

ENGINEER'S PROJECT NO.
B5018.00

PROJECT: Lake Worth Wastewater Pump Station No. 4
and Generator Replacement
Lake Worth Solicitation No. IFB-16-108
Lake Worth Project No. LS1503

DATE: March 11, 2016

ADDENDUM NO. 1

TO: ALL PROSPECTIVE BIDDERS

Pursuant to the Invitation to Bid on this Project, you are instructed to make the following modifications to the Project Contract Documents, which modifications shall constitute a portion of the Contract Documents and be an integral part of the Project:

GENERAL

A non-mandatory Pre-Bid Meeting was held on March 1, 2016. The Pre-Bid Meeting Minutes and the attendance sheet are included in this Addendum.

PROJECT MANUAL

(1) Replace Page 00020-1 Invitation to Bid with the revised page attached. The revised Invitation to Bid includes the following changes:

The number of days for Bid withdrawal has been updated.

(2) Replace page 00300-6 of the Bid Form with the revised page attached. The revised "Schedule of Values" includes the following changes:

The Wilo-Emu pump is included in the base bid, an ABS (Sulzer) pump has been added to the Alternative Pump Packages, and the Alternative Pump Packages have been changed to deductive alternates.

(3) Replace Section 15161, "Submersible Wastewater Pumps" in its entirety.

CONSTRUCTION DRAWINGS

(1) Replace sheet E1-1 and E2-1 in their entirety. Electrical conduits have been added to the Electrical Site Plan and Electrical Equipment Rack detail.

ENGINEER'S CLARIFICATIONS

The following clarifications are provided:

(1) The golf course will be fully operational during construction of the new pump station.

(2) Filtered dewatering water that meets NPDES requirements may be discharged into the existing storm system. The Contractor is responsible to provide the necessary settling tanks

to reduce the turbidity levels of the dewatering water to meet current NPDES requirements prior to discharge into the storm system. There is an existing stormwater manhole just south of the existing pump station. Dewatering water may not be discharged to the sanitary sewer system.

- (3) The existing generator is to be relocated by the Contractor to Pump Station No. 15 as indicated on Sheet C0-3 in the Sequence of Construction. The relocation of the generator does not include installation. The generator is to be delivered to the Pump Station No. 15 site located at the southeast corner of Lantana Road and Old Congress Road and set on the generator pad. The Contractor shall coordinate the generator relocation with Lake Worth Utilities staff.
- (4) Permax CTF may be used as the lining material for sanitary sewer ductile iron pipe and fittings as an alternative to Protecto 401.
- (5) The conventional installation method for the pump station is feasible. It will require sheeting and dewatering.
- (6) The cart path is to be restored per detail 2 on Sheet C5-4.
- (7) All sod disturbed during construction is to be replaced with Bermuda 419 as indicated on Sheet LP-1.
- (8) The golf course irrigation system is maintained by Lake Worth golf course staff. The Contractor will be required to coordinate with golf course staff to identify the location of the existing irrigation system and to coordinate repairs to the irrigation system. Damage to the irrigation system during Construction is to be repaired by the Contractor within 48 hours as indicated in note 18 on Sheet C0-2.
- (9) The Contractor is required to provide Record Drawings and a pressure test of the forcemain to the Engineer for submittal to the Palm Beach County Health Department for approval of the pump station. The approval process is typically two (2) to four (4) weeks.
- (10) The existing 36" gravity sewer pipe required to be cleaned is approximately 485 feet. A schematic of the pipe is shown on Sheet C0-2. The pipe contains approximately 2" of silt at the upstream manhole and 12" of silt at the downstream manhole. Heavy cleaning will be required for the pipe.
- (11) Anchor bolts and/or epoxy threaded anchors may not be used in lieu of the J-bolts indicated in the pump station details on Sheets C5-1 and C5-2 for installation of the pumps.
- (12) A drop pipe will not be required to be installed on the 36" influent pipe.
- (13) The Contractor is responsible to provide signed and sealed calculations from the wetwell manufacturer indicating the tremie seal thickness.

- (14) The Contractor is required to provide the temporary stabilized access drive indicated on Sheet C0-2. There are “soft areas” in the golf course where heavy equipment may get stuck. The temporary drive should be constructed to provide a stabilized path for the Contractor’s equipment.
- (15) As indicated in Section 01000 General Requirements, paragraph 11.0, the soil boring included in the Project Manual is not to be relied upon by the Contractor. It is provided for informational purposes only and is not a part of the Contract Documents.
- (16) There is an existing 4” pump out connection located on the south side of the station adjacent to the backflow preventers.
- (17) The existing pump station has not been bypassed previously.
- (18) The existing pump station discharges to a manhole at the east end of 12th Ave North as shown in the schematic on Sheet C0-2.
- (19) The City is not including an allowance for electrical improvements costs. The cost for electrical improvements should be included in the Contractor’s bid.
- (20) Lake Worth Electric Utilities Department is aware of this project.
- (21) The existing power pole indicated to be removed on Sheet C0-3 is to remain until the new pump station is placed into service.
- (22) Temporary power may be obtained from the existing power pole to remain.
- (23) There is not sufficient power to run both pump stations simultaneously. The start-up of the new station will have to be coordinated closely with Lake Worth Utilities staff.
- (24) The existing electrical service shall remain in place until the new station is placed into service. The demolition of the existing utility pole and electrical service shall commence after the new station is placed into service.
- (25) The condition of the existing sanitary sewer pipe is unknown at this time.
- (26) The 6-foot diameter manhole is sufficient for the installation. The existing pipes are 36” RCP which require 48” cores but the proposed pipe is a 36” ductile iron pipe which only requires a 42” core. The minimum wall between the pipes is provided with a 6-foot diameter manhole.

/s/ MOCK, ROOS ASSOCIATES, INC.

END OF ADDENDUM NO. 1

City of Lake Worth
Wastewater Pump Station No. 4 and Generator Replacement
Pre-Bid Meeting Minutes
March 1, 2016

(Lake Worth Solicitation No. IFB-16-108
Lake Worth Project No. LS1503)

A Pre-Bid meeting was held for the above referenced project on March 1, 2016 at 8:30 am at the Lake Worth Municipal Golf Course Clubhouse. The following people were in attendance:

Name	Company	Telephone No.	Email
Hirut Darge	City Lake Worth	561-586-1651	hdarage@lakeworth.org
Bobby Jenkins	City Lake Worth	561-586-1664	bjenkins@lakeworth.org
Judy Love	City Lake Worth	561-586-1719	jlove@lakeworth.org
Dave Laperna	City Lake Worth	561-586-1719	dperna@lakeworth.org
Mike Sweeney	Intercounty Engineering	951-972-7800 x.32	msweeney@intercountyengineering.com
Julie Parham	City Lake Worth	561-586-1798	pharham@lakeworth.org
Brian Shields	City Lake Worth	561-586-1675	bshields@lakeworth.org
Tom Biggs	Mock•Roos	561-683-3113 x.216	thomas.biggs@mockroos.com
Shampale Holland	Mock•Roos	561-683-3113 x.282	shampale.holland@mockroos.com
John Adkins	B&B Underground	561-249-0341	jadkins@bbundergroundcontractors.com
Angel Peel	Valley Crest	561-232-7506	
TC Blandford	Xylem/Godwin Pumps	954-895-8810	thomas.blanford@xylemine.com
Geoff Schmidt	Florida Design Cont.	561-845-1233	bids@floridadesigncontractors.com
Eric Doverspike	Kaman (Wilo)	305-345-8447	eric.doverspike@kaman.com
Rene Viau	Energy Efficient Electric	561-655-2211	rene@energyeff.com
Chase Rogers	Hinterland Group, Inc.	561-640-3503	crogers@hinterlandgroup.com
Steve Hockman	Smith Engineering	561-616-3911	steve@smithengineeringconsultants.com

A sign-in sheet and agenda were distributed at the meeting (copies attached). The items on the agenda were discussed as follows:

I. Introductions

1. Brian Shields, Utilities Director introduced the Purchasing Agent Hirut Darge. Darge noted that all bid questions are to be directed to Mock•Roos in writing for a formal response. Shields introduced Utilities Engineer Julie Parham and Mock•Roos as the Engineer for the project.

II. Project Contacts

1. The project contacts for the City and Engineer are as noted on the agenda.

III. Project Description

1. The project includes replacing the City's last dry pit/wet pit type station with a new triplex submersible pump station. Construction includes a new wetwell, valve vault, manhole, generator, electrical equipment, fencing, landscaping, and site restoration.

IV. Project Site

1. The project site features were reviewed noting that the project phasing indicated in the Bid Documents is to accommodate golf course usage and provide the least amount of disruption to play.
2. The site may only be accessed through the maintenance entrance on 14th Avenue North.
3. If the Contractor plans to use the storage area at the northeast corner of North Lakeside Drive and 12th Avenue North, they must still use the 14th Ave North entrance to access the site. Equipment may not be driven across the golf course.

V. Bid Documents

1. All bidders are required to register on Demand Star. Bidders that are not registered on Demand Star will be disqualified.
2. The base bid is the tremie construction method. The alternate bid is standard construction.

VI. Bid Questions

1. All questions are to be directed to Mock•Roos and only questions answered formally by addendum are binding.
2. The last day to submit a question is five business days before the Bid Opening on March 8, 2016.

VII. Bid Opening

1. The Bid Opening will be held at City Hall on March 15, 2016 at 3:00 pm.

VIII. Bid Security

1. A bid security in the amount of 5% of the bid should be included with the submitted bid package.

IX. Contractor Qualifications

1. All bidders must fully complete the qualifications information questionnaire and include it in the submitted bid package.

X. Contract Time

1. Phase 1 – This portion of the work is during the golf course off season. All heavy construction work should be completed during this phase of the work. Phase 1 is to be substantially complete within 180 days of the Notice to Proceed.
2. Phase 2 – This portion of the work will include the generator installation and site restoration. Phase 2 is to be substantially complete within 210 days of the Notice to Proceed.

XI. Contract Award

1. The Contractor is required to start construction immediately in order to complete heavy construction in the golf course off season.

XII. Other Items

1. Clarification about the 3% City of Lake Worth Building Permit fee was requested. The 3% fee is an allowance for the building permit and should be included in the Schedule of Values Item A.2. A credit will be provided to the City for the difference if the fee is less than 3%. All other permit fees (i.e. dewatering permit) required for the project should be included in Item A.2 as well. See Supplementary Conditions Section 00800, SC-6.13.
2. It was noted that the existing station is to remain in service until the new pump station is approved for service.
3. It was asked if demolition of the existing pump station is a part of the project. Demolition of the existing station is required as noted in the Bid Documents. Sheet C0-3 is the Demolition Plan and includes a sequence of construction.
4. It was noted that the existing pump station experiences heavy debris which should be considered for bypass pumping set up.

5. The engineer's estimate for the project was requested. The Engineer's estimate is \$800,000.
6. The existing pump station flow information and pump data was requested. The average daily flow is approximately 371 gpm. The existing pump is Wilo EMU FA15.44W submersible wastewater vortex pump.
7. It was asked if a riser up the electrical pole is required for the new electrical service. A riser and weather-head up the pole are required for the electrical service. The weather-head must be a minimum of two (2) feet below the pole's secondary wires.

XIII. Site Review

1. All meeting attendees were invited to the site to review existing conditions.

City of Lake Worth

Attendance Sheet - Pre-Bid Meeting



IFB 16-108 Wastewater Pump Station No. 4 & Generator Replacement (Mock

Solicitation No.: Roos)

Date & Time: March 1, 2016 @ 9:00 AM Lake Worth Golf Course Clubhouse

NAME - Please Print	COMPANY	CCNA ✓	TELEPHONE NO.	EMAIL ADDRESS
Hirut Darge	CLW		(561) 586-1651	hdarge@lakeworth.org
Bobby Jenkins	CLW		561 586-1664	
Jay Ross	CLW		(561) 586-1719	JLross@lakeworth.org
Dave Chapman	CLW		(561) 586-1719	D Chapman @ lakeworth.org
Mike Sweeney	Intercounty Engineering, Inc		(957) 972-7800 ext	m.sweeney@intercountyengineering.com
Julie Parham	CLW		(561) 586-1798	jparham@lakeworth.org
Brian Shields	CLW		(561) 586-1575	bshields@lakeworth.org
Tom Biggs	Mock Roos		(561) 683 3113 x26	Thomas. Biggs @ Mock Roos.com
Shampale Holland	Mock Roos		(561) 683 3113 x25	Shampale.holland@mockroos.com
JOHN ADKINS	BE B Under Ground Const.		(561) 249-0341	JADKINS@BBundergroundcontractors.com
ANSEL-PECI	---		(561) 232-7506	
TC Blanford	XVlum / Godwin Pump		(954) 895-8810	Thomas.Blanford@xvlininc.com
GEOFF SCHMIDT	FLORIDA DESIGN CONTRACTORS		(561) 845-1233	BIDS@FLORIDADESIGNCONTRACTORS.COM



WATER UTILITIES DEPARTMENT

301 College Street
Lake Worth, FL 33460
561.586.1710

Pre-Bid Meeting Agenda
for Wastewater Pump Station No. 4 and Generator Replacement
Lake Worth Municipal Golf Course Clubhouse
Tuesday, March 1, 2016
(Lake Worth Solicitation No. IFB-16-108
Lake Worth Project No. LS1503)

- I. Introductions
- II. Project Contacts
 - A. Owner: City of Lake Worth Water Utilities Department
Julie Parham, P.E., Utilities Engineer – (561) 586-1798
jparham@lakeworth.org
 - B. Consulting Engineer: Mock•Roos
Shampale Holland, P.E., Project Manager – (561) 683-3113 x-282
shampale.holland@mockroos.com
- III. Project Description
- IV. Project Site
- V. Bid Documents
 - A. Demand Star
- VI. Bid Questions
 - A. All questions are to be directed to Mock•Roos in writing.
 - B. Questions must be received within five (5) business days of the Bid Opening.
 - C. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- VII. Bid Opening
 - A. City of Lake Worth Procurement Office, March 15, 2015 at 3:00 p.m.
- VIII. Bid Security
- IX. Contractor Qualifications
- X. Contract Time
 - A. Phase 1
 - B. Phase 2
- XI. Contract Award
- XII. Other Items
- XIII. Site Review

PROJECT: Wastewater Pump Station No. 4 and
Generator Replacement
Lake Worth Solicitation No. IFB-16-108
Lake Worth Project No. LS1503

Date: February 11, 2016

00020
INVITATION TO BID

Sealed bids, in duplicate, will be received by City of Lake Worth Procurement Office, City Hall, 2nd Floor, 7 North Dixie Highway, Lake Worth, Florida 33460 for the subject Project until 3:00 p.m. local time, March 15, 2016, then opened publicly at that time.

The OWNER for the Project is City of Lake Worth, Florida.

A pre-bid meeting will be held at the Lake Worth Municipal Golf Course Clubhouse on Tuesday, March 1, 2016 at 9:00 a.m. Attendance by prospective bidders is highly recommended, but not mandatory. If a prospective bidder is unable to attend the pre-bid meeting, they should schedule another time with utility staff to review the project work area, (561) 586-1798.

The Contract Documents will be open to inspection at Mock, Roos & Associates, Inc., 5720 Corporate Way, West Palm Beach, Florida 33407 or in electronic form on the City of Lake Worth website: www.lakeworth.org/business/bids.

Contract Documents may be obtained for bidding from DemandStar: www.demandstar.com. All bidders must be a plan holder of record with DemandStar.

This Contract is a unit price contract.

Bids must be accompanied by a Bid Security in the form of a certified or bank check made payable to the Owner, or a Bid Bond. The amount of the security shall not be less than five (5) percent of the Bidder's total price indicated in Bid Form.

No Bid may be withdrawn for a period of 120 days after the scheduled closing date for the receipt of bids except as otherwise provided in Article 13 of the Instructions to Bidders.

The successful Bidder, who is awarded the Contract, shall be required to furnish a 100% Construction Performance Bond and a 100% Construction Payment Bond.

The OWNER reserves the right to reject any or all Bids, to waive informalities, and to re-advertise.

/s/ Larry Johnson, P.E., Water Utilities Director

Publish: Palm Beach Post – February 14, 2016

Wastewater Pump Station No. 4 and Generator Replacement Schedule of Values

Item	Item Description	Quantity	Unit	Unit Price	Extended Price
E. Wilo-Emu Pump					
1.	Submersible Pump Package (incl. rail system & accessories)	1	LS		\$
TOTAL BASE BID (A THROUGH E)					\$
F. Pump Station (Alternate Bid)					
1.	Temporary Sheeting and Dewatering	1	LS		\$
2.	Wetwell	1	LS		\$
3.	Valve Vault	1	LS		\$
4.	8" DIP Pump Discharge Piping, Valves, Quick Connect, & Appurtenances	1	LS		\$
TOTAL ALTERNATE BID (A AND C THROUGH F)					\$
Alternative Pump Packages					
G. Flygt Pump					
1.	Submersible Pump Package (incl. rail system & accessories)	1	LS	Deduct	\$
H. ABS Pump					
1.	Submersible Pump Package (incl. rail system & accessories)	1	LS	Deduct	\$

SECTION 15161

SUBMERSIBLE WASTEWATER PUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submersible Wastewater Pumps and Appurtenances.

1.02 RELATED WORK

- A. Electrical
- B. Pipe and Fittings
- C. Valves
- D. Concrete

1.03 SUBMITTALS

- A. Submit certified pump curves indicating pump performance characteristics with pump and system operating point.
- B. Pump manufacturer's affidavit of compliance, as well as test reports and pump performance tests for the pumping units. The tests shall be non-witness tests and be furnished prior to unit installation.
- C. Submit detailed assembly and installation drawings.
- D. Submit for each motor:
 - 1. No Load Current at rated voltage.
 - 2. Full Load Current at rated voltage.
 - 3. Power Factor at 0, 50, 75, 100, 115 Percent Full Load
 - 4. Efficiency at 50, 75, 100, 115 Percent Full Load.
 - 5. Locked-rotor Current and Amps at rated voltage.
 - 6. Breakdown Torque at rated voltage.
 - 7. Full Load RPM (Sip Frequency).
 - 8. Load WK2 capability.
 - 9. Stator Winding C Rise (Average, by Resistance).
 - 10. Outline Drawing and Weight.
 - 11. Descriptive material outlining construction features and hardware.
 - 12. Descriptive material outlining winding construction and insulation system.
- E. Submit six sets of operation, parts and maintenance manuals for each pump.

PART 2 PRODUCTS

2.01 GENERAL

- A. The pumps furnished under this section shall be the submersible, electrically driven type intended for handling raw, unscreened sewage.
- B. Each submersible pump unit shall be furnished complete with pump, motor, rail type removal system, pump base discharge elbow, and both the pump and the motor shall be furnished by the same manufacturer. A single manufacturer shall supply the above listed submersible pumps for the project.

2.02 MANUFACTURER:

A. Sewage pumps shall be manufactured by Wilo-EMU, Flygt Products or ABS (Sulzer).

The sewage pumps shall be equal to:

Pump Manufacturer	Pump Model	Motor No.	Installation Type
Wilo-Emu	FA15.44W	T 24-6/22KEx	Submersible
Flygt	NP3153.185	21-15-4AA-W	Submersible
ABS (Sulzer)	XFP 150G CBI	PE 110/6-G	Submersible

2.03 PUMP CRITERIA

A. Pump shall meet the following minimum criteria:

No. of Units	3	3	3
Pump Model	FA15.44W	NP3153.185	XFP 150G CBI
Impellar Diameter (mm)	363	194	275
Discharge (in)	6	6	6
Min Hydraulic Requirements	1,000 gpm @ 29' TDH Shutoff head = 62'	1000 gpm @ 29' TDH Shutoff head = 58'	1000 gpm@29' & TDH Shutoff head = 60'
Power	230V, 3 Phase, 60Hz	230V, 3 Phase, 60Hz	230V, 3 Phase 60 Hz
Motor No.	T 24-6/22KEx	21-15-4AA-W	PE 110/6-G
Maximum Motor HP	25	12	15
Max Number of Starts per Hour	10	10	10
Installation Type	Submersible	Submersible	Submersible

2.04 PUMP DESIGN AND CONSTRUCTION

A. General Pumping Unit Requirements:

1. The sewage pumping units shall be vertical, non-clogging, centrifugal sewage pumps with bottom inlet and side discharge. The pumps shall be direct driven by integral squirrel cage, electric induction motors.
2. The pump(s) shall be the submersible type capable of operation fully submerged to a depth of 42 ft. normally. The pump motors shall be guaranteed to run at maximum horsepower rating continuously for 24-hour operation without damage, overheating, or overloading in the dry pit configuration without additional modifications to the motor or cooling system.
3. All major components of the pumping unit (i.e., volute casing, stator housing, sealing chamber, etc.) shall be manufactured from close-grained cast iron.
4. All nuts, bolts, washers, and other fastening devices supplied with the pumps shall be 316 stainless steel.
5. All mating surfaces requiring a watertight seal shall be machined and fitted with Buna-n O-rings.
6. Pumps shall be furnished with standard Class 125 cast iron suction and discharge flanges that are capable of flange mounting. All pumps shall be provided with suction and discharge flanges for pipe connection.
7. Solids passing capability: Minimum 3.9 inches. Solids passage shall include both the pump volute and impeller and shall be demonstrated prior to pump installation at the job site.

B Pump Volute Casings:

1. Casings shall be manufactured from close-grained cast iron, and shall be furnished with a removable clean-out port cover.
2. The clean-out port shall be large enough to permit the removal of solids equal to or greater than the solids passing capability of the impeller.
3. The interior contour of the clean-out port cover shall conform to and be flush with the interior contour of the volute casing.

C. Impellers:

1. Pump impellers shall be manufactured from A536 ductile cast iron and shall be of the solids handling vortex vane type.
2. The impeller vanes shall be smooth, finished throughout, and shall be free from sharp edges.
3. Impellers shall be statically and dynamically balanced after assembly to the rotor.
4. Impellers shall be key driven and securely held to the shaft by a streamlined impeller washer and bolt assembly specifically designed to reduce friction in the suction eye of the impeller. The arrangement shall be such that the impeller cannot unscrew or be loosened by torque from either forward or reverse rotation. Designs based on threaded connection between pump shaft and impeller are not acceptable.
5. The impeller shall be capable of passing a solid non-deformable sphere of the diameter listed in Section 2.03 Pump Criteria, paragraph A item 12. above.

D. Shafts:

1. Pump shafts shall be Series 421 stainless steel. Carbon steel shafts or shafts with sleeves of any type are not acceptable. The shaft shall be one piece construction without joints or stubs attached.
2. Multiple row lower bearings for axial thrust and a single row upper bearing for radial thrust shall support the motor/pump shafts. Thrust bearings shall be restrained from thrust in both directions and this design point shall be demonstrated in submitted pump/motor cutaway drawing showing detail parts lists of components used restrain the shaft bearings. Designs that do not protect the pump/motor from thrust in reverse directions shall not be acceptable. Reversal of thrust forces always occurs as a result of operation at certain flowrates within the normal pumping curve.
3. All shafts shall be dynamically balanced and shall be amply sized to minimize shaft deflection. Shaft overhang shall not exceed 2.5 times the shaft diameter.
4. The oil contained and circulated in the motor shall lubricate all pump/motor bearings. Grease lubricated bearings shall not be provided or acceptable.
5. Minimum shaft diameter shall be 1.96 inches at the lowest mechanical seal.

E. Sealing Devices:

1. Each pump shall be provided with an enclosed block seal consisting of a cartridge containing both the upper and lower sets of mechanical seal faces. Regular tandem mechanical seal running in an oil bath shall also be acceptable provided the designs utilize all stainless steel springs, mounting hardware, and seal face retention components. The seal face housing and spring system shall be constructed of 316 stainless steel. Both sets of faces (both upper and lower sets) shall be silicon carbide. Conventional double mechanical seals with a spring

assembly between the rotating faces, requiring constant differential pressure to effect sealing and subject to penetration and opening by pumping forces shall not be considered equal to the enclosed block seal design or the tandem seal specified. Seal designs that use springs or housing materials other than type 316 stainless steel shall not be provided or accepted. Seal face materials other than silicon carbide shall not be accepted.

2. A moisture sensor shall be furnished in the seal area of each pump. This sensor shall be wired to the Pump Control Panel and shall activate an alarm light upon seal failure. The moisture sensor probe shall be mounted on the external portion of the sealing chamber. The probe shall be capable of being tested, removed, and replaced without having to disassemble any component of the pump/motor.

F. Power and Control Cables:

1. Power and control cables shall be furnished in lengths to run contiguously from the pump to the pump control panel as shown on the Contract Drawings and as specified herein. Cables shall terminate with conductor sleeves that bundle the entire group of strands of each phase to improve termination at the pump control panel. The sleeves shall be provided to confirm that all strands of each conductor is terminated properly. Power and sensor cables, which are not provided with these sleeves, shall be rejected and shall not be acceptable on in the installation. Termination shall be coordinated with the connection to the Pump Control Panel.
2. Cables shall be of the "SO" type and shall conform to industry standards for loads, resistance under submersion against sewage, and be of stranded construction. The cables shall enter the pump through a heavy duty galvanized cast iron entry assembly which shall be provided with an external clamp assembly to protect against tension once secured providing a strain relief function as part of standard construction.
3. The cables for each pump shall pass through the galvanized cast iron strain relief component and then through a series of stainless steel disks and Buna-n grommet that is sandwiched between the disks to control compression of the grommet. These components shall work to compress the cable jacket by the inner diameter of the grommet while the outer diameter of the grommet seals against the inside surface of the cable entry chamber in the top of the motor.

D. Motors:

1. Each pump shall be furnished with a squirrel cage, induction motor enclosed in a watertight housing suitable for use and compatible with all variable frequency drive systems.
2. The motor shall be suitable for dry pit installation under full load conditions. The motors shall be capable of installation in either the wet pit or dry pit installation without adding or removing any items to the motor's interior or exterior.
3. The motors shall be oil filled and furnished with moisture resistant Class F 155°C insulation treated to be moisture resistant, NEMA B design, certified and designed for continuous duty and shall be non overloading throughout the entire pump curve range of operation without utilizing the motor service factor. The motor service factor shall be a minimum of 1.15. The motor shall be designed for operation in Class I, Group D, Division 1 locations.
4. Motors shall be capable of sustaining 10 starts per hour (unlimited starts with VFD) at a minimum ambient temperature of 40°C.
5. Motors shall be capable of uninterrupted operation with a voltage drop of 10%.
6. The power cables entering the motor housing shall connect to individual terminal pins, which separates the incoming service from the pump motor. If leakage occurs, the terminal pins short out causing the main pump circuit breaker to trip indicating that moisture has gained access to the cable entry chamber before damaging the motor.

7. The motor shall be cooled via the internally circulated oil by means of a pump/motor shaft mounted oil circulation impeller. This design shall be capable of cooling the motor under all operating conditions without the need for external jackets, air conditioning systems, or sources of clear water for cooling purposes. Jackets, external fins, or de-rating shall not be acceptable.
8. The oil circulating through the pump shall provide positive oil lubrication to all the bearings in the pump. The upper bearing shall be of the open design so that oil must flow through and around the rotating elements as it returns from the top of the motor. The lower thrust bearing shall be pressure lubricated by the shaft mounted oil impeller that discharges pressurized oil from the oil impeller through the rotating elements of the bearing and then discharges this oil to the motor heat exchanger.
9. The motor/pump oil circulation impeller shall cause the oil to move through and around the stator windings and motor rotor from which it picks up heat. This heat is then directed into the motor heat exchanger that transfers the heat to the pumped liquid. The heat exchanger shall be located below the sealing chamber. It shall be provided with a labyrinth design channel system that keeps the coolant in contact with the heat exchanger surface for the required time in order to guarantee that all the heat is removed from the coolant before it is returned to the motor. The system shall be designed such that operation at reduced speed still provides satisfactory cooling for the motor under all operating conditions.
10. Cooling systems requiring separate, clean water source or that circulates the pumped sewage through a cooling jacket will not be accepted.
11. Thermal switches shall be furnished to monitor stator temperatures. The stator shall be equipped with two (2) thermal switches, embedded in the end coils of the stator spaced directly across from each other in the stator. Thermal switches shall automatically de-energize the motor when its temperature exceeds a preset limit as recommended by the manufacturer.
12. The pump manufacturer's nameplates shall be engraved or stamped on stainless steel and fastened to the motor casing with stainless steel screws or drive pins.

H. Suction Support Base Elbow

1. The suction support base elbow shall be provided to support the submersible pump in the installation. The suction elbow shall be capable of supporting the weight of the submersible pump as well as provide a secure and vibration free mount to allow the pump to operate at all points on the pump curve free from vibration.

I. Warranty

1. The pumps, motors, and materials will be covered by a five-(5) year warranty that shall comprise the following terms: The initial year from substantial completion of the equipment shall be covered 100 % for parts, labor, and materials. The following years 2 through 5 shall be covered 50 % for parts, labor, and materials. This warranty shall not be limited by hours of running time, operation from VFD, or requirements by the Owner to do any maintenance on the pumps.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install pumping units at locations shown on the Drawings. Installation shall conform to details shown on the Drawings and manufacturer's recommendations.

3.02 MANUFACTURER'S FIELD SERVICES

- A. Provide the services of the pumping unit manufacturer's authorized field representative to verify proper installation prior to start-up and to check initial operation. Provide instruction to Owner on proper operation and maintenance of the pumps.

3.03 FIELD QUALITY CONTROL

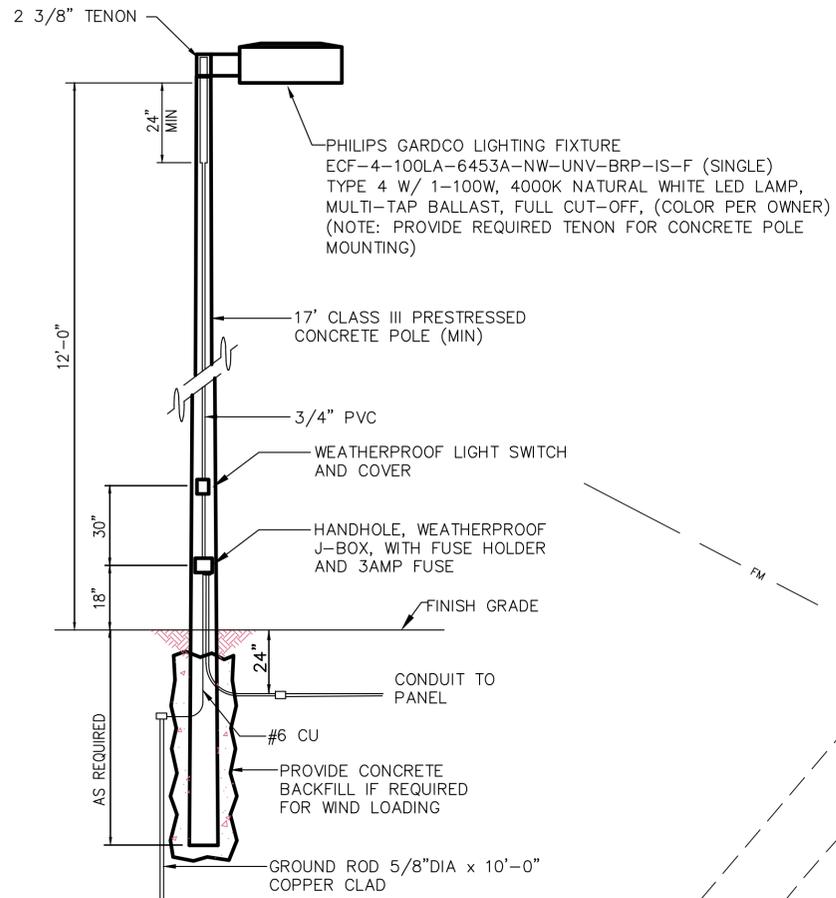
A. Field Testing:

1. After the installation of the Pumps, controls and all appurtenances, and when construction of other units of the pump installation will permit, each complete pump unit will be subject to field tests as specified herein under actual operating conditions. Testing shall validate pump operating conditions specified herein.
2. The field tests shall be made by the Contractor under the direct supervision of a qualified factory trained engineer, and in the presence of the Engineer. The Contractor shall provide, calibrate and install all temporary gauges and meters, shall make necessary tapped holes in the pipes, and install all temporary piping and wiring required for the field tests.
3. The field tests shall check each pump for the following:
 - Has not been damaged by transportation or installation.
 - Has been properly installed.
 - Have no mechanical defects.
 - Is in proper alignment.
 - Has been properly connected.
 - Is free of overheating of any parts.
 - Is free of all-objectionable vibration and noise.
 - Is free of overloading of any parts.

B. Test Reports

1. Submit certified copies of manufacturer's field start-up report.

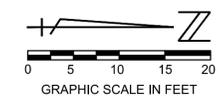
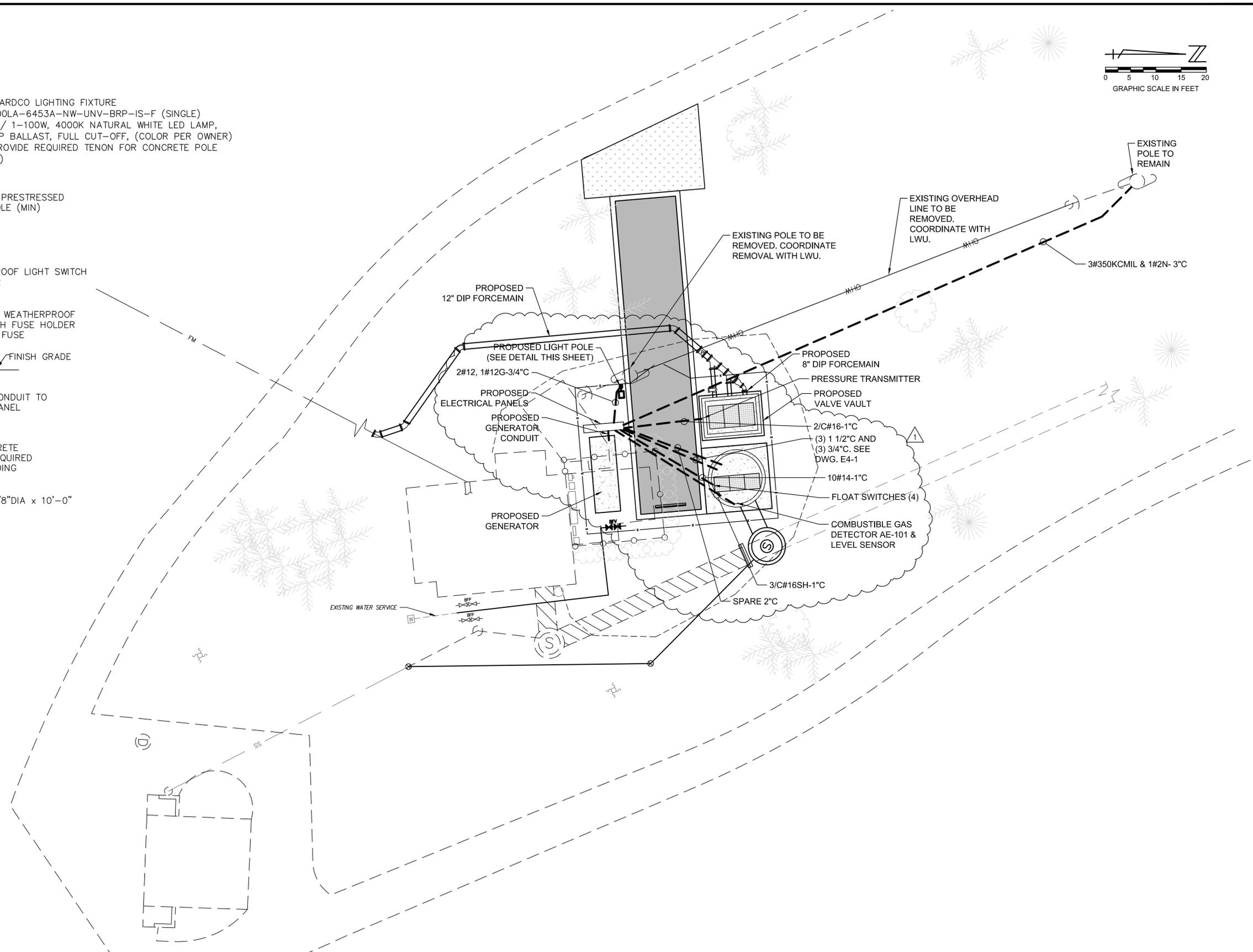
END OF SECTION



LIGHT POLE DETAIL
N.T.S.

WINDLOAD NOTE:

ALL POLE INSTALLATIONS SHALL BE SUITABLE FOR WIND LOAD IN ACCORDANCE WITH THE FLORIDA BUILDING CODE. THE CONTRACTOR SHALL INCLUDE WITH THE SHOP DRAWING SUBMITTAL, A POLE WIND LOADING CALCULATION SEALED BY A STRUCTURAL ENGINEER REGISTERED IN FLORIDA SHOWING THAT THE PROPOSED INSTALLATION WILL MEET THE WIND LOADING REQUIREMENT.



PLOT DATE: Mar 07 2016 9:17am XREFS: OT_15000 SURV.dwg p14r1a01_m01.dwg IMAGES: BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

CADD FILE: M:\SEC\2016\1515027 MRA-LWU\PS\1515027E-1.dwg	NO. 3/7/16	SPH	ADDENDUM NO. 1
NO.	DATE	BY	REVISION

SEC Smith Engineering Consultants, Inc.
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SEAL	FLORIDA E.B. NO. 48
LARRY M. SMITH FLORIDA P.E. NO. 45997	
DATE	

MOCK • ROOS
ENGINEERS • SURVEYORS • PLANNERS
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FLORIDA L.B. NO. 48	FIELD: D. LEAVY
	DRAWN: S.P.H.
	DESIGN: S.P.H.
	APPR: L.M.S.
	SCALE: AS SHOWN

ELECTRICAL SITE PLAN

WASTEWATER PUMP STATION NO. 4
AND GENERATOR REPLACEMENT

CITY OF LAKE WORTH
PALM BEACH COUNTY, FLORIDA

DATE:	JANUARY 2016
P.A. NO.	B5018.00
DWG. NO.	44-43-15-157
SHEET:	E1-1

