APPLIED AT 125 MILS. PRODUCT SHALL BE GREEN MONSTER LINER BY QML COATINGS, LLC. OR PRE-APPROVED EQUAL.  
 11.1.3. SURFACE PREPARATION  
 3.1. PREPARATION WILL BE DONE BY SANDBLASTING THE ENTIRE SUBSTRATE PREPARING THE SURFACE SO THAT IT IS STRUCTURALLY INTACT, CLEAN OF ALL CORROSION, AND PROVIDING A MINIMUM OF A 2 IN. PROFILE.  
 3.2. AFTER SANDBLASTING IS COMPLETED, 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. A CEMENTITIOUS CALCIUM ALUMINATE CONCRETE BLEND (QML 30/60) WILL BE APPLIED TO THE ENTIRE SUBSTRATE. IN MOST CASES THE ENTIRE SURFACE WILL BE STRUCTURALLY BUILT UP 25 TO 3 INCHES THICK PROVIDING A SMOOTH BRUSHED FINISH. OTHER APPLICATIONS MAY APPLY WHERE THERE IS MORE DETRIORATION OF THE EXISTING STRUCTURE.  
 3.6. WORK AREA IS 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 POROUS CONCRETE.  
 3.8. GREEN MONSTER LINER SHALL BE SPRAY APPLIED AT 125 MIL THICKNESS. THIS IS TO BE SPRAY APPLIED TO THE SPOT OF THE STRUCTURE DOWN TO THE COATING OF THE BENCH IN MANHOLES AND THE ENTIRE BOTTOM OF OTHER STRUCTURES.  
 11.1.4. MATERIAL INSTALLATION  
 4.1. LIMITS OF THE CORROSION PROTECTION SYSTEM SHALL BE ALL EXPOSED CONCRETE SURFACES INCLUDING WALLS, PIPE PENETRATIONS, RISERS, ETC., UNLESS OTHERWISE SPECIFIED BY ENGINEER.  
 4.2. APPLICATION OF THE GREEN MONSTER LINER SYSTEM SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.  
 4.3. MATERIAL INSTALLED MUST BE HEAVILY TESTED FOR PINHOLES. EITHER A QML COATINGS REPRESENTATIVE SHALL APPROVE THE TEST OR AN ONSITE INSPECTOR EMPLOYED BY THE OWNER.  
 11.1.5. 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 MILLAGS, 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  
 COMPOSED ENTIRELY OF CALCIUM ALUMINATES, SEWPERCOAT®/PC IS A PRE-PACKAGED READY TO USE, FIBER REINFORCED, HIGH STRENGTH WET SHOTCRETE MATERIAL. SEWPERCOAT®/PC 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 BIOLOGIC CORROSION CAUSED BY THE HYDROGEN SULFIDE (H2S) FOUND IN WASTEWATER ENVIRONMENTS.  
 THE UNIQUE PROPERTIES OF SEWPERCOAT®/PC RESULT FROM THE CHEMICAL AND MINERAL PHASES FORMED DURING THE HYDRATION PROCESS. SEWPERCOAT®/PC UNIQUE WHEN COMPARED TO OTHER MATERIALS SUCH AS PRIMARY PORTLAND CEMENT (OPC) CONCRETE, EPOXIES, POLY-IMINE CHLORIDE (PIC) OR POLYETHYLENE, BECAUSE OF ITS CAPACITY TO INHIBIT BACTERIAL ACTIVITY BY EFFECTIVELY NEUTRALIZING SULFURIC ACID PRODUCTION.  
 SEWPERCOAT®/PC IS A MORTAR THAT POSSESSES THIN SECTION THICKNESS AS WELL AS HIGH COMPRESSIVE AND FLEXURAL STRENGTHS. ADDITIONAL FEATURES INCLUDE HIGH EARLY STRENGTH, FREEZE-THAW RESISTANCE AS WELL AS HIGH TEMPERATURE RESISTANCE (1,800°F/1,000°F). SEWPERCOAT®/PC ALSO RESISTANT TO MANY OTHER TYPES OF CORROSION INCLUDING SULFATES, SEAWATER, OILS, GASES, AND DILUTE ACIDS (PH RANGE 3.5 - 11).  
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**LIFT STATION SPECIFICATIONS**

- 1.0 WET WELL
- 1.01 HOLES MADE IN THE FIELD - THEIR MAXIMUM DIMENSION SHALL NOT EXCEED 1 1/2 TIMES THE OUTSIDE DIAMETER OF THE PIPE PASSING THROUGH THE OPENING. REINFORCED STEEL IN THE WALL SHALL BE CUT CLEANLY AND IN NO CIRCUMSTANCES WILL CUT ENDS BE BENT SO AS TO TURN TO THE INSIDE OR OUTSIDE SURFACE. OPENINGS SO MADE SHALL BE THOROUGHLY FILLED WITH NON-SHRINKING GROUT AFTER INSTALLATION OF THE PIPES AND SPECIAL CARE SHALL BE TAKEN TO INSURE A WATER-TIGHT CONNECTION AT THESE POINTS.
- 1.02 PIPING INSIDE PUMP STATION AND VALVE VAULT
- 2.0 PIPING INSIDE THE STATION WET WELL AND VALVE VAULT SHALL BE DUCTILE IRON.
- 3.0 VALVES
- 3.01 ECCENTRIC TYPE PLUG VALVES: PLUG VALVES SHALL BE NONLUBRICATED ECCENTRIC TYPE WITH RESILIENT FACED PLUGS HAVING MECHANICAL JOINT OR FLANGED ENDS.
- 3.02 GATE VALVES
- 3.03 CHECK VALVES SHALL BE SWING CHECK VALVES WITH OUTSIDE WEIGHTED ARM, IRON BODY, BRONZE MOUNTED, MULLER OR APPROVED EQUAL.
- 4.0 FASTENERS AND HARDWARE
- 4.01 ALL FASTENERS AND HARDWARE INSIDE THE WET WELL AND VALVE BOX SHALL BE STAINLESS STEEL.
- 4.02 ALL EXPOSED NUTS, BOLTS, SPRINGS, AND WASHERS SHALL BE PLATED WITH CORROSION RESISTANT MATERIAL. MEANS OF ACTION SHALL BE BY LEVER, ZEAR ACTUATOR, TIE WRENCH, EXTENSION STEM, OR FLOOR STAND, AS INDICATED.
- 5.0 ACCESS FRAME AND COVER
- 5.01 A DOOR ACCESS FRAME ASSEMBLY SHALL BE FURNISHED FOR THE WET WELL AND VALVE BOX. THE ACCESS FRAME COVER SHALL BE CAPABLE OF BEARING A 300 POUNDS PER SQUARE FOOT (PSF) LIVE LOAD. ACCESS FRAME AND COVERS SHALL BE FABRICATED OF ALUMINUM. FRAME SHALL SUPPORT STAINLESS STEEL GUDE RAILS AND STAINLESS STEEL CABLE HOLDER. ALL HINGED COVER SHALL BE SPRING LOAD PROVIDED WITH LIFTING HANDLE AND SUPPORT LATCH TO HOLD COVER IN THE OPEN POSITION. LOCKING HASPS SHALL BE FURNISHED FOR EACH COVER. FRAME AND COVER SHALL BE MANUFACTURED BY HALLIDAY PRODUCTS OR EQUAL. THE ENTRANCE LATCH SHALL BE CONSTRUCTED AND FABRICATED TO COMPLY WITH THE OSHA STANDARDS. ALL SURFACES IN CONTACT WITH CONCRETE SHALL HAVE A SHOP COAT OF ZINC CHROMATE PRIMER, APPROVED ALKALI RESISTANT PAINT OR OTHER APPROVED PROTECTIVE COATING. COVER MUST BE COMPATIBLE WITH PUMPS AND GUIDE RAIL SYSTEM. ALL HARDWARE, INCLUDING ANCHORS, BOLTS, HASPS, HINGES, GUIDES AND CABLE HOLDERS SHALL BE STAINLESS STEEL.
- 6.0 PUMPS
- 6.01 PUMPS AS NOTED ON THE PLANS OR EQUIVALENT.
- 7.0 PANEL
- 7.01 THE PANEL SHALL HAVE THE FEATURES LISTED ON THE PLANS AS A MINIMUM.
- 8.0 DROP PIPES, IF REQUIRED, SHALL BE RELINER INSIDE DROP SYSTEM BY DURAN INC.
- 9.0 SHOP DRAWINGS
- 9.01 SHOP DRAWINGS SHOWING DETAILS OF CONSTRUCTION SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO ANY CONSTRUCTION.
- 9.02 RECORD DRAWINGS AND OPERATOR AND MAINTENANCE MANUAL.
- 9.03 UPON COMPLETION OF THE PROJECT AND PRIOR TO FINAL PAYMENT THE CONTRACTOR SHALL SUPPLY RECORD DRAWINGS OF THE LIFT STATION AND PROVIDE AN OPERATOR AND MAINTENANCE MANUAL DETAILING ALL EQUIPMENT USED AND DESCRIBING PROPER OPERATION PROCEDURES AND REQUIRED MAINTENANCE PROCEDURES. FOUR COPIES ARE TO BE SUPPLIED.
- 11.00 START UP
- 11.01 DURING CONSTRUCTION, THE SERVICES OF A MANUFACTURER'S REPRESENTATIVE SHALL BE PROVIDED, WITHOUT COST TO THE OWNER, TO INSPECT THE VARIOUS ITEMS OF EQUIPMENT DURING CONSTRUCTION AS WELL AS PRIOR TO PLACING INTO OPERATION. IN ADDITION TO THESE INSPECTIONS, THE SERVICES OF THE MANUFACTURER'S REPRESENTATIVE WILL BE REQUIRED TO PROVIDE CONSULTATION DURING INITIAL STATION START-UP AND FOR A PERIOD THEREAFTER TO INSTRUCT THE OWNER'S UTILITY PERSONNEL IN THE OPERATION OF THE SEWAGE PUMPING EQUIPMENT.
- 11.02 AFTER RECEIVING APPROVAL FROM THE CONTRACTOR, THE MANUFACTURER'S REPRESENTATIVE SHALL BE PROVIDED WITH A SATISFACTORY MANNER, ALL EQUIPMENT SHALL BE LUBRICATED ACCORDING TO RECOMMENDATIONS OF THE MANUFACTURERS AND ALL ADJUSTMENTS SHALL BE MADE TO SUIT UNDATED OPERATIONS. EACH ITEM OF EQUIPMENT SHALL BE TESTED TO SHOW IT OPERATES QUIETLY, WITHOUT VIBRATION, OVERHEATING, OR SIGNS OF DISTRESS, AT FULL CAPACITY. ADJUSTMENTS SHALL BE MADE AS NECESSARY. ALL DEFECTIVE PARTS OF MACHINERY SHALL BE REPLACED.
- 11.03 A WARRANTY OF ONE YEAR ON ALL LABOR, EQUIPMENT, PARTS AND MATERIALS USED IN THE CONSTRUCTION SHALL BE PROVIDED BY THE CONTRACTOR TO THE OWNER.

**UTILITY NOTES:**

- THE UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS ARE REPRESENTATIONAL ONLY. FIELD INVESTIGATION FOR EXACT LOCATIONS IS REQUIRED AND WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL DISTURBED PREVIOUSLY IMPROVED AREAS WILL BE COMPLETELY RESTORED TO ORIGINAL CONDITIONS, THIS INCLUDES SODDING, LANDSCAPING, IRRIGATION SYSTEMS, STRUCTURES, ETC.
- ALL CONSTRUCTION WITHIN THE CITY OF SEBRING RIGHT-OF-WAY IS TO BE IN ACCORDANCE WITH THE CURRENT CITY OF SEBRING STANDARD.

**MANHOLE DOWN STREAM FROM LIFT STATION**

HORIZONTAL SEPARATION	CROSSING (1)	JOINT SPACING + CROSSINGS (FULL JOINT CENTERED)
WATER MAIN	WATER MAIN	ALTERNATE MINIMUM OTHERS
OTHER	OTHER	WATER MAIN
WATER MAIN	WATER MAIN	ALTERNATE MINIMUM OTHERS
OTHER	OTHER	WATER MAIN
WATER MAIN	WATER MAIN	ALTERNATE MINIMUM OTHERS
OTHER	OTHER	WATER MAIN

(1) WATER MAIN SHOULD CROSS ABOVE OTHER PIPE. WHEN WATER MAIN MUST BE BELOW OTHER PIPE THE MINIMUM SEPARATION IS 12 INCHES.  
 (2) RECLAIMED WATER REGULATED UNDER PART II OF CHAPTER 62-610, F.A.C.  
 (3) 3 FEET FOR GRAVITY SANITARY SEWER WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SEWER.  
 (4) RECLAIMED WATER NOT REGULATED UNDER PART II OF CHAPTER 62-610, F.A.C.

**2925 KENILWORTH BLVD., SEBRING, FLORIDA 33870**  
 863-365-5684  
 863-365-2462 FAX

**Polston PE Engineering Inc.**  
 CIVIL ENGINEERING CONSULTANTS

**GRAND AVENUE LIFT STATION RENOVATION IMPROVEMENTS FOR THE CITY OF SEBRING**

**SHEET 2 OF 2**

**DATE:** 06-02-10  
**REVISIONS:** 06-02-10 REVISIONS DUE TO BIDDING CHANGES

**JOB #:** 15055  
**SCALE:** 1" = 1'-0"

**REMARKS:** 7-10-15 INITIAL SUBMITTAL  
 06-02-10 REVISIONS DUE TO BIDDING CHANGES

**DR:** CH  
**MLW:** DRP  
**DRJ:** DRP

**CERTIFICATE OF AUTHORIZATION # 5884**  
 MARVIN LUTHER WOLFE P.E. # 5880