

Town of Surfside ITB 2023-01

Abbott Avenue Stormwater Improvements Project

Addendum No. 3

Date Issued: March 29, 2023

To All Proposers:

Proposers for the above-referenced ITB shall take note of the following changes, additions, deletions or clarifications to ITB No. 2023-01, which in accordance with the ITB Documents shall become a part of and have precedence over anything shown or described otherwise in the ITB.

THE FOLLOWING CHANGES ARE MADE TO THE ITB:

- 1. Please advise if the Underground Utility and Excavation Florida State license will satisfy the bidders qualifications.
 - Updated Response: Yes, but specialty licenses will be required for specialty trades.
- 2. Please provide details of the FPL points required for the pump stations.

 Response: Refer to the electrical drawings attached to this addendum and dated 1/2/23.
- 3. Please provide electrical plans for the pump stations.

 Response: Refer to the electrical drawings attached to this addendum and dated 1/2/23.
- **4. Will obtaining building and electrical permits for the pump stations be required?**Response: Yes
- 5. The coatings listed in drawings CP401 and CP-404 (bitumastic 300-M & Mainstay) are designed for sanitary sewer applications; please confirm that they will be required. Response: Will not be required.

PROPOSER:		
NAME:	 	
TITLE:	 	
DATE:		

B. WHEN DRAWINGS, NOTES AND THESE REQUIREMENTS ARE IN CONFLICT, THE MOST STRINGENT CONDITION SHALL APPLY UNLESS OTHERWISE APPROVED BY THE

C. THE WORK CONSISTS OF ALL SUPERVISION, LABOR, MATERIALS, EQUIPMENT AND INSTALLATION REQUIRED FOR THE COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS OR CALLED FOR IN THESE REQUIREMENTS.

D. FURNISH, INSTALL AND MAINTAIN TEMPORARY ELECTRICAL POWER AND LIGHTING REQUIRED FOR ALL TRADES.

E. CONNECT ELECTRICAL EQUIPMENT FURNISHED BY OTHER TRADES EVEN IF NOT SHOWN ON ELECTRICAL DRAWINGS.

1.2 CODES AND STANDARDS PERFORM WORK AND FURNISH EQUIPMENT COMPLYING WITH CURRENT EDITIONS OF THE FOLLOWING CODES:

1) NATIONAL ELECTRICAL CODE (NEC 2017)

2) NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

UNDERWRITERS' LABORATORIES (UL)

4) NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) 5) AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

6) INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA) 7) FLORIDA BUILDING CODE (FBC 2020)

8) INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)

1.3 SHOP DRAWINGS WITHIN 30 DAYS AFTER THE DATE OF THE AWARD OF THE CONTRACT. AND BEFORE ANY MATERIAL OR EQUIPMENT IS PURCHASED, SUBMIT TO THE ENGINEER FOR APPROVAL, A COMPLETE LIST IN QUINTUPLICATE OF ELECTRICAL MATERIALS. AND EQUIPMENT TO BE INCORPORATED IN THE WORK. INCLUDE CATALOG NUMBER, DIMENSIONS, INTERCONNECTION DIAGRAMS AND INSTALLATION INSTRUCTIONS.

1.4 OPERATION AND MAINTENANCE MANUALS

O & M MAINTENANCE MANUALS MUST CONTAIN BUT NOT LIMITED TO THE FOLLOWING: 1) SYSTEM DESCRIPTION, AND OPERATING AND MAINTENANCE INSTRUCTIONS. MANUFACTURER'S NAME AND MODEL NUMBER OF ALL COMPONENTS.

CONTROL AND WIRING DIAGRAMS WITH SEQUENCE OF OPERATION. 4) LIST OF RECOMMENDED SPARE PARTS.

1.5 AS BUILT DRAWINGS

AFTER FINAL INSPECTION, FURNISH A SET OF REPRODUCIBLE "AS BUILT DRAWINGS" SHOWING DEPTHS AND ROUTING OF CONCEALED ELECTRICAL BELOW GRADE INSTALLATIONS AND ALL VARIATIONS BETWEEN THE ACTUAL WORK AND AS IT WAS SHOWN ON THE CONTRACT DRAWINGS.

A. FURNISH EQUIPMENT AND MATERIALS THAT ARE NEW AND LATEST DESIGN OF STANDARD PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH EQUIPMENT. B. ALL MATERIALS SHALL BEAR THE LABEL OF UNDERWRITER'S LABORATORY FOR THE

EQUIPMENT ENCLOSURES SHALL BE NEMA 12 FOR INDOOR USE, AND NEMA 4X (STAINLESS STEEL) OR 3R AS SHOWN ON DRAWINGS FOR OUTDOOR USE.

D. FURNISH LIGHTING FIXTURES WITH LAMPS AND 10 PERCENT (TWO MINIMUM) SPARE LAMPS OF EACH TYPE.

E. FURNISH FUSIBLE EQUIPMENT WITH FUSES AND 10 PERCENT (THREE MINIMUM) OF SPARE FUSES OF EACH TYPE.

1.7 INSTALLATION

A. INSTALL EQUIPMENT AT THE LOCATIONS SHOWN ON THE DRAWINGS FOLLOWING THE MANUFACTURER'S RECOMMENDATIONS.

B. COORDINATE INSTALLATION OF UNDERGROUND DUCTS AND CONDUITS WITH EXISTING UNDERGROUND UTILITIES. FIELD VERIFY ROUTING AND BURIAL DEPTH. DRAIN DUCTS AWAY FROM BUILDINGS TOWARD MANHOLES. LOW POINTS IN DUCT BANK RUNS ARE NOT ACCEPTABLE.

C. INSTALL FLOOR MOUNTED SELF SUPPORTED EQUIPMENT ON 4-INCHES HIGH CONCRETE PADS WITH STEEL REINFORCING. USE REQUIRED BOLTS, ANCHORS, INSERTS AND CONDUIT SLEEVES.

D. MAKE OPENINGS THROUGH WALLS, CEILINGS, ROADWAYS, FLOOR SLABS, ETC. REQUIRED FOR THE INSTALLATION OF ELECTRICAL EQUIPMENT, BUT CUTTING, WELDING, OR OTHER WEAKENING OF BUILDING STRUCTURE TO SIMPLIFY ELECTRICAL EQUIPMENT AND MATERIALS' INSTALLATION ARE NOT PERMITTED. WHERE EXISTING WALLS, CEILINGS OR FLOOR SLABS HAVE TO BE CUT. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER BEFORE MAKING SUCH CUTS. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE DONE WHILE PROVIDING SUCH OPENINGS AND SHALL PATCH THE SURFACE TO MATCH ADJACENT MATERIALS AND

E. NO CONDUITS, SLEEVES, PIPES OR ANY OTHER ITEM SHALL BE EMBEDDED IN CONCRETE ALONG OR THROUGH ANY BEAM, COLUMN, FOOTING, GRADE BEAM, SLAB, WALL OR ANY OTHER STRUCTURAL MEMBER WITHOUT THE PRIOR APPROVAL OF THE

F. COORDINATE SHIPPING LENGTHS OF SWITCH GEARS AND MOTOR CONTROL CENTERS. THOSE ITEMS SHALL BE ABLE TO BE REMOVED AND REPLACED IN THE FUTURE THROUGH THE PERMANENT ACCESS PROVIDED IN THE STRUCTURE.

G. PROVIDE 36- INCHES WIDE, 3/16- INCHES THICK RUBBER MATS IN THE FRONT AND REAR OF SWITCH GEARS, MOTOR CONTROL CENTERS AND SWITCHBOARDS, MATS TO COMPLY WITH FEDERAL SPECS ZZ-F-416A.

1.8 TESTING UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL ENERGIZE, START-UP AND TEST OPERATE ALL THE SYSTEMS AND EQUIPMENT IN THE PRESENCE OF THE ENGINEER. INSULATION RESISTANCE TESTS SHALL BE MADE ON 240 VOLT FEEDER WITH A 500 VOLT DC MEGGER. DEFECTS FOUND SHALL BE CORRECTED.

2.0 RACEWAYS

2.1 RIGID CONDUIT A. STEEL: HOT DIPPED ZINC COATED, GALVANIZED, THREADED RIGID STEEL CONFORMING TO ANSI C80, AND FED. SPEC WW-C-581. USE THREADED GALVANIZED STEEL FITTINGS

B. ALUMINUM: CONTAINING LESS THAN 0.1 PERCENT COPPER AND CONFORMING TO

FEDERAL SPECIFICATION WW-C-540C. USE THREADED ALUMINUM FITTINGS.

C. PLASTIC: RIGID, SCHEDULE 40, 90 DEGREES C., UL RATED, PVC PLASTIC CONFORMING TO UL 651, FED. SPEC. W-C-1094 AND NEMA TC-2. FITTINGS TO CONFORM WITH UL3 514 AND NEMA TC-3.

2.2 FLEXIBLE METAL CONDUIT LIQUID-TIGHT: FLEXIBLE ZINC COATED CONFORMING TO UL 1 TYPE WITH LIQUID-TIGHT FLEXIBLE PLASTIC SHEATH, CONFORMING TO UL 360 STANDARD. FITTINGS, PER FED. SPEC. W-R-406B AND UL 514.

2.3 LOCATION AND USE OF EACH TYPE OF CONDUIT A. USE RIGID ALUMINUM CONDUIT FOR ABOVE GROUND EXPOSED INSTALLATIONS EXCEPT IN CORROSIVE AREAS WHERE PVC COATED RIGID GALVANIZED STEEL SHALL

B. USE GALVANIZED THREADED RIGID STEEL CONDUIT AS FOLLOWS:

WHEREVER SPECIFICALLY CALLED FOR ON DRAWINGS.) WHERE RACEWAY ELBOWS FROM DUCT BANKS STUB-UP

3) FOR UNDERGROUND WORK BEYOND BUILDINGS WHERE CONCRETE ENCASED PLASTIC CONDUITS HAVE NOT BEEN SPECIFIED. COAT BURIED GALVANIZED STEEL CONDUITS AND FITTINGS WITH TWO COATS OF CARBOLINE'S BITUMASTIC NO. 50 OR EQUAL.

USE PLASTIC CONDUIT AS FOLLOWS: WHEN INSTALLED IN POURED CONCRETE SLABS OR WALLS.

) FOR UNDERGROUND WORK UNDER SLABS. 3) IN DUCT BANKS OR, IF SPECIFICALLY CALLED FOR, IN TRENCHES. BACK-FILL TRENCHES WITH STRUCTURAL FILL 90 % COMPACTED (PROCTOR DENSITY) AND RESOD TO ORIGINAL CONDITION.

D. USE FLEXIBLE METAL CONDUIT (24 TO 60 INCHES LONG) FOR CONNECTIONS TO ROTATING OR VIBRATING EQUIPMENT.

DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL BENDS, FITTINGS, BOXES, AND SPECIALTIES WHICH MAY BE REQUIRED OR THE EXACT LOCATION OF CONDUITS. EXAMINE THE STRUCTURAL AND FINISH CONDITIONS AFFECTING ALL OF THE WORK AND PLAN IT ACCORDINGLY. FURNISHING SUCH FITTINGS AS MAY BE REQUIRED TO MEET SUCH CONDITIONS. ARRANGE CONDUIT RUNS TO CLEAR BEAMS, PIPES AND OTHER OBSTRUCTIONS AND AVOID INTERFERENCES WITH OTHER TRADES WORK. ANY CHANGES FROM LOCATIONS SHOWN ON THE DRAWINGS MUST BE APPROVED BY THE

B. INSTALL RACEWAYS PARALLEL OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS. OR INTERSECTIONS OF VERTICAL PLANES AND CEILINGS. INSTALL HORIZONTAL RACEWAYS CLOSE TO CEILING OR CEILING BEAMS, AND ABOVE PIPES AND DUCTS.

SIZE RACEWAY ACCORDING TO NEC, BUT IN NO CASE SHALL BE LESS THAN INDICATED ON DRAWINGS. MINIMUM SIZE SHALL BE 3/4-INCH, EXCEPT FLEXIBLE CONDUITS TO LIGHT FIXTURES CAN BE 3/8" BUT NOT EXCEEDING SIX FEET LONG.

SLEEVES THROUGH FULL CONCRETE THICKNESS AND PROVIDE 1/2- INCH CLEARANCE AROUND CONDUITS TO FACILITATE SEALING.

INSTALL CONDUITS PASSING THROUGH WALLS AND SLABS IN PVC SLEEVES. EXTEND

SEAL ANY OPENING MADE IN SLABS OR WALLS TO PREVENT SMOKE OR FIRE SPREAD AND THE PASSAGE OF WATER. USE SEALING COMPOUND APPROVED FOR

USE EXPANSION FITTINGS WHEN CONDUITS CROSS STRUCTURAL EXPANSION JOINTS. EXCEPT WHERE BOXES, PANELS AND OTHER EQUIPMENT HAVE THREADED OPENINGS, MAKE CONDUIT CONNECTIONS AS FOLLOWS:

 DOUBLE LOCKNUTS, ONE INSIDE AND ONE OUTSIDE. 2) PROVIDE MALLEABLE, IRON OR STEEL BUSHING WITH BAKELITE LINER MOLDED AND

BONDED INTO THE BUSHING. 3) PLACE GROUNDING BUSHING ON END OF CONDUIT IN ADDITION TO

LOCKNUTS.

2.5 SUPPORT OF RACEWAY A. INSTALL WALL MOUNTED ELECTRICAL EQUIPMENT, WIRING TROUGHS, JUNCTION BOXES AND GROUPS OF TWO OR MORE CONDUITS ON A SYSTEM OF EXTRUDED, GAUGE 12, 1-5/8 INCHES WIDE, ALUMINUM CHANNELS. ATTACH CHANNELS TO WALL WITH STAINLESS STEEL MACHINE BOLTS AND EXPANSION SHIELDS. CHANNELS TO BE SERIES P-1000 WITH COMPATIBLE HARDWARE AND FITTINGS AS MANUFACTURED BY UNISTRUT MFG. CO. OR EQUAL.

FASTEN VERTICAL AND HORIZONTAL RUNS OF RACEWAYS AT INTERVALS OF NOT MORE THAN 8 FEET AND WITHIN 3 FEET OF BENDS, OUTLETS AND JUNCTION BOXES.

SUPPORT SINGLE CONDUITS NOT LARGER THAN 1-1/2 INCHES IN DIAMETER BY MEANS OF TWO-HOLE PIPE STRAPS OR INDIVIDUAL PIPE HANGERS. FOR CONDUITS LARGER THAN 1-1/2 INCHES IN DIAMETER USE INDIVIDUAL PIPE HANGERS.

D. SPACE CONDUITS INSTALLED AGAINST CONCRETE SURFACES NOT LESS THAN 1/4 INCH AWAY FROM THE SURFACES BY CLAMP BACKS OR OTHER APPROVED MEANS. E. FURNISH HANGER RODS MADE OF GALVANIZED STEEL OF NOT LESS THAN 1/4 INCH IN DIAMETER. WHEN CONCEALED ABOVE A SUSPENDED CEILING,

GAI VANIZED PERFORATED STEEL STRAPPING IS ACCEPTABLE F. SUPPORT BRANCH CIRCUIT RACEWAYS INSTALLED ABOVE SUSPENDED CEILING INDEPENDENTLY OF THE CEILING SUPPORT SYSTEM. WHEREVER POSSIBLE, THEY SHALL BE FASTENED TO THE UNDERSIDE OF THE SLAB ABOVE.

2.6 METAL FRAMING (CONTINUOUS SLOT METAL CHANNEL SYSTEM)

A. CONFIGURATION. SINGLE CHANNEL OR TWO SINGLE CHANNELS WELDED TOGETHER. WITH CONTINUOUS 7/8-INCH SLOT AND TO ACCEPT SPRING-HELD STEEL NUTS.

B. DIMENSIONS: FOR SINGLE CHANNEL, 1-5/8 INCHES BY 1-5/8 INCHES. FOR DOUBLE CHANNEL, 1-5/8 INCHES BY 3-1/4 INCHES BOTH 12-GAUGE. FITTINGS TO BE 1-5/8 INCHES WIDE BY 1/4 INCH-THICK MINIMUM.

C. FINISHING OF CHANNELS. PIPE CLAMPS AND FITTINGS TO BE HOT DIP GALVANIZED AFTER FABRICATION CONFORMING TO ASTM A123 OR A153, AS APPLICABLE MINIMUM WEIGHT OF COATING. 2.0 OUNCES PER SQUARE FOOT. NUTS, BOLTS AND SCREW TO BE ELECTRO GALVANIZED.

3.0 CONDUCTORS (600 VOLTS)

3.1 MATERIAL

A. FURNISH CONDUCTORS OF 98 % ANNEALED COPPER, 600 VOLT CLASS B, HEAT AND MOISTURE RESISTANT, THERMOPLASTIC TYPE THHN/THHW (SIZED BY THW RATING), WITH A POLYVINYL CHLORIDE INSULATION RESISTANT TO OIL, GASOLINE AND WEATHER. INSULATION SHALL MEET UL STANDARD 83.

B. CONDUCTORS TO BE STRANDED; #8 THROUGH #2 SHALL BE 7 STRAND; #1 THROUGH 4/0, 19 STRAND AND 250 MCM THROUGH 500 MCM, 37 STRAND.

3.2 IDENTIFICATION

A. COLOR CODE POWER CONDUCTORS AS FOLLOWS: 1) 120/240 VOLT SYSTEM: WHITE-NEUTRAL, BLACK-PHASE A, BLUE-PHASE B,

RED-PHASE C. 2) 277/480 VOLT SYSTEM: GRAY-NEUTRAL, YELLOW-PHASE A, BROWN-PHASE B, ORANGE-PHASE C.

BONDING CONDUCTOR GREEN. B. IDENTIFY FEEDERS, BRANCH CIRCUITS AND INSTRUMENTATION AND CONTROL WIRES AT TERMINATIONS, JUNCTION AND PULL BOXES.

A. DO NOT USE CONDUCTORS SMALLER THAN AWG #12 FOR POWER AND #14 FOR CONTROL UNLESS SPECIFICALLY INDICATED ON DRAWINGS. B. DO NOT PULL CONDUCTORS INTO CONDUITS UNTIL THE MECHANICAL WORK HAS

BEEN COMPLETED. C. GROUP AND TIE CONDUCTORS IN PANEL BOARDS, JUNCTION BOXES, PULL BOXES, ETC., FOR A NEAT AND ORDERLY APPEARANCE. D. USE CONNECTORS, TERMINALS AND SPLICES THAT ARE DESIGNED AND

APPROVED FOR THE SPECIFIC TYPE AND SIZE OF THE CONDUCTORS BEING CONNECTE E. FIREPROOF FEEDERS WHERE NOT PROTECTED BY CONDUITS LIKE IN MANHOLES, SWITCH GEARS, ETC.

4.0 OUTLET, PULL AND JUNCTION BOXES

A. OUTLET BOXES IN INDOOR FINISHED WALLS TO BE GALVANIZED STEEL, 4" X 4" X

1-1/2" CONFORMING TO FEDERAL SPECIFICATIONS WC-583 AND ANSI-C33.65. B. EXTERIOR OUTLET BOXES, BOXES AND FITTINGS EMBEDDED IN CONCRETE, AND BOXES FOR EXPOSED CONDUIT RUNS SHALL BE CAST OF RUST RESISTING METAL,

WITH FULL THREADED HUBS, AND SCREW TYPE RUBBER GASKET COVERS. INSTALL BOXES FOR LIGHT SWITCHES LOCATED NEAR DOORS ON THE LOCK SIDE, EVEN WHERE THE SYMBOLS ARE INDICATED ON THE HINGE SIDES. PULL AND JUNCTION BOXES SHALL BE OF 12 GAUGE WELDED ALUMINUM WITH

HINGED COVER. NEMA 12 FOR INDOOR USE AND NEMA 4X FOR OUTDOOR USE. MINIMUM DIMENSIONS SHALL BE 12" X 12" X 6". IN CORROSIVE AREAS OR WHERE CALLED FOR ON DRAWINGS, FURNISH PULL AND JUNCTION BOXES OF 14 GAUGE STAINLESS STEEL

WHEN SPLICING CONTROL CONDUCTORS IN BOXES USE SCREW TYPE TERMINAL STRIP BLOCKS CLASS 9080 (G) AS MANUFACTURED BY SQUARE D OR EQUAL, IDENTIFY EVERY WIRE AT BOTH SIDES AND PROVIDE SPADE TYPE LUGS FOR

PROVIDE PULL AND JUNCTION BOXES WHERE REQUIRED TO REDUCE LENGTH OF CABLE PULL OR REDUCE NUMBER OF ELBOWS BETWEEN OUTLETS.

5.0 SWITCHES AND RECEPTACLES

A. FURNISH WALL SWITCHES OF THE QUIET AND TOTALLY ENCLOSED TUMBLER TYPE WITH BODIES OF PHENOLIC COMPOUND. WIRING TERMINALS SHALL BE OF THE SCREW TYPE. NO MORE THAN ONE SWITCH SHALL BE INSTALLED IN A SINGLE-GANG POSITION. SWITCHES SHALL CONFORM TO FEDERAL SPECIFICATIONS WS-5896E, HUBBEL 1221 AND 1223, OR APPROVED EQUAL

B. USE 20A, 125 V. DUPLEX, U-SLOTTED, GROUNDING TYPE RECEPTACLES THAT CONFORM TO FEDERAL SPECIFICATIONS WC-596D, HUBBEL 5362, OR EQUAL.

AMOUNT DUPLEX RECEPTACLES VERTICALLY. BOXES MOUNTED BACK TO BACK ARE NOT PERMITTED. GANGED RECEPTACLES AND SWITCHES SHALL HAVE SINGLE MULTI-GANG COVER PLATE.

D. FURNISH HOSPITAL GRADE GROUND FAULT INTERRUPTER WITH DIFFERENTIAL CURRENT TRANSFORMER, SOLID STATE SENSING CIRCUITRY AND CIRCUIT INTERRUPTER. SENSITIVITY TO BE 5 MA, TRIPPING TIME 1/30TH OF A SECOND.

WHEN INSTALLING RECEPTACLES IN OUTDOOR LOCATIONS USE CAST-METAL OUTLET BOXES WITH GASKET WEATHERPROOF CAST-METAL COVER PLATES AND SPRING-FLAP CAP OVER EACH RECEPTACLE. USE STAINLESS STEEL COVER PLATES FOR SWITCHES AND RECEPTACLES EXCEPT IN

NON-INDUSTRIAL AREAS SUCH AS OFFICES, REST ROOMS, LABORATORIES, ETC.

6.0 MOTOR DISCONNECT SWITCHES & STARTERS

A. PROVIDE EACH MOTOR WITH A DISCONNECTING MEANS MEETING THE REQUIREMENTS OF N.E.C. ARTICLE 430. SWITCHES SHALL BE HEAVY DUTY, HORSE POWER RATED. SUITABLE TO BE PADLOCKED IN "OFF" POSITION AND CONFORM TO FEDERAL SPECS W-S-865, NEMA KS1 AND ANSI C33.64. IF FUSES ARE REQUIRED, THEY SHALL BE CURRENT LIMITING TYPE

B. SIZE DISCONNECTS AND STARTERS FOR THE FULL LOAD OF THE CONTROLLED MOTOR. THE HORSEPOWER RATINGS INDICATED ON THE DRAWINGS ARE SHOWN FOR THE BENEFIT OF THE CONTRACTOR AND DO NOT LIMIT EQUIPMENT SIZE.

FOR SINGLE-PHASE FRACTIONAL HORSEPOWER MOTORS, A SINGLE OR DOUBLE-POLE TOGGLE SWITCH WILL BE ACCEPTABLE PROVIDED THE AMPERE RATING OF THE SWITCH IS AT LEAST 125 PERCENT OF MOTOR RATING. SWITCHES SHALL BE THE QUICK-BREAK TYPE AND DISCONNECT ALL UNGROUNDED

CONDUCTORS. FOR MOTORS LARGER THAN 1/4 HORSEPOWER, FURNISH STARTERS SPECIFICALLY DESIGNED FOR THE PURPOSE AND HAVING A HORSEPOWER RATING EQUAL TO THE

MOTOR CONTROLLED. PROVIDE MOTORS OF 1/8 HORSEPOWER OR LARGER WITH THERMAL-OVERLOAD PROTECTION. THE OVERLOAD PROTECTION DEVICE. OF THE MANUAL RESET TYPE AND WITH CONTACTS ON EACH PHASE, SHALL BE PART OF THE STARTER. SIZE THE OVERLOAD HEATER ELEMENTS ACCORDING TO THE MOTOR MANUFACTURER'S

RECOMMENDATIONS AND BASED ON THE ACTUAL MOTOR NAMEPLATE FULL-LOAD PROVIDE EACH MOTOR WITH A SUITABLE CONTROLLER OR DEVICE TO MAKE IT PERFORM AS REQUIRED. AUTOMATIC CONTROL DEVICES SUCH AS THERMOSTATS, FLOAT OR PRESSURE SWITCHES MAY DIRECTLY CONTROL THE START-STOP OF MOTORS UP TO 1/4 HORSEPOWER, PROVIDED THE DEVICES USED ARE DESIGNED FOR THE PURPOSE AND HAVE AN ADEQUATE HORSEPOWER RATING. WHEN THE AUTOMATIC-CONTROL DEVICE DOES NOT HAVE SUCH A RATING. A MAGNETIC STARTER SHALL BE USED WITH THE AUTOMATIC CONTROL DEVICE ACTIVATING THE COIL OF

THE CONTACTOR. PROVIDE 3 POSITION MANUAL-OFF-AUTO SWITCH WHEN MANUAL AND AUTOMATIC CONTROL IS REQUIRED. CONNECT THE SELECTOR SWITCH SO THAT ONLY THE AUTOMATIC DEVICES ARE BY-PASSED WHEN THE SWITCH IS IN THE "MANUAL" POSITION. ALL SAFETY DEVICES SUCH AS PRESSURE AND TEMPERATURE SWITCHES. MOTOR OVERLOAD AND SAFETY SWITCHES SHALL BE ACTIVE IN "MANUAL" AND

"AUTOMATIC" POSITIONS. MOTOR CONTROL CIRCUITS SHALL OPERATE AT 120V GROUNDED, OBTAINED FROM THE LOAD SIDE OF THE MOTOR-DISCONNECT MEANS. IF THE MOTOR CIRCUIT IS MORE THAN 120V TO GROUND, FURNISH A CONTROL TRANSFORMER WITH FUSED PRIMARY AND SECONDARY CIRCUITS. STARTERS FOR MOTORS WITH SPACE HEATERS

SHALL HAVE CONTROL TRANSFORMERS SIZED FOR THE ADDITIONAL LOAD. J. FURNISH COMBINATION MOTOR STARTERS OF THE MOLDED CASE, MOTOR CIRCUIT PROTECTOR, CIRCUIT BREAKER TYPE, THREE PHASE, OF THE VOLTAGE AND SIZE AS SHOWN ON THE DRAWINGS BUT NOT SMALLER THAN THE SIZE REQUIRED BY THE CONTROLLED MOTOR, 120 VOLT CONTROL CIRCUIT, 3 THERMAL INTERCHANGEABLE OVERLOAD RELAYS, "HAND-OFF-AUTO" OR "ON-OFF" SWITCH AS REQUIRED BY THE APPLICATION, RED AND GREEN PILOT LIGHTS AND FOUR NORMALLY CLOSED AND

NORMALLY OPEN INTERLOCK CONTACTS. K. THE STARTER DISCONNECT SHALL BE OPERABLE BY AN EXTERNAL "ON-OFF" LABELED HANDLE, INTERLOCKED TO PREVENT OPENING THE ENCLOSURE DOOR WHILE THE DISCONNECT IS IN THE "ON" POSITION EXCEPT WHEN CONSCIOUSLY OPERATING

A PERMISSIVE RELEASE DEVICE. L. FURNISH STARTERS MANUFACTURED BY SQUARE D, CLASS 8536, ALLEN BRADLEY BULLETIN NO. 509, OR EQUAL.

7.0 PANEL BOARDS

A. PROVIDE DEAD FRONT CIRCUIT BREAKER TYPE PANEL BOARDS WITH COPPER BUS AND AS SCHEDULED ON DRAWINGS. EACH PANEL BOARD SHALL BE PROVIDED WITH A SEPARATE GROUND BUS IN ADDITION TO THE NEUTRAL BUS. CIRCUIT BREAKERS SHALL BE BOLT-ON AND HAVE A MINIMUM INTERRUPTING RATING OF 10,000 AMPERES AT 120 VOLTS, AND 14,000 AMPERES AT 277 VOLTS. A TYPEWRITTEN DIRECTORY SHALL CLEARLY IDENTIFY THE LOAD SERVED BY EACH CIRCUIT AND SHALL BE MOUNTED INSIDE THE DOOR IN A METAL FRAME WITH PLASTIC COVER. CIRCUIT NUMBERS SHALL BE PERMANENTLY INDICATED ADJACENT TO EACH CIRCUIT BREAKER.

8.0 GROUNDING

ERICO PRODUCTS OR EQUAL.

A. INSTALL GROUNDING AS SHOWN ON DRAWINGS. WHERE NOT INDICATED, INSTALL IN COMPLIANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.

DO NOT USE CONDUCTORS SMALLER THAN SIZE AWG #12. INACCESSIBLE CONNECTIONS SHALL BE MADE WITH THE EXOTHERMIC WELDING PROCESS USING EQUIPMENT MANUFACTURED BY BURUNDY OR

ACCESSIBLE CONNECTIONS SHALL BE MADE WITH BURUNDY, MULTIPLE BOLT CONNECTORS SPECIFICALLY APPROVED FOR THE APPLICATION. D. TO ASSURE ELECTRICAL CONTINUITY, INSTALL JUMPERS ACROSS METAL

TOGETHER BY HIGH RESISTANCE JOINTS. DO NOT EMBED GROUNDING CABLES DIRECTLY IN CONCRETE. USE SLEEVES WHEN PASSING CABLES THROUGH CONCRETE. BARE COPPER CABLES BURIED IN EARTH SHALL BE TINNED.

F. FURNISH GROUND RODS OF COPPER CLAD STEEL, 3/4 INCH IN DIAMETER, 10 FEET LONG, DRIVEN FULL LENGTH INTO THE EARTH. MAXIMUM RESISTANCE TO GROUND IS LIMITED TO 25 OHMS. ADDITIONAL GROUND RODS SHALL BE DRIVEN IF REQUIRED TO MAINTAIN THIS LEVEL

G. PARTS TO BE GROUNDED: SWITCH GEAR AND PANEL BOARD FRAMES, FIXTURES AND DEVICES, CABLE SHEATHS, NEUTRAL OF TRANSFORMERS, BOXES AND RACEWAYS, MOTOR FRAMES, STREET LIGHTS, NON-CURRENT CARRYING PARTS OF APPLIANCES AND DEVICES. AND ALL OTHER PARTS AND EQUIPMENT AS REQUIRED BY NEC. NEVER USE A NEUTRAL WIRE AS GROUNDING MEANS.

H. BOND EQUIPMENT WITH CONDUCTORS INSTALLED IN SAME CIRCUIT RACEWAY AND SIZED AS FOLLOWS:

1) EQUIPMENT RATED 50 AMPERES OR UNDER WITH ONE AWG #8. 2) EQUIPMENT RATED 50 TO 125 AMPERES WITH ONE AWG #6. 3) EQUIPMENT RATED OVER 125 AMPERES WITH ONE AWG #6 AND ONE# 1/O IN 3/4 INCH CONDUIT TO BUILDING GROUND LOOP OR GROUND ROD.

PROVIDE POWER AND LIGHTING CIRCUIT AND 120 VOLT GROUNDING RECEPTACLE WITH A GREEN GROUNDING CONDUCTOR OF THE SAME SIZE AND TYPE AS THE PHASE CONDUCTOR AND RUNNING IN THE SAME CONDUIT J. MAKE BONDING TO EQUIPMENT WITH APPROVED SOLDERLESS CONNECTOR.

CONTACT SURFACE SHALL BE UNPAINTED AND THOROUGHLY CLEANED BEFORE CONNECTION IS MADE TO INSURE A GOOD METAL CONTACT.

9.0 TRANSFORMERS

A. FURNISH DRY TYPE, THREE OR SINGLE PHASE TRANSFORMERS OF THE SIZE AND VOLTAGE INDICATED ON THE DRAWINGS, WITH FOUR (TWO ABOVE AND TWO BELOW) 2-1/2 PROOF ENCLOSURE WITH FRONT ACCESSIBLE WIRING COMPARTMENT AND CONFORMING TO THE APPLICABLE REQUIREMENTS OF ANSI, IEEE, AND NEMA STANDARDS

B. CORE AND COIL ASSEMBLY TO BE VACUUM IMPREGNATED WITH CLASS H INSULATION. TEMPERATURE RISE NOT TO EXCEED 115 DEGREE C.

C. TRANSFORMERS SOUND LEVEL NOT TO EXCEED FOLLOWING VALUES: 0 TO 9 KVA, 36 DB; 10 TO 45 KVA, 42 DB; 50 TO 100 KVA, 45 DB. D. BOLT FLOOR MOUNTED TRANSFORMERS TO FLOOR. WHEN WALL MOUNTED, PROVIDE STEEL BRACKET ANGLES AND BOLT TRANSFORMER TO BRACKET. USE NEOPRENE

ISOLATION PADS TO ISOLATE VIBRATIONS. E. ADJUST PRIMARY TAPS TO PROVIDE A SECONDARY VOLTAGE WITHIN +5 OF NOMINAL

10.0 DUCT BANKS

A. DUCT BANKS OF THE SIZE INDICATED ON DRAWINGS, SHALL CONSIST OF A NUMBER OF INDIVIDUAL PVC DUCTS AS INDICATED, ENCASED IN A REINFORCED CONCRETE

B. USE PVC SCHEDULE 40 CONDUITS WITH MOLDED INTERLOCKING SPACERS. CONCRETE TO BE CLASS C, 2500 POUNDS PSI. PROVIDE # 12 AWG PULL WIRE IN ALL EMPTY

C. SLOPE DUCTS A MINIMUM OF 3 INCHES PER 100 FEET. SLOPE TO BE AWAY FROM BUILDINGS, FROM ONE MANHOLE TO THE NEXT OR BOTH WAYS FROM A HIGH POINT BETWEEN MANHOLES. KEEP THE HIGHEST POINT NOT LESS THAN 24 INCHES BELOW THE FINISHED GRADE.

1- ALL CIRCUITS TO CARRY A FULL GROUND WIRE PER N.E.C. ARTICLE 250.

2- ELECTRICAL SERVICE TO WITHSTAND UTILITY AVAILABLE FAULT CURRENT AND BUILT PER FPL STANDARD. CONTACT YAREMIS SANTOS PHONE (786) 449-6053 F.P.L.

REPRESENTATIVE IN THIS AREA. 3- SEE STRUCTURAL DRAWINGS FOR INSTALLATION DETAILS.

4- THE SHORT CIRCUIT CURRENT RATING (SCCR) OF THE ELECTRICAL PANEL SHALL BE ADEQUATE TO WITHSTAND THE MAXIMUM SHORT CIRCUIT CURRENT AT THE EQUIPMENT TERMINALS. USE STANDARD VALUE XX kA. REFER TO FP&L CORRESPONDING FAULT CURRENT LETTER ON DRAWING E-XX. PANELS SHALL BE FULLY RATED.

5- METER CAN AND MAIN DISCONNECT TO BE MOUNTED ON UNISTRUCT.

6- MOTOR CIRCUIT BREAKER TO BE CAPABLE OF BEING PADLOCKED IN THE OPEN POSITION AND NOT OBSTRUCT CLOSING OR OPENING OF DEAD FRONT.

7- TELEMETRY ANTENNA FOUNDATION TO BE MIAMI DADE STANDARD AND COMPLIES WITH FBC. 8- AC AND MISCELLANEOUS BREAKERS ARE FACTORY FURNISHED AS AN INTEGRAL PART OF

THE CONTROL PANEL. 9- MOTOR CIRCUIT PROTECTOR INDICATED IS AN ADJUSTABLE INSTANTANEOUS-TRIP MAGNETIC ONLY CIRCUIT BREAKERS FOR SINGLE MOTOR CIRCUIT PROTECTION AND ARE INTENDED FOR USE IN COMBINATION WITH MOTOR STARTERS WITH OVERLOAD RELAYS FOR THE PROTECTION OF MOTOR CIRCUITS FROM SHORT CIRCUITS AND OVERLOADS.

10- ALL CABLES SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY. MOTOR WIRES SHOWN ARE MOTOR POWER AND GROUND ONLY. SUBMERSIBLE PUMP CABLES MULTICONDUCTOR TO BE FURNISHED BY THE MANUFACTURER AS AN INTEGRAL PART OF THE MOTOR. IF THE PUMP IS FURNISHED WITH SEPARATED POWER AND CONTROL CABLES; CONTRACTOR SHALL INCREASE THE SIZE OF THE CONDUITS AS REQUIRED.

11- PUMP CONTROL PANEL SHALL BE MANUFACTURED AND LABELED PER UL 698A AND SUITABLE FOR SERVICE ENTRANCE USE.

12- PRESSURE TRANSDUCER TO BE SLX 130 OR EQUIVALENT.

13- WET WELL IS A CLASS I DIVISION 2 AND VALVE BOX IS A CLASS 1 DIVISION 2 HAZARDOUS LOCATION AS PER NFPA 820. SEAL OFF SHALL COMPLY WITH NEC. 501. PRESSURE TRANSDUCER AND FLOAT SWITCHES TO BE ADEQUATE FOR CLASS 1 DIVISION 2 LOCATION. ELECTRICAL EQUIPMENT IN VALVE VAULT TO BE ADEQUATE FOR CLASS 1 DIVISION 2 LOCATION.

14- MAIN DISCONNECT SWITCH SIZED TO MATCH MAIN CIRCUIT BREAKER AND IN A PAD LOCKABLE SERVICE RATED, xx kA.I.C. MIN. NEMA 4X STAINLESS STEEL ENCLOSURE. TOP SHALL NOT BE HIGHER THAN THE TOP OF THE CABINET.

15- CONTROL PANEL SHALL INCORPORATE TAMPER/INTRUSION SWITCH(ES) THAT ACTIVATES AN ALARM TO THE RTU WHENEVER THE PANEL IS OPENED. THE SWITCH SHALL BE LOCATED ON EACH PANEL DOOR WHERE A DOOR HANDLE IS PROVIDED.

16- THE TEMPERATURE RATING ASSOCIATED WITH THE AMPACITY OF A CONDUCTOR SHALL COMPLY WITH NEC 110. 17- MAXIMUM GROUND RESISTANCE SHALL NOT EXCEED 25 OHMS PER ELECTRODE AS PER SYMBOL-LEGEND:

0

UNDERGROUND POWER CONDUIT ELECTRICAL CIRCUIT RUN EXPOSED FUSED SAFETY SWITCH - NUMBER INDICATES POLES, TRIP AND FRAME - SIZE "O" FOR

TRIP INDICATES A NON-FUSED SWITCH

DUPLEX CONVENIENCE OUTLET

TOGGLE SWITCH ON-OFF TYPE

T H **TRANSFORMER** HORN В MMOTOR

GROUND FAULT INTERRUPTER RECEPTACLE JUNCTION BOX

> PUSH BUTTON PUSH BUTTON, ON-OFF TYPE, MAINTAINED POSITION.

OVERLOAD TEMPERATURE ACTUATED SWITCH

LIMIT SWITCH

RELAY CONTACT NORMALLY OPEN, CLOSES \rightarrow ON ENERGIZATION, OPENS ON RELAY CONTACT NORMALLY CLOSED, OPENS

ON ENERGIZATION, CLOSES ON DE-ENERGIZATION

△ DELTA CONNECTION PWR. XFMR. 3PH. ─ WYE GROUNDED. NEUTRAL CONNECTION POTENTIAL XFMR. MEDIUM DRAWOUT PRIMARY FUSED NUMERAL INDICATES QUANTITY.

CONTROL POWER XFMR. CURRENT LIMITING FUSE SURGE CAPACITOR & LIGHTNING ARRESTER

FLOW SWITCH FLOAT SWITCH PRESSURE SWITCH

NOTES (CONTINUED)

TIME DELAY RELAY CONTACT

18- ALL ELECTRICAL EQUIPMENT AND APPURTENANCES SHALL COMPLY WITH NEC 110.

19- MINIMUM CONDUIT SIZE TO BE 3/4" AND WIRE TO BE #12 CU. 20- LIGHTNING ARRESTER AND SURGE CAPACITOR SHALL BE INSTALLED IN PANEL AND CONNECTED TO A MULTI-WIRE LUG IN MAIN CIRCUIT BREAKER BY CONTROL PANEL

21- GROUNDING AND NEUTRAL CONDUCTORS SHALL BE BONDED AT ENTRANCE POINT ONLY.

22- PROVIDE PANEL MANUFACTURER'S RECOMMENDED SPARE PARTS FOR TWO YEARS. 23- A. THE CONTRACTOR SHALL FURNISH SHORT-CIRCUIT AND PROTECTIVE DEVICE COORDINATION STUDIES AS PREPARED BY THE ELECTRICAL EQUIPMENT

MANUFACTURER OR AN APPROVED ENGINEERING FIRM. B. THE CONTRACTOR SHALL FURNISH AN ARC FLASH HAZARD ANALYSIS STUDY PER THE REQUIREMENTS SET FORTH IN NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE, AND NEC 110. THE ARC FLASH ANALYSIS SHALL BE PERFORMED ACCORDING TO THE IEEE 1584 EQUATIONS THAT ARE PRESENTED

C. THE CONTRACTOR OF THE ARC FLASH HAZARD ANALYSIS SHALL PROVIDE WARNING

LABEL INDICATING SEVERITY OF POTENTIAL EXPOSURE AND LEVEL OF PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED. LABEL TO BE AS PER DETAIL IN SHEET E-3.

24- RTU ANTENNA FOUNDATION, POLE SUPPORT AND CONDUIT TO RTU PANEL, PROVIDED AND INSTALLED BY CONTRACTOR. 25- AS PER NEC ARTICLE 409.110 REQUIREMENTS, THE CONTROL PANEL SHALL BE MARKED

ASSEMBLY OR BY ANOTHER APPROVED METHOD.

IN THE LATEST CURRENT EDITION OF THE NFPA-70E.

26- SCADA RTU AND COMMUNICATION EQUIPMENT WILL BE BY MISSION. 27- FINISHED FLOOR ELEVATIONS (FFE) AND TOP OF SLABS MUST BE TWO (2) FEET ABOVE

28- AN ADDITIONAL 6"MAY BE REQUIRED IN AREAS WHERE SEA LEVEL RISE IMPACTS MAY BE

BASE FLOOD ELEVATION AS ESTABLISHED BY THE AREA'S FEMA FIRM MAP/PANEL.

29- PROVIDE NEMA 6 J. BOX AND HARD WIRE TO THE VALVE PIT SUMP PUMP. FLOAT SWITCH TO BE INSTALLED INSIDE THE VALVE VAULT TO SEND SIGNAL TO RTU AND TO CONTROL PANEL FOR LOCAL SIGNAL AS IT IS SHOWN ON CONTROL WIRING DIAGRAM AND RTU TERMINAL BLOCK ON SHEET E-600.

301 East Atlantic Blvd Pompano Beach, FL 33060

> PH: (954) 788-3400 Florida Engineering Business License: CA7928 Florida Surveyor and Mapper Business License: LB6860

Florida Landscape Architecture Business License: LC2600045 M.E. Engineering Consultants, Inc. 11401 SW 40TH Street Suite 301 Ph:(786)275-4635 CA 29121

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CHECKED BY:	ZM
BID-CONTRACT:	

Zoila Morales, P.E.

P.E. NO. 64981



PROJECT

ABBOTT AVENUE DRAINAGE **IMPROVEMENTS**

SHEET TITLE

│ELECTRICAL GENERAL │॑॑

E-100 PROJEC⁻ **NUMBER**

PARTS SEPARATED BY NON-CONDUCTING MATERIALS OR ATTACHED

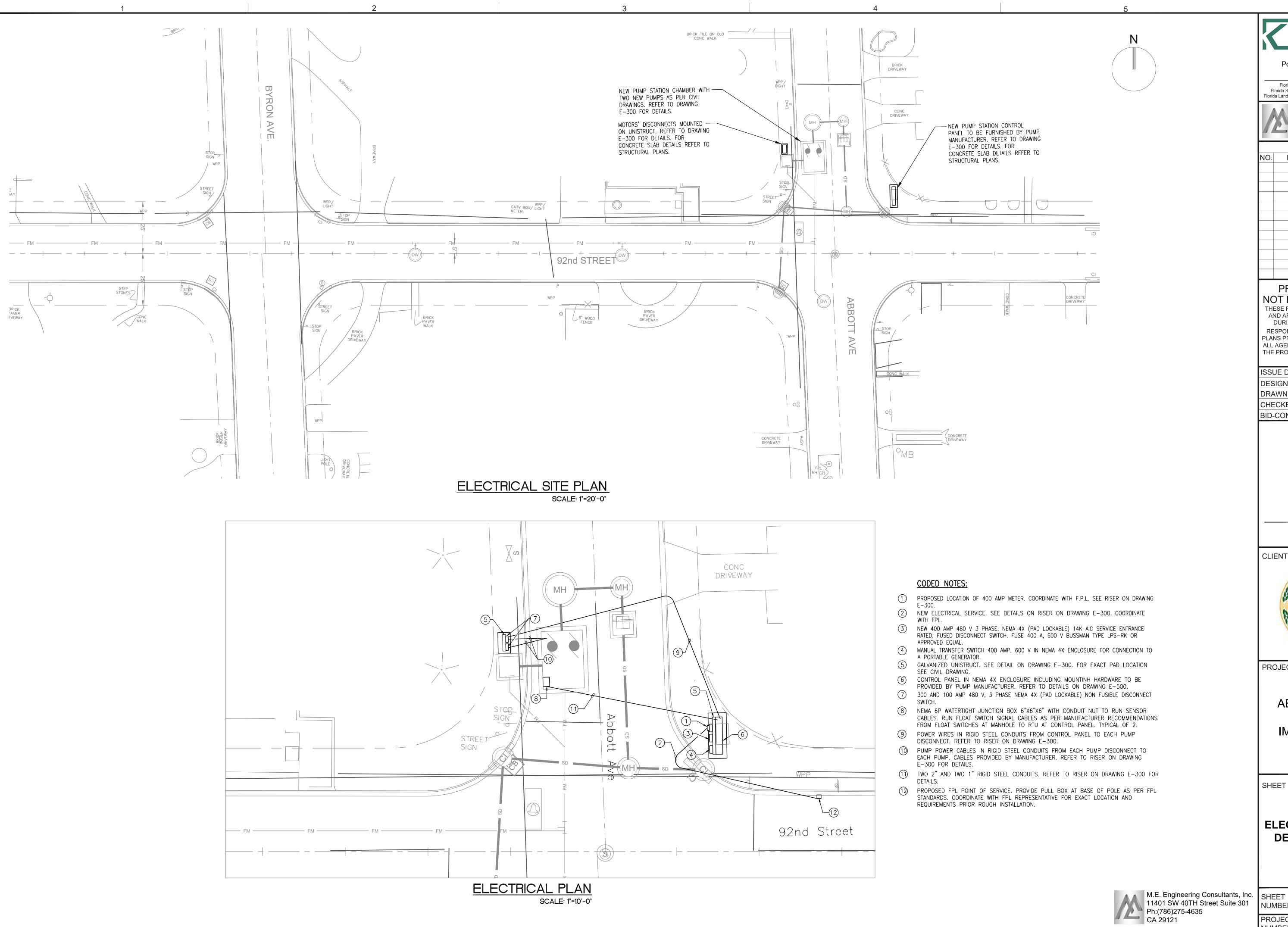
NEC ARTICLE 250.

WITH A SHORT CIRCUIT RATING THAT IS DETERMINED BY BEING A LISTED AND LABELED

NOTES-92ND STREET

NUMBER

11494.01



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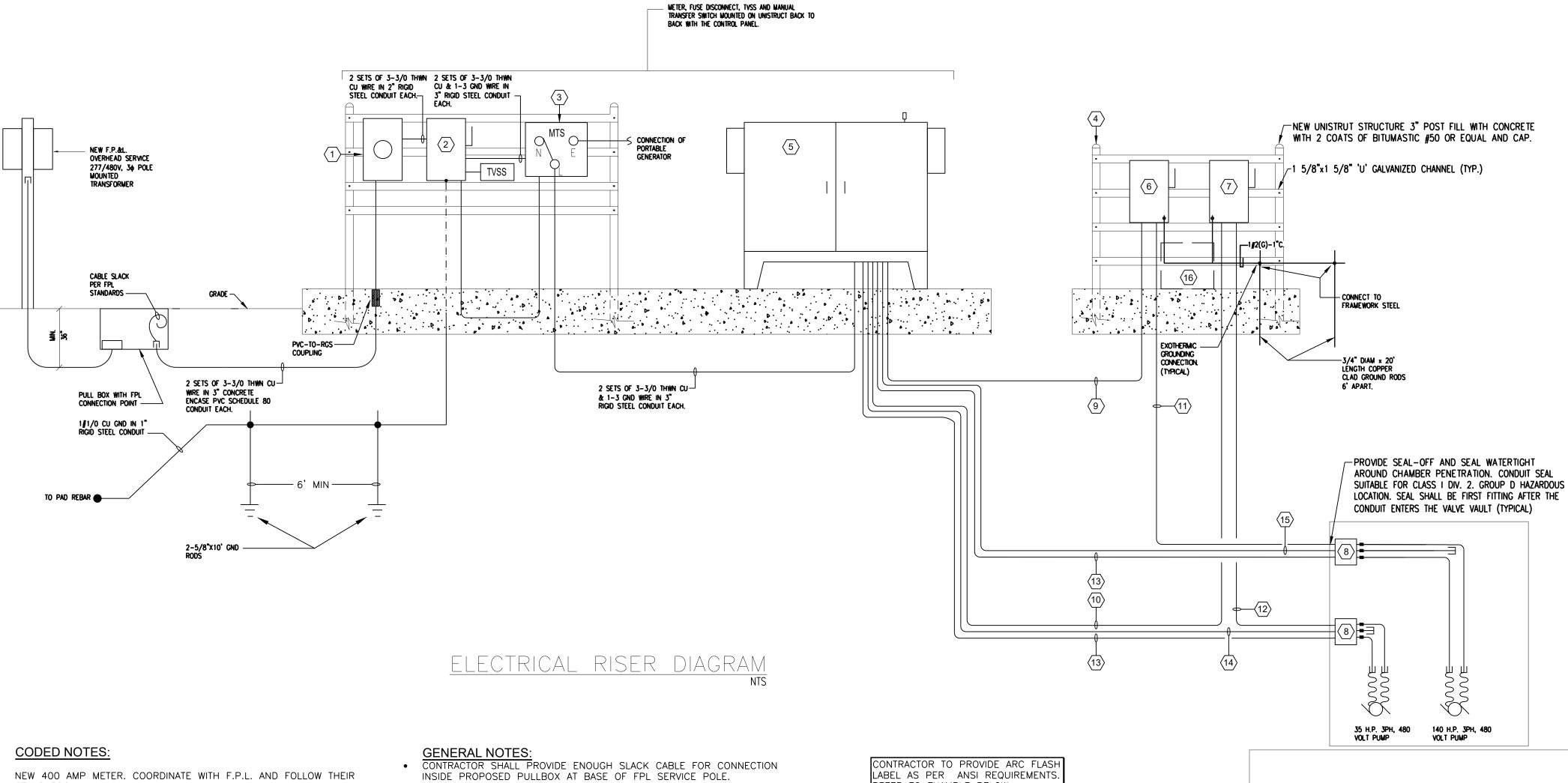
PROJECT

ABBOTT AVENUE DRAINAGE **IMPROVEMENTS**

SHEET TITLE

ELECTRICAL SITE AND **DETAIL PLAN-92ND** STREET

E-200 NUMBER PROJECT 11494.01 NUMBER



- STANDARDS.
- NEW 400 AMP 480 V 3 PHASE, NEMA 4X (PAD LOCKABLE) 14K AIC SERVICE ENTRANCE RATED, FUSED DISCONNÈCT SWITCH. FUSE 400 A, 600 V BUSSMAN TYPE LPS-RK OR APPROVED EQUAL.
- MANUAL TRANSFER SWITCH 400 AMP, 600 V IN NEMA 4X ENCLOSURE FOR CONNECTION OF A PORTABLE GENERATOR.
- 4 GALVANIZED UNISTRUCT. FOR EXACT PAD LOCATION SEE CIVIL DRAWING. 5 CONTROL PANEL IN NEMA 4X TYPE 316 STAINLESS STEEL ENCLOSURE (CONTINUOUS HINGE, PADLOCKABLE DOOR HANDLE). ENCLOSURE TO INCLUDE MOUNTING HARDWARE TO BE PROVIDED BY PUMP MANUFACTURER. REFER TO DETAILS ON DRAWING E-500.
- 6 300 AMP 480 V, 3 PHASE NEMA 4X (PAD LOCKABLE) NON FUSIBLE DISCONNECT
- 7 100 AMP 480 V, 3 PHASE NEMA 4X (PAD LOCKABLE) NON FUSIBLE DISCONNECT
- 8 NEMA 6P WATERTIGHT JUNCTION BOX 6"X6"X6" WITH CONDUIT NUT TO RUN SENSOR CABLES. RUN FLOAT SWITCH SIGNAL CABLES AS PER MANUFACTURER RECOMMENDATIONS FROM FLOAT SWITCHES AT MANHOLE TO RTU AT CONTROL PANEL. TYPICAL OF 2. REFER TO DETAIL ON DRAWING E-400.
- 9 POWER WIRES (3-4/0 & 1-#4 GND) IN 3" RIGID STEEL CONDUITS FROM CONTROL PANEL TO EACH PUMP DISCONNECT. SIZE AS SHOWN.
- 10 POWER WIRES (3-#3 & 1-#8 GND) IN 1.5" RIGID STEEL CONDUITS FROM
- CONTROL PANEL TO EACH PUMP DISCONNECT. SIZE AS SHOWN. 11 PUMP POWER CABLES (3-4/0 & 1-#4 GND) IN 2.5" RIGID STEEL CONDUITS

FROM PUMP DISCONNECT TO PUMP. CABLES PROVIDED BY MANUFACTURER.

- PROVIDE MINIMUM 10 FT OF SLACK CABLE INSIDE STRUCTURE. 12 PUMP POWER CABLES (3-#6 & 1-#8 GND) IN 1.0" RIGID STEEL CONDUITS FROM PUMP DISCONNECT TO PUMP. CABLES PROVIDED BY MANUFACTURER.
- PROVIDE MINIMUM 10 FT OF SLACK CABLE INSIDE STRUCTURE. 13 MANUFACTURER PROVIDED PUMP MONITORING PILOT CABLE IN 2" RIGID STEEL CONDUIT. PROVIDE MINIMUM 10FT OF SLACK CABLE INSIDE STRUCTURE.
- 14 MANUFACTURER RECOMMENDED CABLE FOR FLOAT SWITCHES IN 1" RIGID STEEL
- 15 MANUFACTURER RECOMMENDED TUBING FOR BUBBLER TUBE IN 1" RIGID STEEL CONDUIT. INSTALL TUBING AND CONDUIT IN ACCORDANCE WITH MANUFACTURER
- 16 MOTOR CONNECTION BOX. REFER TO DETAIL ON DRAWING E-600.

- CONTRACTOR TO COORDINATE WITH FPL AND FOLLOW THEIR STANDARDS.
- CONTRACTOR TO PROVIDE CONTROL PANEL SHOP DRAWINGS SHOWING WIRING DIAGRAMS WITH ALL POWER AND CONTROL INTERCONNECTIONS.
- CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR DISCONNECT
- SWITCHES, TVSS, GROUND ROD, CONDUCTOR, CONDUITS, ETC. CONTRACTOR TO KEEP LENGHT OF TRANSIENT VOLTAGE SURGE

SUPPRESSOR LEADS TO A MINIMUM.

1- 140 H.P. PUMP <u>177</u> AMPS. 1- 35 H.P. PUMP <u>42</u>AMPS. ENCLOSURES' AIR CONDITIONERS <u>14</u>AMPS MISCELLANEOUS BASE LOAD <u>30</u>AMPS. 25% OF LARGEST MOTOR <u>44.25</u> AMPS. TOTAL <u>307.25</u> AMPS.

LOAD CALCULATION

PROVIDE SERVICE SIZE: 400 AMP. 277/480 VOLT, 36, 4W

REFER TO EXAMPLE BELOW.



FAULT CURRENT CALCULATION MAIN DISCONNECT

10,746 SYMM. S.C.A. AVAILABLE AT F.P.&L. Co. TRANSFORMER SECONDARY AS PER FPL LETTER ON THIS DRAWING 60 FEET #3/0 Cu. CONDUCTORS IN PVC CONDUIT

f -	1.73 x L x I		(1.73)(60)(10,746)	- = 0.083
, –	C x E _{L-L}	_	(2)(13,923)(480)	0.003
M =	1	_	1	= 0.923
IVI —	1 + f	_	1 + 0.083	- 0.923

AVAILABLE FROM UTILITY x M =(10,746)(0.923) = 9,918.5 Amps

PROVIDE 14k S.C.A. RATED FUSE AT THE MAIN

FAULT CURRENT CALCULATION AT CONTROL PANEL

9,918.5 SYMM. S.C.A. AT MAIN 10 FEET #3/0 Cu. CONDUCTORS IN PVC CONDUIT

f= -	1.73 x L x I C x E _{L-L}	_ = _	(1.73)(10)(9,918 (2)(13,923)(480	 			
M =	1 1 + f	= .	1 + 0.0128	= 0.987			
	Isca =	Isca Al	ΓMAIN x M =	(9,918)(0.987)	=	9,789	Amps

PROVIDE 14k S.C.A. RATED BREAKERS AT CONTROL PANEL



January 31, 2023

Zoila Morales, P.E. 11401 SW 40th ST, Suite 301 Miami, FL 33165

Re: Available Fault Current for Abbott Ave Stormwater Improvements - 92nd and Abbott

Dear Zoila Morales, P.E.:

Thank you for contacting FPL about the available fault current at Abbott Ave Stormwater Improvements - 92nd and Abbott. Based on the plans you have provided dated July 22 2022, the maximum available fault current at the transformer secondary terminals is estimated to be 10746 symmetrical amperes at 277/480 volts. The protective device on the line side of the transformer currently in place or to be installed and serving your property located at the subject location is a 10 amp type KS fuse. The primary service voltage is 13.2kV L-L. This calculated symmetrical fault current is not intended for use as the basis for motor starting calculations and does not include:

• Consideration for any motor contribution or Fault current asymmetry.

The FPL equipment currently serving or planned to serve your facility may change over time as a result of any number of factors, including but not limited to transformer replacements due to load growth, electrical grid changes or emergencies. As a result, although we are providing you with this information for the sole purpose of assisting you in the completion of your study, you and your client should not design, install or operate your system in reliance upon any expectation that the specific size and type of equipment currently in place will remain so. If and when the size and type of the equipment changes, our employees are not always in a position to immediately notify customers.

As the construction project progresses, any questions or information you may need can be communicated through me. I have enclosed my business card for easy reference and look forward to hearing from you in the near future.

Asabella Arcos

Distribution Engineer Central Dade Service Center, Florida Power & Light Phone: [Cell] 786-719-0535 [Office] 305-377-6087 Email: Isabella.Arcos@fpl.com or ima0ati@fpl.com Office:122 SW 3rd ST, Miami, FL, 33130



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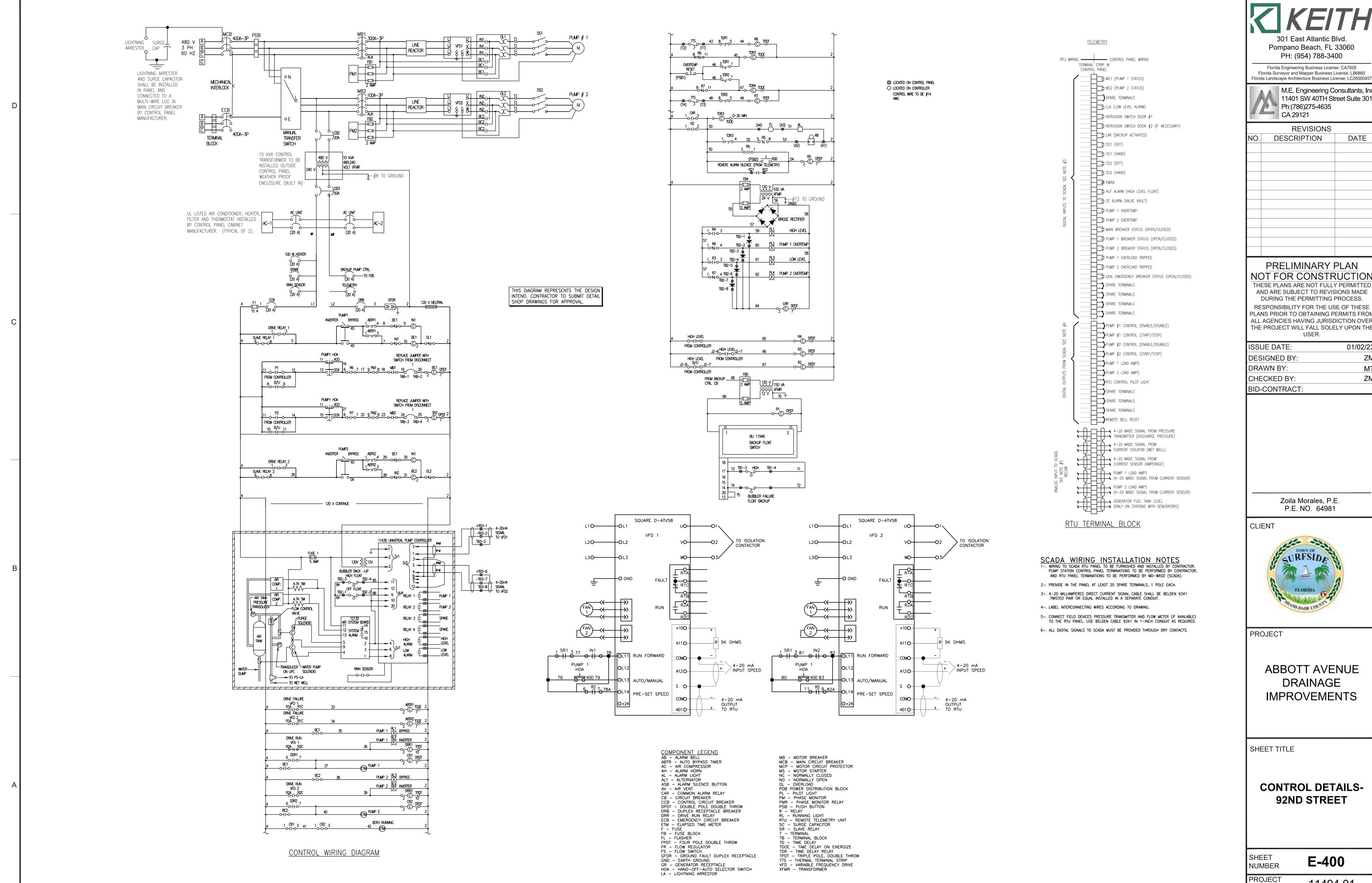
PROJECT

ABBOTT AVENUE DRAINAGE **IMPROVEMENTS**

SHEET TITLE

ELECTRICAL RISER DIAGRAM, NOTES AND LOAD CALCULATION-92ND STREET

E-300 NUMBER PROJECT 11494.01 NUMBER



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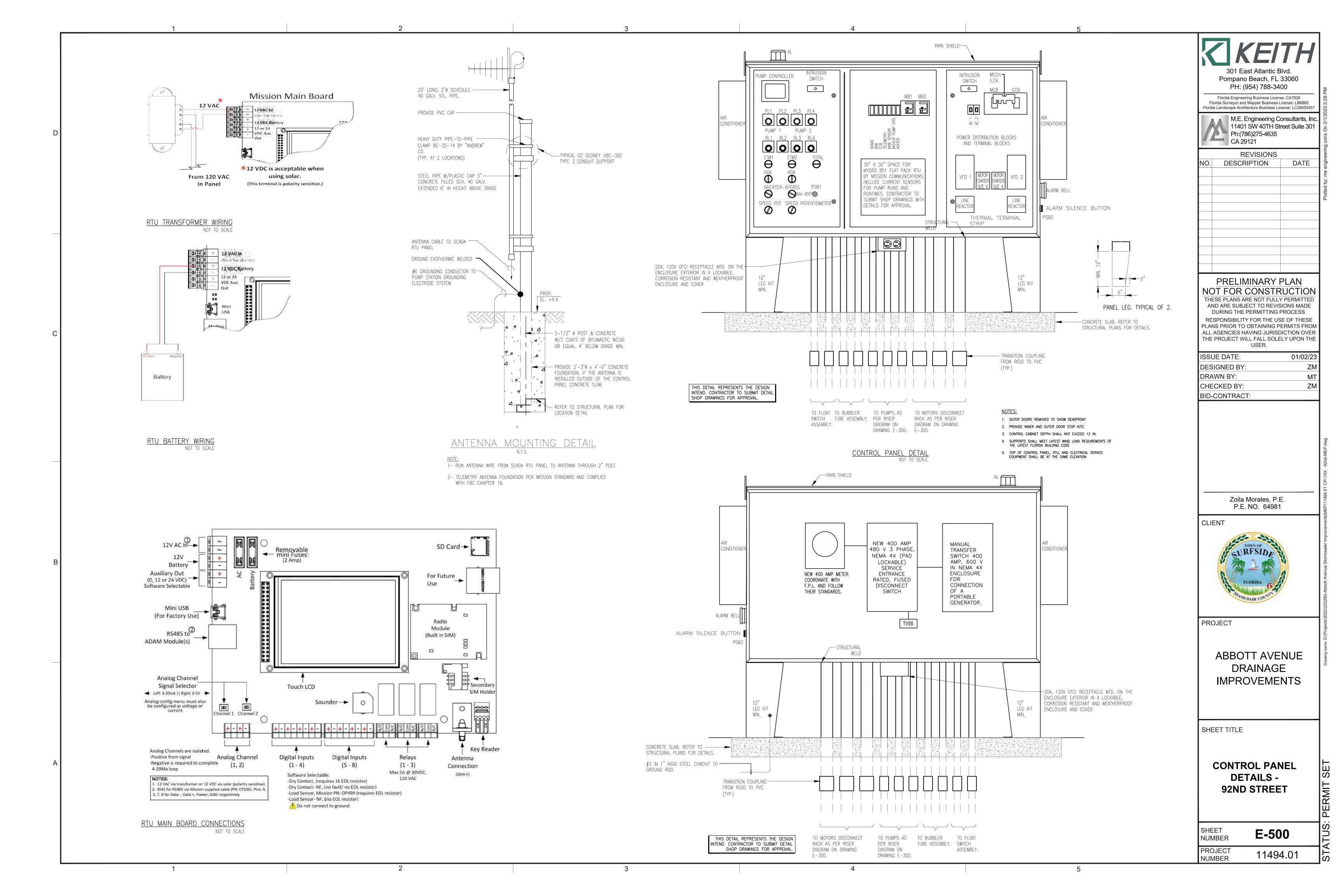
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ABBOTT AVENUE DRAINAGE **IMPROVEMENTS**

CONTROL DETAILS-

E-400 11494.01 NUMBER



TYPICAL GROUND ROD INSTALLATION DETAIL N.T.S.

TRENCH DETAIL

N.T.S.

<u>PAVED AREAS</u> SEE CIVIL

DRAWINGS PAVING DETAIL

COMPACTED BACK FILL

MIXTURE OF TOP SOIL &

SAND TO PROMOTE GRASS TO APPLY APPROPRIATE

GROWING. 2" MIN. DEPTH LAYERS OVER THE NEW

SEE GROUNDING NOTES ON SHEET E-5.

WARNING TAPE -

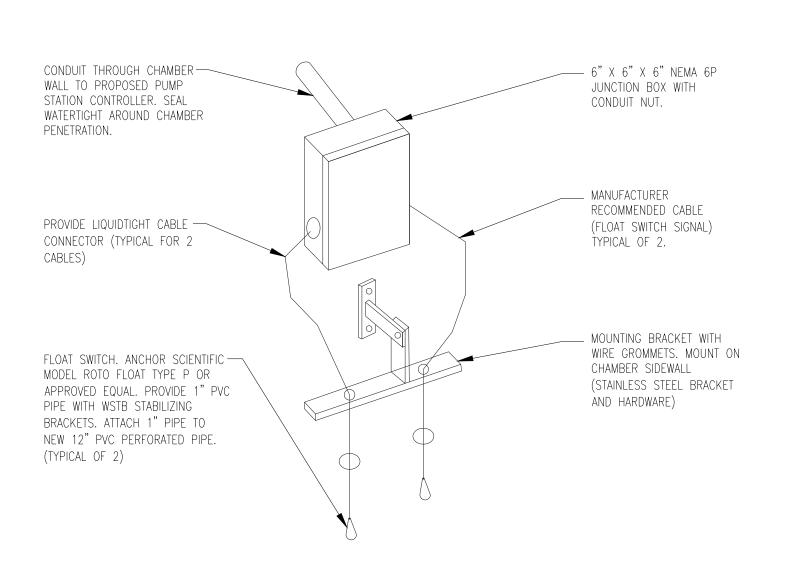
COMPACTED BACKFILL —

ELECTRICAL CONDUIT —

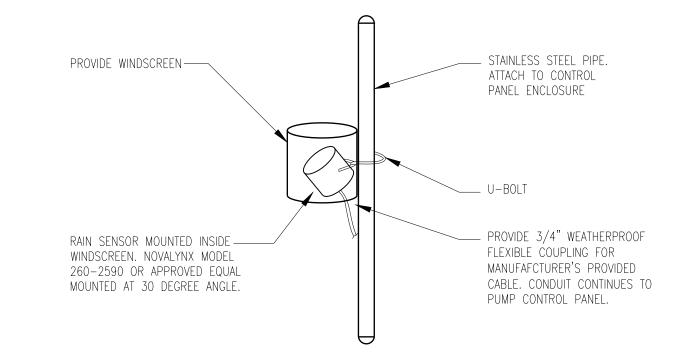
CONCRETE ENCASEMENT ——

20" X 24" X 8" (A) 6-POLE POWER INSULATED TERM NEMA 4X SS ENCLOSURE BLOCK PANEL MOUNT ALLEN W/HINGED BOLT-ON, BRADLEY BULLETIN 1492 SIZED AS PAD LOCKABLE COVER. REQUIRED. (B) 6-CIRCUIT CONTROL INSULATED TERM BLOCK PANEL MOUNT ALLEN PUMP MOTOR CABLES SHALL BE SUBMERSIBLE BRADLEY BULLETIN 1492 LISTED BY A NATIONALLY RECOGNIZED TESTING © CABLE CORD FITTING WITH GLAND NUT LOBARATORIES AND SHALL BE SUPPLIED & NEOPRENE BUSHING EQUAL TO INTEGRAL WITH MOTOR BY MANUFACTURER. CROUSE HINDS CGFP SIZE OR AS REQUIRED FOR CABLE O.D. ① 1/8" DRAIN AND VENTILATION HOLES © CONDUIT SEAL SUITABLE FOR CLASS I, DIV. 1, GROUP D HAZ. LOCATION WITHIN 18" OF ENCLOSURE AS PER NEC 501.1 (F) 3' X 3' X 6"CONCRETE SLAB. SEE STRUCTURAL © COAT WITH CLEAR URETHANE SEAL PVC COATED GALVANIZED RIGID CONDUIT ELECTRICAL-ELECTRONIC INSULATOR AS CRC SHALL BE USED FOR THE LAST 24 INCHES 'U' 02049 BEFORE ITS EMERGENCE, TYPICAL FOR ALL -TRANSITION COUPLING, CONDUIT ENTERING THE WET WELL H 2"ø POST GALV. STL. PIPE SCH. 40 FILLED TYPICAL TRANSITION COUPLING, WITH CONCRETE AND 1-5/8" X 1-5/8" SS TYPICAL UNISTRUT CHANNELS FOR SUPPORT RIGID NONMETALLIC SCH. 40 PVC CONDUIT RIGID NONMETALLIC -- ALL CONDUITS TERMINATED AT THE WET WELL SHALL BE ENCASED TO CONTROL PANEL, SEE RISER DIAGRAM SCH. 40 PVC CONDUIT IN A CONCRETE ENVELOPE A MINIMUM OF 3 INCHES FOR SIZE TO THE WET WELL

TYPICAL MOTOR CONNECTION BOX DETAIL



FLOAT SWITCH INSTALLATION DETAIL



RAIN SENSOR N.T.S.

260-2590 Precipitation Detector

260-2591 Leaf Wetness Sensor

Precipitation



260-2590 Precipitation Detector

The Model 260-2590 Precipitation Detector is used to detect the onset of rainfall. A gold plated grid sensor activates the circuit when water is deposited onto the grid. The presence of water activates an internal relay that may be used to operate larger capacity external

relays, alarms, doors, or may be used as an input to a

An internal heater constantly dries the grid to prevent relay activation during times of dew, fog, or light moisture that is not actual precipitation. During periods of normal precipitation the heater is unable to dry the grid and the relay is activated. The heater power may be disconnected allowing the detector to be operated as a

The solid state electronics are mounted in a sealed weatherproof enclosure. The precipitation detector may be tilted to allow water to drain off. A mounting bracket is provided with the sensor to allow mounting onto a 1" pipe by a U-bolt. The wind screen may be used to prevent premature drying of the grid during precipitation events accompanied by high winds.

The unit requires +12 Vdc power for operation. A 100-240 Vac power adapter is provided with each unit.

Specifications

leaf wetness sensor.

Sensor: Gold plated grid 4" dia Output: Relay (0.5 amps) Heater: Resistive element Power: 12 Vdc (235 mA max.) 100-240 Vac 50-60 Hz adapter Size: Overall 4" dia x 2" high Weight/shipping: 4 lbs/5 lbs (1.8 Kg/2.3 Kg)

Ordering Information

Precipitation Detector, 100-240 Vac, 25' cable Leaf Wetness Sensor, 100-240 Vac, 25' cable 260-2591 Leaf Wetness Sensor with heater control, 100-240 260-2592 Vac, 25' cable

330-0524 Additional Cable, per foot

NovaLynx Corporation PO Box 240 Grass Valley CA 95945 Phone: (530) 823-7185 Fax: (530) 823-8997 USA Toll Free: 1-800-321-3577 www.novalynx.com 137

260-2590 Precipitation Dectector shown without wind screen



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PROJECT

ABBOTT AVENUE DRAINAGE

SHEET TITLE

ELECTRICAL DETAILS -92ND STREET

E-600 PROJECT 11494.01 NUMBER

IMPROVEMENTS