



Revised - AGENDA
CITY OF LAKE WORTH
ELECTRIC UTILITY ADVISORY BOARD MEETING
CITY HALL CONFERENCE ROOM
WEDNESDAY, AUGUST 03, 2016 6:00 PM

1. ROLL CALL:
2. PLEDGE OF ALLEGIANCE:
3. AGENDA - Additions/Deletions/Reordering:
4. PRESENTATIONS: (there is no public comment on Presentation items)
5. PUBLIC PARTICIPATION OF NON-AGENDAED ITEMS:
6. APPROVAL OF MINUTES:
 - A. EUAB 07.06.16 Minutes
7. UNFINISHED BUSINESS:
 - A. Willdan Financial Services - Economic & Financial Valuation Update
 - B. Purchase of digital radios with Radio One
8. NEW BUSINESS:
 - A. Purchase and install protective relay panels for the Hypoluxo Station
9. BOARD COMMENTS:
10. BOARD LIASON REPORTS AND COMMENTS:
11. ADJOURNMENT:

If a person decides to appeal any decision made by the board, agency or commission with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such

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purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. (F.S. 286.0105)

NOTE:ONE OR MORE MEMBERS OF ANY BOARD, AUTHORITY OR COMMISSION MAY ATTEND AND SPEAK AT ANY MEETING OF ANOTHER CITY BOARD, AUTHORITY OR COMMISSION.

**MINUTES
CITY OF LAKE WORTH
ELECTRIC UTILITY ADVISORY BOARD
MEETING
July 6, 2016 – 6:00 PM**

The meeting was called to order by Lisa Maxwell on the above date at 6:00 PM in the City Hall Conference Room, located at 7 North Dixie Highway, Lake Worth, Florida.

1. ROLL CALL:

Present were members: Lisa Maxwell, Ibrahim Chalhoub, Peggy Fisher, and Noah Tennyson.

Caroline Clore and Roger St. Martin were absent for the roll call. Roger St. Martin joined the meeting at 6:24 p.m.

Joel Rutsky, the Electric Utility Revenue Protection Manager, was present.

Walter Gill, the Assistant Electric Utility Director, was present.

John Borsch, the Electric Utility Director and Board Liaison, was also present.

2. PLEDGE OF ALLEGIANCE:

The pledge of allegiance was led by Noah Tennyson.

3. AGENDA – Additions/Deletions/Reordering:

The EUAB requested to reorder the agenda –Going forward, Board Comments moved after New Business.

The new business Item (D) - Prepaid Account Management System, Software and Implementation with Exceleron Software, LLC, discussed last.

4. PRESENTATIONS:

There were no presentations on the Agenda.

5. BOARD COMMENTS:

A. Peggy Fisher commended the Electric Utility for the brightness of the new street lights near her home.

B. Board member asked about the new street LED lights causing blindness and other health problems.

Board Liaison responded that about a year ago Electric Utility proposed the 4000 Kelvin LED lights and the Commission brought forward concerns of this causing health problems. Research on the possible health implications caused by the higher Kelvin LED light was conducted and it is recommended to use 3000 Kelvin LED lights and below to reduce the exposure to the blue light. The Commission along with Electric Utility decided the lower 2700 Kelvin LED lights were a better option as this unit of temperature does not cause any known health issues.

6. PUBLIC PARTICIPATION OF NON-AGENDAED ITEMS:

There was no public participation of non-agendaed items.

7. APPROVAL OF MINUTES:

A. EUAB Minutes 06.01.16

Action: The motion was made by Ibrahim Chalhoub to approve the minutes and seconded by Noah Tennyson.

Vote: Unanimous

8. UNFINISHED BUSINESS:

A. Willdan Financial Services - Economic & Financial Valuation Update

Staff submitted Willdan Financial Services report and provide copy of report to EUAB.

John Borsch stated the Willdan Financial Services report shows the value of Electric Utility to the City is around \$100 Million but according to the Valuation if sold the City would lose about \$12 Million.

EUAB stated there are legal constraints do not allow the selling of Electric Utility, at the moment it is not an option.

Staff will provide full report at the next EUAB meeting.

Peggy Fischer stated that in the report under the assumptions section Willdan Financial mentions option one (1) provided by Burton Associates and asked staff to provide details.

Staff responded that Burton Associates reported that in a number of years Electric Utility will need to maintain the reserves balance and there is a rate request that helps preserve this demand.

9. NEW BUSINESS:

A. Purchase Agreement with Circuit Breakers Sales & Service

Staff is notifying EUAB on quotes solicited for the purchase and installation of a new circuit breaker for the power plant. The best quote attained was from Circuit Breaker Sales & Services in the amount of \$23,150 for one (1) new General Electric PVVL-13.8-750-12 circuit breaker which is compatible with current switch gear. Electric Utility has enough funds to purchase one (1) circuit breaker for fiscal year 2016 and will order more towards the end of the year.

Lengthy discussion ensued.

EUAB suggested staff hires a Purchasing Agent in the Electric Utility department to assist with quotes and requisitions as the department is constantly soliciting services for repairs and replacement.

B. Professional Services Agreement with Ametek Solidstate Controls

Discussion regarding the S-4 inverter needing proactive, predictive, and preventive maintenance. Performing recommended Proactive & Preventive Maintenance (PM) on an annual basis will minimize plant downtime or unscheduled maintenance caused by adverse environmental conditions and equipment malfunction due to failed or aging components.

The S-4 inverter manufacture date is February 19, 1993. The unit was last serviced on August 14, 2003. The manufacturer recommends that preventive maintenance needs to be done every 10 years.

C. Purchase of Digital radios with Radio One

Walter Gill stated the Electric Utility is currently using an analog radio communication system that has been in service for close to 10 years and has surpassed its end of life support. The proposed two way radio system will include the MOTOROLA Linked Capacity Plus digital system, which provides a reliable and efficient radio; network functionality and two way radio communication system for the Electric Utility. This will accommodate all communications between all departments, services, and security. The purchase of radios from Radio One and all materials to complete the radio upgrade project in the electric utility in the amount of \$65,926.05.

Lengthy discussion ensued on the capacity and communication system for this product.

EUAB asked about the equipment Motorola will provide.

Staff provided the list as an attachment in the agenda.

EUAB had concerns on Motorola as a sole source and asked staff to clarify.

Staff responded that Radio One is the sole source for Motorola for the type of radios which meet the needs and requirements for the City.

Joel Rutsky stated current system is outdated and some of the features cannot be repaired. Our SCADA Engineer alongside a committee formed to research the radio products recommended Motorola as the vendor which met the features and future requirements of the City.

Lengthy discussion ensued.

EUAB requested additional information on Radio One and Motorola before making a recommendation.

D. Purchase three phase cable and materials for the Generator GT-1.

Staff reported that one phase of cable that ties GT-1 to 138 kV transmission cable phase has failed and cannot be repaired. An emergency replacement is currently in place and Electric Utility recommends changing all three cable phases along with the associated materials required for cable termination as the remaining two cables have long exceeded their life expectancies and are at a risk of failure.

EUAB asked about email notifications regarding the outages in the City is related to heat or GT-1.

Staff responded it is related to how the systems is stressed for generation.

EUAB asked is this an emergency purchase.

Staff responded yes it was an emergency purchase and the Mayor and City Manager were notified of purchase.

E. Prepaid Account Management System, Software and Implementation with Exceleron Software, LLC

Joel Rutsky presented a one minute video on a customer's experience using the prepaid system.

Joel Rutsky stated Exceleron Software, LLC has been in business for 16 years, they work over 100 utilities and manage about 140, 000 pre pay accounts. The City of Lake Worth desires to piggy back off of the City of Ocala's contract with Exceleron Software, LLC for a prepaid account management system software that allows residents to pre pay for their

Electric, Water & Sewer usage. The software also helps customers who can't afford large deposits to still move into the City of Lake Worth's service area.

Mr. Rutsky stated that with this software program customers are able to monitor account usage/balance on a daily basis and make payments as needed to keep their account in good standing. This program eliminates the need for staff to collect large utility deposits as well as help many of City's customers pay off past due utility balances. In addition, customers that sign up for the Pre-Paid system no longer receive a paper bill or a final notice letter and this alone results in an annual savings. This software is a tool to bring more residents into our City to help further our economic growth.

EUAB asked does this eliminate utility deposits.

Joel Rutsky responded no. This program is another option for customers who are required to make large deposit because no credit or bad credit. This pay as you go program also means the City will have less non-paying customers and ultimately reduce the City's debt on unpaid utility bills.

EUAB is this an option for commercial business.

Joel Rutsky stated this can be an option in the contract. We can work on some of the terms with Exceleron Software, LLC to include businesses.

The City of Lake Worth agreement will be for the next 36 months. For the first year FY 15-16, the implementation fee of \$15,000 will be charged to the Transmission & Distribution professional services account of the Electric Department. Thereafter, the City will be responsible for a monthly maintenance fee of \$3,000. The maintenance fee will be charged to the Meters' professional services in the consecutive years.

EUAB asked is the \$15,000 an all-inclusive fee and had concerns on the charge per participant monthly maintenance fee.

Joel Rutsky responded that \$15,000 is a onetime set up fee. The City will pay \$3,000 as a monthly maintenance charge. Exceleron will charge a monthly fee based on the number of prepaid participants in the program. This charge amounts to \$.20 per day for each prepaid participant which equates to approximately \$6.00 per month. Exceleron provides a ramp up minimum in months three and four after the initial pilot period in months one and two.

Lengthy discussion ensued.

Action: The motion was made by Ibrahim Chalhoub to recommend the Prepaid

Account Management System, Software and Implementation with Exceleron Software, LLC in the amount of \$95,000 over three years and seconded by Peggy Fisher.

Vote: Voice vote showed: AYES: Chair, Lisa Maxwell; and members, Ibrahim Chalhoub; Peggy Fisher. NAY: Roger St. Martin

10. BOARD LIAISON REPORTS AND COMMENTS:

- A. John Borsch reported we reached a high peak of 96% temperature.
- B. Wi-Fi project to go in front of Commission on July 19th, 2016.
- C. Staff has submitted the MR Valuation and the Willdan Financial Services report to John Ragone for review.
- D. Staff hired Scott Trantham as a temporary Power Plant Manager for the Tom G. Smith Power Plant.
- E. Electric Utility will be training next week on Diversity in the work place. Sally Clark is the insights trainer and will be working with the City attorney on a presentation for the department.
- F. John Borsch reported conducting a series of presentation regarding Electric Utility's operation and projects, with one more scheduled for August 5th.
- G. Siemens project going well. Half of the water meters have been installed with a project delayed due to some minor issues. Over 3,000 electric meters has been installed. A purchase of 150 Million poles, fixtures and light going up throughout the City.
- H. John Borsch had a meeting with the Whispering Palms Homeowners Association and addressed concerns on solar panels.
- I. Solar panels are in and construction to start next week, permits are complete with minors specification required.
- J. Staff stated Siemens and Public Services suggested building a tower platform for students to learn about Solar panels and generation, project may be considered.
- K. Walter Gill reported Orlando Utility Commission currently working on the one (1) year purchase power agreement extension with Orlando Utility Commission (OUC), hopes to have this by August for EUAB review.

Lengthy discussion ensued.

EUAB asked if Orlando Utility Commission planning on making any major changes to contract.

Mr. Gill responded absolutely not, they are very interested in working with the City in the future.

11. ADJOURNMENT:

The meeting was adjourned at 7:56 pm.

Lisa Maxwell, Chairperson

ATTEST:

Sugey Moreno, Executive Secretary

Minutes Approved: August 03, 2016

A digital audio recording of this meeting will be available in the Office of the City Clerk.



AGENDA DATE: August 3, 2016

DEPARTMENT: Electric Utility

EXECUTIVE BRIEF

TITLE: Purchase and install protective relay panels for the Hypoluxo Station

SUMMARY: Staff recommends replacing legacy protective relay devices with microprocessor-based devices (analog to digital devices) to meet the FPL requirement of the transmission line upgrade. Staff recommends the purchase and installment of three relay panels estimated in the amount of \$230,000.

BACKGROUND AND JUSTIFICATION:

Hypoluxo Station is the single location that the City of Lake Worth ties to the bulk electric system at 138 kV. The station is owned by City of Lake Worth and operated by FPL per contractual agreement. FPL has approached the City to upgrade its end of the transmission line protective devices at Hypoluxo.

FPL has undergone a project to add transmission breakers at Quantum Substation. Furthermore, FPL is introducing new breakers that will split the current transmission line in half (Quantum). Due to the new line configuration, the transmission line will not be adequately protected with current legacy protective devices.

The advantages to this upgrade include:

- Higher reliability and repeatability
- Satisfy current FPL requirements to continue supporting the City of Lake Worth as Transmission operator (TOP)
- Flexibility in settings to provide adequate protection with any future transmission system modifications
- 12-year Vs. 6-year testing requirement per FRCC & NERC regulatory agencies
- Superior protection compared to electromechanical devices (analog)
- Faster processing and fault isolation

The Electric Utility Engineering division is currently receiving quotes for both equipment procurement and installation and commissioning. Budgetary cost associated with this project are estimated at \$230,000. A project budgetary analysis has been generated to quantify project scope.

Task/Item	Budgetary Cost	Proposed Vendor	Description
Project management engineering/design	\$0	In-house	<ul style="list-style-type: none"> Engineering for panel specifications/design for build Project management and oversight
Qty. 3 relay panels	\$105,000.00	SEL	<ul style="list-style-type: none"> Procure, build, and ship panels to the City of Lake Worth
Engineering Services & Labor Services	\$125,000.00	SEL	<ul style="list-style-type: none"> Design protective relay settings, test, calibrate, and commission new panels in collaboration with FPL Engineering contractor Install, wire, and terminate all field connections and commission

Note that proposed vendor might vary depending on anticipated quotes.

MOTION:

I recommend / do not recommend the purchase and installation of three protective relay panels for the Hypoluxo Station upgrade in the amount not to exceed \$230,000.

ATTACHMENT(S):

- Specifications for engineering/labor support - City of Lake Worth Hypoluxo relay engineering
- Quote from CE Power Engineering - Hypoluxo Switch Station Relay Panels Proposal
- Quote from Birmingham Controls Panel
- Quote from Kemco Panel
- Quote from SEL Panel

FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2016	2017	2018	2019	2020
Capital Expenditures	105,000	125,000	0	0	0
Operating Expenditures	0	0	0	0	0
External Revenues	0	0	0	0	0
Program Income	0	0	0	0	0
In-kind Match	0	0	0	0	0
Net Fiscal Impact	105,000	125,000	0	0	0
No. of Addn'l Full-Time Employee Positions	0	0	0	0	0

B. Recommended Sources of Funds/Summary of Fiscal Impact:

Electric		SEL				
Account Number (s)	Account Description	Project #	FY 2016 Budget	Available Balance	Agenda Expense	Balance
401-6034-531-6300	Improve Other than Build/ Infrastructure	EL 1402 System Relay Upgrade	275,000	253,700	-105,000	148,700

Electric			SEL			
Account Number (s)	Account Description	Project #	FY 2017 Budget	Available Balance	Agenda Expense	Balance
401-6034-531-6300	Improve Other than Build/ Infrastructure	EL 1402 System Relay Upgrade	148,700	148,700	-125,000	23,000

C. Department Fiscal Review: John Borsch, Electric Utility Director

FISCAL IMPACT ANALYSIS

D. Five Year Summary of Fiscal Impact:

Fiscal Years	2016	2017	2018	2019	2020
Capital Expenditures	0	0	0	0	0
Operating Expenditures	0	0	0	0	0
External Revenues	0	0	0	0	0
Program Income	0	0	0	0	0
In-kind Match	0	0	0	0	0
Net Fiscal Impact	0	0	0	0	0
No. of Addn'l Full-Time Employee Positions	0	0	0	0	0

E. Recommended Sources of Funds/Summary of Fiscal Impact:

F. Department Fiscal Review: _____



Proposal # 809368

July 22, 2016

City of Lake Worth Utilities
1900 2nd Ave North
Lake Worth, FL 33461

Attn: George Guirguis
Subject: 809368 HYPOLUXO SWITCH STATION RELAY PANELS
Reference: City of Lake Worth Project Scope Rev.001

Dear George:

CE Power appreciates this opportunity to be of service to City of Lake Worth Utilities. Per the above referenced subject, we submit the following for your consideration. CE Power will provide the required technical labor, supervision, basic equipment, consumable materials and Professional Engineering.

CE Power will perform the work based off of the 'City of Lake Worth Project Scope for Quote – Hypoluxo Switch Station Relay Panels Engineering & Technical Services Re. 001', the (1) single line, and the (1) three line drawings received.

CE Power will provide two (2) Protection and Control Engineers and the required technicians to perform the following scope of work:

WORK SCOPE

1. CE Power will perform equipment installation, engineering support, and technical oversight for the City of Lake Worth Utilities (CLWU).
2. CE Power will replace three (3) existing electromechanical relay panels and one (1) metering panel with new three (3), microprocessor-based, transmission line protective relaying panels at Hypoluxo Switch Station.
3. The new panels are being procured by CLWU directly.

PANEL REMOVAL/INSTALLATION

1. CLWU shall assure de-energized panel prior to commencement of each panel removal and installation
 - A. Tagged out and Clearance issued from both CLWU and FP&L
2. Panel installation is to be completed while adjacent panel to remain energized; great care is expected as to not disturb panel in service.
 - A. New panel interconnection wiring as needed
 - i. New wire to be cable (non-SIS)
 - ii. Wire/cable will be provided by CLWU
3. Verify and install new cable markers as per cable schedule (Provided by CLWU)
4. All conductors to be labeled

5. Existing panel #'s 3 & 4 services to be transitioned independently in an order consistent with FP&L schedule
6. Physically install new panel #1 in position of existing panel #2 and complete all associated field and adjacent panel(s) interconnections as necessary
 - A. Transition field wiring to new panel #1 from existing panel #3
 - i. Field wiring to be cut, re-terminated, and labeled (all conductors)
 - ii. Field wiring to be used (assuming good condition and feasibility)
 - iii. CLWU will provide manpower to support any field wiring modifications as necessary
7. CE Power to remove existing panel #3 and associated interconnecting wiring
 - i. CLWU will retain panel equipment
8. Physically install new panel #2 in position of existing panel #3 and complete all associated field and adjacent panel(s) interconnections as necessary
 - A. Transition field wiring to new panel #2 from existing panel #4
 - i. Field wiring to be cut, re-terminated, and labeled (all conductors)
 - ii. Field wiring to be used (assuming good condition and feasibility)
 - iii. CLWU will provide manpower to support any field wiring modifications as necessary
9. CE Power to remove existing panel #4 and associated interconnecting wiring
 - A. CLWU will retain panel equipment
10. Physically install new panel #3 in position of existing panel #4 and complete all associated field and adjacent panel(s) interconnections as necessary
 - A. Transition field wiring to new panel #3 from existing ABB REL-512 panel located under sync. Scope
 - i. Field wiring to be cut, re-terminated, and labeled (all conductors)
 - ii. Field wiring to be used (assuming good condition and feasibility)
 - iii. CLWU will provide manpower to support any field wiring modifications as necessary
 - iv. Reinstall Sync Scope mounted to right of new panel 3
11. CE Power to remove existing panel #1 and ABB REL-512 panel located under sync and associated interconnecting wiring
 - A. This work shall be supervised by CLWU Engineering staff
 - B. CLWU will retain panel equipment

ENGINEERING

1. Modify FP&L provided settings for the purpose of CLWU use for new panels 1&2
 - A. Migration from GE-D60 to SEL-311L setting modifications
 - i. Non-line current differential, step distance only
 - ii. Breaker failure scheme
 - B. FP&L SEL-421 to CLWU SEL-421
 - C. FP&L UPLC settings
2. Modify CLWU provided settings for new CLWU Panel #3
 - A. CLWU will provide settings from existing ABB REL-512 relay to be modified for SEL-311L and SEL-421 (Dual Primary application)
3. CLWU shall complete the following tasks in panel 3 and shall be omitted from CE Power's proposal
 - A. RTAC Settings
 - B. GPS Clock (SEL-2407)
 - C. IP Switch (SEL-2730U)

- D. I/O Module (SEL-2516)
- 4. CLWU shall perform removal of legacy communication equipment and shall be omitted from CE Power proposal
- 5. CE Power shall receive the following from CLWU
 - A. Complete drawing package including interconnections
 - B. Cable schedule
- 6. CLWU shall receive the following from the contractor
 - A. Engineering Deliverables
 - i. Relay(s) database
 - ii. Settings documentation
 - iii. Any relevant engineering analysis/study performed to determine relay settings

COMISSIONING & TESTING

- 1. All relays to be tested using Omicron Test Universe software
- 2. Collaborate with FP&L engineering contractors for end-to-end testing of new panels 1&2
 - A. Functional testing to include but not limited to:
 - i. Breaker trip
 - ii. Blocking schemes
 - iii. Breaker failure schemes
 - iv. Close, reclose, and synchronism
 - v. Any other schemes identified/enabled in settings
 - vi. All inputs and outputs used/wired by relay
- 3. Collaborate with CLWU engineering for testing of new panel 3
 - A. Functional testing to include but not limited to:
 - i. Breaker trip
 - ii. Blocking schemes
 - iii. Breaker failure schemes
 - iv. Close, reclose, and synchronism
 - v. Any other schemes identified/enabled in settings
 - vi. All inputs and outputs used/wired by relay Close, reclose, and synchronism
 - B. All above tests to not result in an actual breaker trip but verified at terminal block
- 4. Commissioning & Testing deliverables
 - A. All Relay test records
 - B. Commissioning reports
 - i. Documentation to validate completed commissioning and testing tasks (i.e. highlighted drawings)

PREPARATION WORK (OPTIONAL)

- 1. This section shall be quoted as a separate line item for evaluation by CLWU
- 2. Removal of existing panel #2 (metering panel) as per drawing # E-92460 to allow space for new panel #1
 - A. This work is to be completed while existing panel #'s 1, 3, 4, & sync. scope to remain energized, feeding the entire CLWU electric service territory and completing FP&L ring bus
 - B. Relocate sync. scope and associated wiring to a temporary location in advance to allow disassembly of panel #4

STAFFING

Proposed Preliminary Staffing Requirements:

Senior Engineer/Field Supervisor/P&C Engineer: 2

Technicians: 1

PROJECT COST

The cost to perform the above outlined project during normal working hours 7:30 am to 4:00 pm Monday thru Friday is as follows:

TOTAL: \$ 98,840.00
Option 1 (Section 5 Prep Work): \$ 5,600.00

SPECIAL CONSIDERATIONS

CE Power is a Professional Service Organization that provides Engineering, Project Management, Procurement, Commissioning, Preventive Maintenance, and Predictive Maintenance solutions on large or complex electrical projects. CE Power employees are Drug Free and OSHA safety trained. Analysis and engineering recommendations are provided by a Licensed PE.

Unless otherwise specifically agreed-to in this proposal document, all job-specific electronic files produced, modified, developed, utilized or incorporated as part of a project, including (but not limited-to): Autodesk Autocad drawing files, system study project files, electronic test set files, electronic data collection medium files and any associated dll files remain the intellectual property of CE Power and are not included in the deliverable package of test reports, study reports, report documentation or presentation documentation. The files in the intellectual property includes (but is not limited-to) documents with the extensions of: .qcm, .bdf, .ovt, .rmp, .occ, .xml, .xls, .xlsx, .doc, .docx, .axt, .axd, .mdb, .da1, .epr, .db, .rdb, .dxf, .dwg, .set, .ddb, .dv6, .plan, etc.

TERMS

Standard CE Power Terms and Conditions apply

Terms: Net 30 days

This proposal is valid for 60 days

PROPOSAL ACCEPTANCE INFORMATION

Upon acceptance of this proposal, please send contract/purchase order to:

CE Power
Attn: Stephen Scala
4040 Rev Drive
Cincinnati, OH 45232

Fax: 513.887.0842

Email: info@cepower.net

We appreciate this opportunity and please feel free to contact us with any questions, concerns or clarifications.

Sincerely,

Stephen Scala
Sales Representative

Standard Contingencies:

Contingency Clause – if during the course of Field Testing and Maintenance Services, any unforeseen problems or conditions arise which may require immediate attention and will require utilizing additional man-hours and/or material/components outside the original, agreed upon Specifications or Scope of Work: these costs will be brought to the immediate attention of the Client's authorized personnel for written approval before proceeding.

Demobilization/Job Cancellation – if, within 24 hours of schedule Field Service Work, the customer cancels the job, CE Power may charge for all mobilization and de-mobilization costs, set-up, hourly labor rates and loss of opportunity expenses.

Delay Clause – for Firm Bid Purchase requisitions, any disruption to the normal progression of the Field Testing and Maintenance Services caused by the Client production, facilities or personnel resulting in the inability to perform Field Testing and Maintenance Services will be charged, in addition to the base price, as stated on the Hourly Rate Schedule after ½ hour delay.

Weather-related or natural disaster-related disruptions or cancellations will be charged up to the next billable hour while on-site. Expenses, diems and mobilizations will be charged through the following travel day.

Onsite Substation Clause – CE Power requires a minimum advance notice of 5 working days prior to commencement of work. Advance notice of less than 5 working days for scheduling of work will be subject to price escalation depending on the nature of work to be performed.

Required Client Information for installed of existing installations – The pricing and timeline quoted is based upon receipt of complete and accurate client information required to carry out of the scope of work specified. This includes, but is not limited to installation and equipment drawings, diagrams, specifications, pictures or other pertinent information relating to the work to be performed. Except as otherwise noted within the proposal and contract, CE Power assumes that all such material will be made immediately available for use in executing the scope of work. Failure or delay in providing such information could result in delay of project and/or additional charges to be incurred.

Repair/Remanufacture Contingency – Any equipment that is repaired or remanufactured (including but not limited to circuit breakers and transformer rectifier units), and in which the control equipment is not replaced with NEW, will not be covered under standard CE Power warranty.

Taxes and Permitting Fees – Unless otherwise explicitly stated in this proposal, applicable taxes and permitting fees are not included in this proposal. If so desired, please contact CE Power.

This proposal is considered proprietary in nature, intended for the sole use of the entity addressed above, and as such is not intended for general public distribution.

Birmingham Control Systems, Inc.

1205 Eighth Street West
Birmingham, Al 35204
Phone: 205-252-2504
<http://BirminghamControls.com>

July 1, 2016

Q16106

Mr. George M. Guirguis, P.E.
Electrical Engineer
City of Lake Worth
1900 2nd Avenue North
Lake Worth, FL 33461

Re: Hypoluxo Substation Relay Panels

Birmingham Control Systems is pleased to offer for your consideration our bid for the equipment referenced above. In reviewing the specifications and drawings for the Hypoluxo Substation and equipment, our offering is in accordance to what we understand your requirements to be. I have attached Birmingham Control Systems BOM Q16106A – Q16106C.

Item	BOM	Qty	Description	Total Price
1	Q16106A	1	Relay Panel #1	\$38,995
2	Q16106B	1	Relay Panel #2	\$38,995
3	Q16106C	1	Relay Panel #3	\$28,595

Notes:

Bid Validity: 30 Days

Payment Terms: Net 30 days

Delivery: 12-14 weeks after receipt of purchase order, approved BOM and drawings **or by date required provided we receive drawings in a timely manner.**

Accessibility: The site must be accessible for delivery of the Equipment. The terrain must be stable and capable of supporting the tractor-trailer delivering the Equipment and also capable of delivery and support of the equipment offloading. Any demurring charges resulting from an unsafe or inaccessible substation site, whether the result of an "Act of God" or other cause, will be the responsibility of the purchaser. These charges may be substantial due to overnight charges, redelivery, or site preparation.

Exception: Birmingham Controls Systems will do everything possible to get the job completed on time but will not accept any Liquidated Damages.

Freight FOB Destination prepaid and included by common carrier.

Crane offloading at job site is not included.

Drawings Included: If required panel structural, front panel layout, and BOM.

AC/DC Schematics design is an additional cost, if not listed above.

This price does not include setup/configuration of relays or final test of substation.

Unless noted elsewhere any bonds, certification, PE stamp, permits, or licenses required are not included in this quote and are the responsibility of the owner.

Sales tax, Import tax, Goods and Services tax, and Duty Tax are not included.

Please review the BOM since material variance from the Birmingham Control Systems BOM will result in a change order.

Birmingham Control Systems 'Terms and Conditions' are an integral part of this quote.

Thank you for the opportunity to quote. If you have any questions please contact me at (205) 252-2504 extension 17.

Sincerely,
Birmingham Control Systems, Inc.


Sammy Montalbano, PE

Fax: 205-252-2507

Cell: 205-837-9813

sammym@bhamcontrol.com

Proudly Manufactured in the USA

TERMS AND CONDITIONS

Birmingham Control Systems, INC. is herein called "Seller". The person, firm or corporation to whom or which quotation is made is herein called "Buyer".

TERMS OF PAYMENT: "Terms", as noted in the proposal, is the net cash price due monthly, subject to credit approval. Buyer agrees to pay all costs of collection or securing or attempting to collect or secure the debt created by purchases, including reasonable attorney fees, whether or not involving litigation. Late payments are subject to interest penalty of 1-1/2% per month or any portion of a month.

TAXES: Prices stated herein do not include any tax, excise, duty or levy now or hereafter enacted or imposed, by any governmental authority on the manufacture, sale, delivery and/or use of any item delivered. An additional charge will be made therefore and paid by Buyer unless Seller is furnished with a proper exemption certificate relieving Seller of paying or collecting the tax, excise, duty or levy in question.

PRICES AND QUOTATIONS: All prices include standard domestic packing and are firm for thirty (30) days unless specified otherwise. All prices in catalogs are subject to change without notice. Prices are FOB Seller's plant. Title to all articles sold by Seller to Buyer shall pass to Buyer upon delivery thereof by Seller to a carrier for shipment to Buyer.

DELAYS: Seller shall not be liable or responsible for damage or loss for delays or defaults in deliveries due to Acts of God or the public enemy, laws, regulations or orders of the federal, state or local governments or their agencies, fires, accidents, strikes or labor troubles, riots or insurrection, unusually severe weather, material or transportation shortages or delays in obtaining, due to such causes, materials or supplies, or other causes beyond Seller's control, nor shall Buyer cancel or have the right to cancel its purchase order because of delays or defaults in deliveries due to such causes.

CHANGES: Buyer shall have the right by written order to make changes in specifications or delivery schedules once agreed upon. If such changes cause an increase or decrease in the amount due under the purchase order or in the time required for its performance, an equitable adjustment of the price and/or time for performance shall be made. Changes, engineering or otherwise, affecting the function or performance for the articles ordered shall not be made without consent of Seller in writing.

CANCELLATION: The Seller may cancel an order subject to the following cancellation schedule. Days 0-5 0%, Days 6-15 25%, Days 16-30 60%, and Days 30-45 100%. "Days" are the number of days after receipt of purchase order and "%" is the percent of purchase order price that is due upon cancellation. Cancellations for the convenience of the Federal Government may be effected and cancellation charges paid as required by applicable Federal statutes or regulations. If either Buyer or Seller should be declared bankrupt or insolvent, or if a receiver should be appointed for all or a substantial portion of the assets of either by a court of competent jurisdiction, or if there should be filed in any such court and not dismissed within thirty days any application or petition for adjudication of such insolvency or bankruptcy, or for the appointment of such a receiver, or involving the resetting or extension, however termed, of the obligations of Buyer or Seller, or if either Buyer or Seller should make an assignment for all or a substantial portion for its property for the benefit of its creditors, then upon the happening of any of such events, the other party may cancel any order placed by Buyer with Seller immediately by notice in writing sent to the opposite party by registered mail at its last known business address, or by personal service upon such party.

INDEMNIFICATION: Seller agrees to take all necessary precautions to prevent injuries to any person or damage to property during the terms of this agreement but shall not be liable for any injuries or damage to property due to wiring or software problems or errors, equipment misuse or failure, programming errors, operation by Seller or other users or electrical power failure.

PENALTY CLAUSE: In no event does the Seller agree to pay any amount identified as a penalty or as liquidated damages of any kind.

PATENT PROTECTION: Seller agrees to hold Buyer and its customers harmless only against infringement of patents covering the material or part in the form sold by Seller, provided Buyer or its customer, as the case may be, promptly notifies Seller for any claim or litigation and tenders, to the extent of Buyer's ability to do so, the defense thereof to Seller. Buyer agrees to hold Seller harmless from any liability of Seller for infringement of patents by reason of manufacture according to Buyer's specific design or by reason of the incorporation of said part in a more comprehensive assembly than sold by Seller, provided Seller promptly notifies Buyer of any claim or litigation and tenders, to the extent of Seller's ability to do so, the defense thereof to Buyer and/or the Government where Government Contracts are involved. Seller grants no license, express or implied other than the right of Buyer to use the specific material or part in the form delivered by Seller.

SERVICE: Startup service, construction supervision, operator orientation or installation is not included unless specifically included in the proposal. In the event that service is included for startup and Seller's personnel are onsite to perform service and equipment is not ready for service Buyer agrees to pay additional charges for extended stay or another service call. Additional service call will be billed at \$1200.00 per day plus travel and living expenses. Other field services are available at Seller's current prevailing rates.

SHIPPING: If shipping is included in proposal it shall be per Seller's carrier or Seller's carrier of choice. The Seller will confirm with Buyer for delivery. If a shipment is sent after confirmation with Buyer and the site is not ready or no one is available for receiving shipment, there will be an additional charge for the shipment. The substation site must be accessible for delivery of the Substation Equipment Enclosure. The substation terrain must be stable and capable of supporting the tractor-trailer delivering the Substation Equipment Enclosure. Any demurring charges resulting from an unsafe or inaccessible substation site, whether the result of an "Act of God" or other cause, will be the responsibility of the purchaser. These charges may be substantial due to overnight charges, redelivery, or site preparation.

REMEDYING DEFECT: Owner must allow Birmingham Control Systems to make corrections in a timely manner. Birmingham Controls Systems will have the option to have the equipment returned for repair or to send a technician out to make repairs. Any corrections or changes made by anyone else before Birmingham Control personnel have inspected the equipment and been given an opportunity to make the correction in a timely manner will not be compensated by Birmingham Control Systems. A timely manner is generally 1 to 2 weeks and may depend on the availability of transportation, parts, etc.

WARRANTY: One year on parts and labor from Birmingham Control Systems. Warranty starts from date of delivery unless panel is stored at Birmingham Control Systems for more than 30 days in which case the warranty starts on completion date of panel manufacture. Component accessories will carry the original manufacturer's warranty, which may be longer than 1 year.

ERRORS: Stenographic or clerical errors are subject to correction.

Birmingham Control Systems
1205 8th Street West
Birmingham, AL 35204

Bill of Materials

Owner: CITY OF LAKE WORTH
Project: HYPOLUXO PANEL 1

Bid JN: Q16106A

Rev 1:
Rev 3:

Rev 2:
Rev 4:

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
1	1	SEL	04215615XXXX4H78424XX SS-6	PROTECTION AUTOMATION AND CONTROL, STANDARD FIRMWARE PLUS SUB-CYCLE ELEMENTS, 125/250VDC OR 120/240VAC POWER SUPPLY, SCREW TERMINAL BLOCK, 300V 5A PHASE SECONDARY INPUTS, 125VDC MAINBOARD INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 5U FRONT PANEL WITH 24 TARGET LEDS AND 12 OPERATOR CONTROL PUSHBUTTONS, 16 OPTOISOLATED INDEPENDENT LEVEL-SENSITIVE INPUTS, 8 HIGH-SPEED HIGH-CURRENT INTERRUPTING FORM A OUTPUTS, 13 STANDARD FORM A AND 2 STANDARD FORM C OUTPUTS 421	SEL
2	1	FBO	0311L1HD03254X2XX	CURRENT DIFF AND DISTANCE PROTECTION RELAY, 3 RACK UNIT, HORIZONTAL MOUNT, NO ADDITIONAL I/O, 125 VDC POWER SUPPLY, 5 AMP CT INPUTS, 125 VDC CONTROL INPUTS, TWO 10/100BASE-T-SEL ASCII VIA TELNET COMMUNICATIONS PROTOCOLS, 1300 NM FIBER (2 PORTS)	FBO

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
3	1	ATEK	US2NEM9AFSX	CARRIER UNIV UPLC-II, UNIVERSAL POWER LINE WITH PROGRAMMABLE FREQUENCIES, TYPE UPLC II, 110/125/250 VDC WITH AUXILIARY POWER	AMTK
4	2	SD	392XBX48P-5.0MADC	TRIP CIRCUIT MONITOR, 10K OHM COIL 74-1, 74-2	BYDC
5	2	P&B	27E122	RELAY SOCKET, 8 PIN OCTAL BASE 74	ALIE
6	4	EMAX	6319232	TRIP INDICATION RELAY, 2.5 A MAX PULL-IN B52TX1, M52TX1, B52TX2, M52TX2	EMAX
7	1	SEL	0735VX20944EXXXXXX1610 1XX	POWER QUALITY AND REVENUE METER, 125/250VDC POWER SUPPLY, VERTICAL PANEL MOUNT, ADVANCED PQ, FORM 9 METERING, 125VDC, ONE EIA-232 PORT, ONE EIA-485 PORT, ONE 100BASE-T PORT, 60HZ, SEL ASCII-SEL DISTRIBUTED PORT SWITCH PROTOCOL-DNP3-TELNET COMM PROTOCOLS, ANSI LABELING	SEL
8	2	ESW	74206TT	BREAKER CONTROL SWITCH, SERIES 24, 6 DECKS, PISTOL GRIP HANDLE, RED/GREEN FLAG, POSITION ENGRAVING "TRIP-CLOSE", TITLE ENGRAVING "BREAKER CONTROL" B52CS, M52CS	ESW

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
9	1	ESW	24202VG	SYNCHRONIZING CONTROL SWITCH, SERIES 24, 2 DECKS, 3 POSITIONS, REMOVABLE YELLOW OVAL HANDLE, MAINTAINED, POSITION ENGRAVING "BKR2-OFF-BKR1", TITLE ENGRAVING "SYNCHROSCOPE" 25CS	ESW
10	1	ESW	74201D-004	MOTOR OPERATED CONTROL SWITCH, WITH OPEN-CLOSE POSITIONS, SPRING RETURN TO CENTER, PISTOL GRIP & FLAG. 89CS	ESW
11	5	ABB	C129A501G01	TEST SWITCH, TYPE FT-1, TEN POTENTIAL POLES, SEMI-FLUSH MOUNT, WITH CLEAR COVER. TD3, TD7, TD8, TD9, TD12	ABB
12	2	ABB	C498A020G01	TEST SWITCH, TYPE FT-1, 10 POLE, TEN (10) CURRENT SHORTING POLES, CLEAR COVER, SEMI-FLUSH MOUNT, BACK CONNECTED. TD4, TD10	ABB
13	3	ABB	C129A514G01	TEST SWITCH, TYPE FT-1, SIX CURRENT POLES & FOUR POTENTIAL POLES, SEMI-FLUSH MOUNTING. TD5, TD6, TD11	ABB
14	2	ABB	C837A407G01	TEST SWITCH, TYPE FT-1, 10 POLE, WITH (8) CURRENT SHORTING POLES AND (2) POTENTIAL POLES, SEMI- FLUSH MOUNT, BLACK HANDLES WITH CLEAR COVER. TD1, TD2	ABB

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
15	3	GE	116B6708G5C	INDICATING LIGHT, TYPE ET-16, 120 VAC, WITH 1900 OHM RESISTOR	GEML
16	3	DATA	BB4-CW	CLEAR WHITE CAP	MID
17	8	GE	116B6708G3E	INDICATING LIGHT, TYPE ET-16, 125 VDC, WITH 2000 OHM RESISTOR	GEML
18	5	LED	UTL1835-1UR	PILOT LIGHT LED BULBS, 125 VOLTS -- RED	BYDC
19	5	DATA	BB4-CR	CLEAR RED CAP	MID
20	3	LED	UTL1835-1AG	PILOT LIGHT LED BULBS, 125 VOLT -- GREEN	BYDC
21	3	DATA	BB4-CG	CLEAR GREEN LENS CAP	MID
22	1	BCS	PANEL	RELAY PANEL, 11 GAUGE STEEL, STANDARD PANEL DESIGN, FOR RACK AND PANEL MOUNTED DEVICES, ANSI NO. 70 LIGHT GRAY ENAMEL, WHITE INTERIOR, WITH SUB PAN, WITH TWO UHF BRACKETS, 90"H X 28"W X 18"D	B&D
23	12	BUSS	BM6032SQ	MIDGET FUSE BLOCK, 2 POLE, 30 AMP, 600 VOLT	GEX

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
24	2	BUSS	LP-CC-1	TYPE LP-CC FUSE, CARTRIDGE TYPE, 1 AMP, 600 VOLT	BYDC
25	12	BUSS	LP-CC-30	TYPE LP-CC FUSE, CARTRIDGE TYPE, 30 AMP, 600 VOLT	BYDC
26	8	BUSS	LP-CC-10	TYPE LP-CC FUSE, CARTRIDGE TYPE, 10 AMP, 600 VOLT	BYDC
27	2	GE	EB25B06	TERMINAL BLOCK, 6 POLE, 600 V, 30 A D, H	GEML
28	2	BUSS	LP-CC-5	TYPE LP-CC FUSE, CARTRIDGE TYPE, 5 AMPERE, 600 VOLT	BYDC
29	12	GE	EB25B12	TERMINAL BLOCK, 12 POLE, WITH BLACK MARKING STRIP A, B, C, E, F, G	GEML
30	2	GE	2860351G2	TERMINAL BLOCKS, TYPE EB-4, 4 POLE RA, RB	GEC
31	3	PHOX	0801733	DIN MOUNTING RAIL TYPE NS 35/7.5 STEEL PERFORATED	BCS
32	3	PHOX	1004076	UBE/D TERMINAL STRIP MARKER CARRIER WITH COVER Z	SOUB
33	6	PHOX	0800886	E/ NS 35 N END CLAMP	SOUB

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
34	6	PHOX	2775113	D-UDK 4 END COVER	SOUB
35	180	PHOX	2775016	UDK4 TERMINAL BLOCK 1-180	SOUB
36	90	PHOX	2775210	UDK4-MTK-P/P TERMINAL BLOCK Z181/Z182... Z359/Z360	SOUB
37	54	PHOX	0828736	ZB6 NUMBER STRIP LABEL PRINTED HORIZONTALLY WITH SEQUENTIAL NUMBERS AS FOLLOWED 1-180 PRINTED TWICE 181-360 PRINTED ONCE	SOUB
38	8	PHOX	0829160	ZB6 ORANGE NUMBER STRIP LABEL PRINTED HORIZONTALLY WITH DECADE LABELING 10, 20, 30...400 PRINTED TWICE	SOUB
39	1	BCS	J-HOOK	J-HOOK, STAINLESS STEEL WITH HEX NUTS AND #10-32 THREAD	BCS
40	2	AHH	257-103	BINDING POST-BLACK HEX HEAD, 10- 32, GOLD PLATED	ALIE
41	1	AHH	257-104	BINDING POST-GREEN HEX HEAD, 10- 32, GOLD PLATED	NEW
42	4	OHM	95J10KE	RESISTOR, 10K OHMS, 5 WATTS	ALIE

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
43	1	BCS	UHF BRACKET	UHF ADAPTER BRACKET, 1U, 19" RACK PLATE	BCS
44	1	AMPH	031-220N	AMPHENOL; BNC BULKHEAD 2 FEMALE ADAPTER	ALIE
45	1	POM	3287	POMONA; UHF FEMALE TO BNC MALE ADAPTER (PART # RFA 8313. WILL NEEDCUSTOMER APPROVAL)	ALIE
46	2	AMPH	031-9	AMPHENOL; BNC RIGHT ANGLE ADAPTER	ALIE
47	1	POM	2249-C-36	POMONA; 3' BNC CABLE RG-58/U WITH STRAIN RELIEF (PART #	ALIE
48	19	BCS	NAMEPLATES	NAMEPLATES	BCS
49	6	BCS	MANUAL	INSTRUCTION MANUAL	BCS
50	1	BCS	WLMH	WIRE, LUGS, MISC. HARDWARE.	BCS
51	1	BCS	FREIGHT	TRANSPORTATION AND SHIPPING -FREIGHT -PARTS	BCS

Birmingham Control Systems
 1205 8th Street West
 Birmingham, AL 35204

Bill of Materials

Owner: CITY OF LAKE WORTH
 Project: HYPOLUXO PANEL 2

Bid JN: Q16106B

Rev 1: Rev 2:
 Rev 3: Rev 4:

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
1	1	SEL	04215615XXXX4H78424XX SS-6	PROTECTION AUTOMATION AND CONTROL, STANDARD FIRMWARE PLUS SUB-CYCLE ELEMENTS, 125/250VDC OR 120/240VAC POWER SUPPLY, SCREW TERMINAL BLOCK, 300V 5A PHASE SECONDARY INPUTS, 125VDC MAINBOARD INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 5U FRONT PANEL WITH 24 TARGET LEDS AND 12 OPERATOR CONTROL PUSHBUTTONS, 16 OPTOISOLATED INDEPENDENT LEVEL-SENSITIVE INPUTS, 8 HIGH-SPEED HIGH-CURRENT INTERRUPTING FORM A OUTPUTS, 13 STANDARD FORM A AND 2 STANDARD FORM C OUTPUTS 421	SEL
2	1	FBO	0311L1HD03254X2XX	CURRENT DIFF AND DISTANCE PROTECTION RELAY, 3 RACK UNIT, HORIZONTAL MOUNT, NO ADDITIONAL I/O, 125 VDC POWER SUPPLY, 5 AMP CT INPUTS, 125 VDC CONTROL INPUTS, TWO 10/100BASE-T-SEL ASCII VIA TELNET COMMUNICATIONS PROTOCOLS, 1300 NM FIBER (2 PORTS)	FBO

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
3	1	ATEK	US2NEM9AFSX	CARRIER UNIV UPLC-II, UNIVERSAL POWER LINE WITH PROGRAMMABLE FREQUENCIES, TYPE UPLC II, 110/125/250 VDC WITH AUXILIARY POWER	AMTK
4	2	SD	392XBX48P-5.0MADC	TRIP CIRCUIT MONITOR, 10K OHM COIL 74-1, 74-2	BYDC
5	2	P&B	27E122	RELAY SOCKET, 8 PIN OCTAL BASE 74	ALIE
6	4	EMAX	6319232	TRIP INDICATION RELAY, 2.5 A MAX PULL-IN B52TX1, M52TX1, B52TX2, M52TX2	EMAX
7	1	SEL	0735VX20944EXXXXXX1610 1XX	POWER QUALITY AND REVENUE METER, 125/250VDC POWER SUPPLY, VERTICAL PANEL MOUNT, ADVANCED PQ, FORM 9 METERING, 125VDC, ONE EIA-232 PORT, ONE EIA-485 PORT, ONE 100BASE-T PORT, 60HZ, SEL ASCII-SEL DISTRIBUTED PORT SWITCH PROTOCOL-DNP3-TELNET COMM PROTOCOLS, ANSI LABELING	SEL
8	2	ESW	74206TT	BREAKER CONTROL SWITCH, SERIES 24, 6 DECKS, PISTOL GRIP HANDLE, RED/GREEN FLAG, POSITION ENGRAVING "TRIP-CLOSE", TITLE ENGRAVING "BREAKER CONTROL" B52CS, M52CS	ESW

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
9	1	ESW	24202VG	SYNCHRONIZING CONTROL SWITCH, SERIES 24, 2 DECKS, 3 POSITIONS, REMOVABLE YELLOW OVAL HANDLE, MAINTAINED, POSITION ENGRAVING "BKR2-OFF-BKR1", TITLE ENGRAVING "SYNCHROSCOPE" 25CS	ESW
10	1	ESW	74201D-004	MOTOR OPERATED CONTROL SWITCH, WITH OPEN-CLOSE POSITIONS, SPRING RETURN TO CENTER, PISTOL GRIP & FLAG. 89CS	ESW
11	5	ABB	C129A501G01	TEST SWITCH, TYPE FT-1, TEN POTENTIAL POLES, SEMI-FLUSH MOUNT, WITH CLEAR COVER. TD3, TD7, TD8, TD9, TD12	ABB
12	2	ABB	C498A020G01	TEST SWITCH, TYPE FT-1, 10 POLE, TEN (10) CURRENT SHORTING POLES, CLEAR COVER, SEMI-FLUSH MOUNT, BACK CONNECTED. TD4, TD10	ABB
13	3	ABB	C129A514G01	TEST SWITCH, TYPE FT-1, SIX CURRENT POLES & FOUR POTENTIAL POLES, SEMI-FLUSH MOUNTING. TD5, TD6, TD11	ABB
14	2	ABB	C837A407G01	TEST SWITCH, TYPE FT-1, 10 POLE, WITH (8) CURRENT SHORTING POLES AND (2) POTENTIAL POLES, SEMI-FLUSH MOUNT, BLACK HANDLES WITH CLEAR COVER. TD1, TD2	ABB

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
15	3	GE	116B6708G5C	INDICATING LIGHT, TYPE ET-16, 120 VAC, WITH RESISTOR	GEML
16	3	DATA	BB4-CW	CLEAR WHITE CAP	MID
17	8	GE	116B6708G3E	INDICATING LIGHT, TYPE ET-16, 125 VDC, WITH RESISTOR	GEML
18	5	LED	UTL1835-1UR	PILOT LIGHT LED BULBS, 125 VOLTS -- RED	BYDC
19	5	DATA	BB4-CR	CLEAR RED CAP	MID
20	3	LED	UTL1835-1AG	PILOT LIGHT LED BULBS, 125 VOLT -- GREEN	BYDC
21	3	DATA	BB4-CG	CLEAR GREEN LENS CAP	MID
22	1	BCS	PANEL	RELAY PANEL, 11 GAUGE STEEL, STANDARD PANEL DESIGN, FOR RACK AND PANEL MOUNTED DEVICES, ANSI NO. 70 LIGHT GRAY ENAMEL, WHITE INTERIOR, WITH SUB PAN, WITH TWO UHF BRACKETS, 90"H X 28"W X 18"D	B&D
23	12	BUSS	BM6032SQ	MIDGET FUSE BLOCK, 2 POLE, 30 AMP, 600 VOLT	GEX

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
24	2	BUSS	LP-CC-1	TYPE LP-CC FUSE, CARTRIDGE TYPE, 1 AMP, 600 VOLT	BYDC
25	12	BUSS	LP-CC-30	TYPE LP-CC FUSE, CARTRIDGE TYPE, 30 AMP, 600 VOLT	BYDC
26	8	BUSS	LP-CC-10	TYPE LP-CC FUSE, CARTRIDGE TYPE, 10 AMP, 600 VOLT	BYDC
27	2	GE	EB25B06	TERMINAL BLOCK, 6 POLE, 600 V, 30 A D, H	GEML
28	2	BUSS	LP-CC-5	TYPE LP-CC FUSE, CARTRIDGE TYPE, 5 AMPERE, 600 VOLT	BYDC
29	12	GE	EB25B12	TERMINAL BLOCK, 12 POLE, WITH BLACK MARKING STRIP A, B, C, E, F, G	GEML
30	2	GE	2860351G2	TERMINAL BLOCKS, TYPE EB-4, 4 POLE RA, RB	GEC
31	3	PHOX	0801733	DIN MOUNTING RAIL TYPE NS 35/7.5 STEEL PERFORATED	BCS
32	3	PHOX	1004076	UBE/D TERMINAL STRIP MARKER CARRIER WITH COVER Z	SOUB
33	6	PHOX	0800886	E/ NS 35 N END CLAMP	SOUB

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
34	6	PHOX	2775113	D-UDK 4 END COVER	SOUB
35	180	PHOX	2775016	UDK4 TERMINAL BLOCK 1-180	SOUB
36	90	PHOX	2775210	UDK4-MTK-P/P TERMINAL BLOCK Z181/Z182... Z359/Z360	SOUB
37	54	PHOX	0828736	ZB6 NUMBER STRIP LABEL PRINTED HORIZONTALLY WITH SEQUENTIAL NUMBERS AS FOLLOWED 1-180 PRINTED TWICE 181-360 PRINTED ONCE	SOUB
38	8	PHOX	0829160	ZB6 ORANGE NUMBER STRIP LABEL PRINTED HORIZONTALLY WITH DECADE LABELING 10, 20, 30...400 PRINTED TWICE	SOUB
39	1	BCS	J-HOOK	J-HOOK, STAINLESS STEEL WITH HEX NUTS AND #10-32 THREAD	BCS
40	2	AHH	257-103	BINDING POST-BLACK HEX HEAD, 10- 32, GOLD PLATED	ALIE
41	1	AHH	257-104	BINDING POST-GREEN HEX HEAD, 10- 32, GOLD PLATED	NEW
42	4	OHM	95J10KE	RESISTOR, 10K OHMS, 5 WATTS	ALIE

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
43	1	BCS	UHF BRACKET	UHF ADAPTER BRACKET, 1U, 19" RACK PLATE	BCS
44	1	AMPH	031-220N	AMPHENOL; BNC BULKHEAD 2 FEMALE ADAPTER	ALIE
45	1	POM	3287	POMONA; UHF FEMALE TO BNC MALE ADAPTER (PART # RFA 8313. WILL NEEDCUSTOMER APPROVAL)	ALIE
46	2	AMPH	031-9	AMPHENOL; BNC RIGHT ANGLE ADAPTER	ALIE
47	1	POM	2249-C-36	POMONA; 3' BNC CABLE RG-58/U WITH STRAIN RELIEF (PART #	ALIE
48	19	BCS	NAMEPLATES	NAMEPLATES	BCS
49	6	BCS	MANUAL	INSTRUCTION MANUAL	BCS
50	1	BCS	WLMH	WIRE, LUGS, MISC. HARDWARE.	BCS
51	1	BCS	FREIGHT	TRANSPORTATION AND SHIPPING -FREIGHT -PARTS	BCS

Birmingham Control Systems
 1205 8th Street West
 Birmingham, AL 35204

Bill of Materials

Owner: CITY OF LAKE WORTH
 Project: HYPOLUXO PANEL 3

Bid JN: Q16106C

Rev 1: Rev 2:
 Rev 3: Rev 4:

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
1	1	SEL	04215615XXXX4H78424XX SS-6	PROTECTION AUTOMATION AND CONTROL, STANDARD FIRMWARE PLUS SUB-CYCLE ELEMENTS, 125/250VDC OR 120/240VAC POWER SUPPLY, SCREW TERMINAL BLOCK, 300V 5A PHASE SECONDARY INPUTS, 125VDC MAINBOARD INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 5U FRONT PANEL WITH 24 TARGET LEDS AND 12 OPERATOR CONTROL PUSHBUTTONS, 16 OPTOISOLATED INDEPENDENT LEVEL-SENSITIVE INPUTS, 8 HIGH-SPEED HIGH-CURRENT INTERRUPTING FORM A OUTPUTS, 13 STANDARD FORM A AND 2 STANDARD FORM C OUTPUTS 421	SEL
2	1	FBO	0311L1HD03254X2XX	CURRENT DIFF AND DISTANCE PROTECTION RELAY, 3 RACK UNIT, HORIZONTAL MOUNT, NO ADDITIONAL I/O, 125 VDC POWER SUPPLY, 5 AMP CT INPUTS, 125 VDC CONTROL INPUTS, TWO 10/100BASE-T-SEL ASCII VIA TELNET COMMUNICATIONS PROTOCOLS, 1300 NM FIBER (2 PORTS)	FBO

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
3	1	SEL	3530HB0BX211X0XXXXXX	REAL-TIME AUTOMATION CONTROLLER WITH 16 PORTS, I/O BOARD WITH 8 OUTPUTS/24 INPUTS, 48VDC CONTROL VOLTAGE, HORIZONTAL RACK MOUNT, SEL/DNP3/MODBUS CLIENT/SERVER	FBO
4	1	SEL	251603114X	REMOTE I/O MODULE, 125 VDC CONTROL INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 48/125 VDC OR 125 VAC, SEL 2815 COMPATIBLE, 8 INPUTS & 8 OUTPUTS I/O BOARD.	FBO
5	1	SEL	2730U0ARAX1111AAAAX0	UNMANAGED ETHERNET SWITCH, 24 PORTS, 4-SFP CAGES, 4-COPPER PORTS, 16-10/100BASE-T PORTS, 1U HORIZONTAL RACK MOUNT, 125/250VDC POWER SUPPLY	SEL
6	1	SEL	24070001B	SATELLITE SYNCHRONIZED CLOCK, GPS ANTENNA (235-0103) WITH 75 FT OF CABLE (C960), 19" RACK MOUNT BRACKET, NO OPTIONAL COMMUNICATIONS PORT, STANDARD FIRMWARE.	SEL
7	2	SD	392XBX48P-5.0MADC	TRIP CIRCUIT MONITOR, 10K OHM COIL 74-1, 74-2	BYDC
8	2	P&B	27E122	RELAY SOCKET, 8 PIN OCTAL BASE 74	ALIE

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
9	4	EMAX	6319232	TRIP INDICATION RELAY, 2.5 A MAX PULL-IN B52TX1, M52TX1, B52TX2, M52TX2	EMAX
10	1	SEL	0735VX20944EXXXXXX1610 1XX	POWER QUALITY AND REVENUE METER, 125/250VDC POWER SUPPLY, VERTICAL PANEL MOUNT, ADVANCED PQ, FORM 9 METERING, 125VDC, ONE EIA-232 PORT, ONE EIA-485 PORT, ONE 100BASE-T PORT, 60HZ, SEL ASCII-SEL DISTRIBUTED PORT SWITCH PROTOCOL-DNP3-TELNET COMM PROTOCOLS, ANSI LABELING	SEL
11	2	ESW	74206TT	BREAKER CONTROL SWITCH, SERIES 24, 6 DECKS, PISTOL GRIP HANDLE, RED/GREEN FLAG, POSITION ENGRAVING "TRIP-CLOSE", TITLE ENGRAVING "BREAKER CONTROL" B52CS, M52CS	ESW
12	1	ESW	24202VG	SYNCHRONIZING CONTROL SWITCH, SERIES 24, 2 DECKS, 3 POSITIONS, REMOVABLE YELLOW OVAL HANDLE, MAINTAINED, POSITION ENGRAVING "BKR2-OFF-BKR1", TITLE ENGRAVING "SYNCHROSCOPE" 25CS	ESW
13	1	ESW	74201D-004	MOTOR OPERATED CONTROL SWITCH, WITH OPEN-CLOSE POSITIONS, SPRING RETURN TO CENTER, PISTOL GRIP & FLAG. 89CS	ESW

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
14	5	ABB	C129A501G01	TEST SWITCH, TYPE FT-1, TEN POTENTIAL POLES, SEMI-FLUSH MOUNT, WITH CLEAR COVER. TD3, TD7, TD8, TD9, TD12	ABB
15	2	ABB	C498A020G01	TEST SWITCH, TYPE FT-1, 10 POLE, TEN (10) CURRENT SHORTING POLES, CLEAR COVER, SEMI-FLUSH MOUNT, BACK CONNECTED. TD4, TD10	ABB
16	3	ABB	C129A514G01	TEST SWITCH, TYPE FT-1, SIX CURRENT POLES & FOUR POTENTIAL POLES, SEMI-FLUSH MOUNTING. TD5, TD6, TD11	ABB
17	2	ABB	C837A407G01	TEST SWITCH, TYPE FT-1, 10 POLE, WITH (8) CURRENT SHORTING POLES AND (2) POTENTIAL POLES, SEMI-FLUSH MOUNT, BLACK HANDLES WITH CLEAR COVER. TD1, TD2	ABB
18	3	GE	116B6708G5C	INDICATING LIGHT, TYPE ET-16, 120 VAC, WITH RESISTOR	GEML
19	3	DATA	BB4-CW	CLEAR WHITE CAP	MID
20	8	GE	116B6708G3E	INDICATING LIGHT, TYPE ET-16, 125 VDC, WITH RESISTOR	GEML
21	5	LED	UTL1835-1UR	PILOT LIGHT LED BULBS, 125 VOLTS -- RED	BYDC

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
22	5	DATA	BB4-CR	CLEAR RED CAP	MID
23	3	LED	UTL1835-1AG	PILOT LIGHT LED BULBS,125 VOLT -- GREEN	BYDC
24	3	DATA	BB4-CG	CLEAR GREEN LENS CAP	MID
25	1	BCS	PANEL	RELAY PANEL, 11 GUAGE STEEL, STANDARD PANEL DESIGN, FOR RACK AND PANEL MOUNTED DEVICES, ANSI NO. 70 LIGHT GRAY ENAMEL, WHITE INTERIOR, WITH SUB PAN, WITH TWO UHF BRACKETS, 90"H X 28"W X 18"D	B&D
26	12	BUSS	BM6032SQ	MIDGET FUSE BLOCK, 2 POLE, 30 AMP, 600 VOLT	GEX
27	2	BUSS	LP-CC-1	TYPE LP-CC FUSE, CARTRIDGE TYPE, 1 AMP, 600 VOLT	BYDC
28	12	BUSS	LP-CC-30	TYPE LP-CC FUSE, CARTRIDGE TYPE, 30 AMP, 600 VOLT	BYDC
29	8	BUSS	LP-CC-10	TYPE LP-CC FUSE, CARTRIDGE TYPE, 10 AMP, 600 VOLT	BYDC
30	2	GE	EB25B06	TERMINAL BLOCK, 6 POLE, 600 V, 30 A D, H	GEML

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
31	2	BUSS	LP-CC-5	TYPE LP-CC FUSE, CARTRIDGE TYPE, 5 AMPERE, 600 VOLT	BYDC
32	12	GE	EB25B12	TERMINAL BLOCK, 12 POLE, WITH BLACK MARKING STRIP A, B, C, E, F, G	GEML
33	2	GE	2860351G2	TERMINAL BLOCKS, TYPE EB-4, 4 POLE RA, RB	GEC
34	3	PHOX	0801733	DIN MOUNTING RAIL TYPE NS 35/7.5 STEEL PERFORATED	BCS
35	3	PHOX	1004076	UBE/D TERMINAL STRIP MARKER CARRIER WITH COVER Z	SOUB
36	6	PHOX	0800886	E/ NS 35 N END CLAMP	SOUB
37	6	PHOX	2775113	D-UDK 4 END COVER	SOUB
38	180	PHOX	2775016	UDK4 TERMINAL BLOCK 1-180	SOUB
39	90	PHOX	2775210	UDK4-MTK-P/P TERMINAL BLOCK Z181/Z182... Z359/Z360	SOUB
40	54	PHOX	0828736	ZB6 NUMBER STRIP LABEL PRINTED HORIZONTALLY WITH SEQUENTIAL NUMBERS AS FOLLOWED 1-180 PRINTED TWICE 181-360 PRINTED ONCE	SOUB

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
41	8	PHOX	0829160	ZB6 ORANGE NUMBER STRIP LABEL PRINTED HORIZONTALLY WITH DECADE LABELING 10, 20, 30...400 PRINTED TWICE	SOUB
42	1	BCS	J-HOOK	J-HOOK, STAINLESS STEEL WITH HEX NUTS AND #10-32 THREAD	BCS
43	2	AHH	257-103	BINDING POST-BLACK HEX HEAD, 10- 32, GOLD PLATED	ALIE
44	1	AHH	257-104	BINDING POST-GREEN HEX HEAD, 10- 32, GOLD PLATED	NEW
45	4	OHM	95J10KE	RESISTOR, 10K OHMS, 5 WATTS	ALIE
46	1	BCS	UHF BRACKET	UHF ADAPTER BRACKET, 1U, 19" RACK PLATE	BCS
47	1	AMPH	031-220N	AMPHENOL; BNC BULKHEAD 2 FEMALE ADAPTER	ALIE
48	1	POM	3287	POMONA; UHF FEMALE TO BNC MALE ADAPTER (PART # RFA 8313. WILL NEEDCUSTOMER APPROVAL)	ALIE
49	2	AMPH	031-9	AMPHENOL; BNC RIGHT ANGLE ADAPTER	ALIE

<u>BCS Item</u>	<u>Item Qty</u>	<u>Manuf Code</u>	<u>Stock Number</u>	<u>Item Description</u>	<u>Vendor Code</u>
50	1	POM	2249-C-36	POMONA; 3' BNC CABLE RG-58/U WITH STRAIN RELIEF (PART #	ALIE
51	19	BCS	NAMEPLATES	NAMEPLATES	BCS
52	6	BCS	MANUAL	INSTRUCTION MANUAL	BCS
53	1	BCS	WLMH	WIRE, LUGS, MISC. HARDWARE.	BCS
54	1	BCS	FREIGHT	TRANSPORTATION AND SHIPPING -FREIGHT -PARTS	BCS

KEMCO Industries, LLC

Metal Fabrication and Relay Panels

70 Keyes Court • Sanford, FL 32773

(407) 322-1230 Fax: (407) 322-0032

July 05, 2016

Lake Worth, City of
1900 2nd Avenue North
Lake Worth, FL 33461
Phone: 561-586-1792

Attention: George M. Guirguis
Mobile: 561-719-9037

Quote No.: 31391

Valid Until: August 04, 2016
Terms: NET 30 Days
Delivery: 10 weeks ARO
F.O.B.: DESTINATION
(See Page 3 for Terms & Conditions)

Project: Lake Worth Utilities - Hypoluxo Station

Line	Line Details	Revision	Quantity	Unit Price	Ext. Price
1	CF005-173C-DFR Panel 1, Lake Worth, Scheme 173C-DFR, 1 Carrier		1 EA	\$ 39,947.00	\$ 39,947.00
2	CF005-173C-DFR Panel 2, Lake Worth, Scheme 173C-DFR, 1 Carrier		1 EA	\$ 39,947.00	\$ 39,947.00
3	CF005-173C-DFR Panel 3, Lake Worth, Scheme 173C-DFR, 1 Carrier		1 EA	\$ 30,052.00	\$ 30,052.00

Sub-Total: \$ 109,946.00

Tax: \$ 0.00

Total: \$ 109,946.00

Notes/Exceptions:

- Quoted prices are strictly based on KEMCO proposed Bill of Materials. Additions or changes to model numbers or quantities are subject to price adjustment.
- KEMCO will provide the following drawings: Structural Fabrication & Layout drawings.
- For Construction Wiring Diagrams and Customer Supplied Equipment required 4 weeks prior to ship date.
- Price includes freight. Shipment is by KEMCO, unloading by others.
- Price includes FAT, see attached EQC003 for testing details. Customer Supplied settings will be uploaded to equipment.
- KEMCO's standard craftsmanship warranty is for one year from the date of shipment. OEM warranty periods are passed along to End User.
- Shark Meter has been substituted with a SEL-0735AX00944EXXXXXX16101XX Part Number needs to be verified for acceptance.



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July 05, 2016

Thank you for the opportunity to furnish this proposal. Please contact us if there are any questions or concerns.

Sincerely,

Ryan DeGaten

Ryan DeGaten

rdegaten@kemco.com



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ISO 9001:2008 Certified

Terms and Conditions

- A. Proposal Acceptance:** With acceptance of KEMCO's proposal, the purchaser shall make the quotation and this document part of the binding contract or PO between the purchaser and KEMCO Industries, LLC.
- B. Sales Tax:** Unless otherwise stated, KEMCO's price does not include any state sales use taxes or any other special fees and charges.
- C. Currency:** Unless otherwise stated, all prices shown are U.S. Dollar.
- D. Delivery Dates:** Proposed delivery dates are based on plant capacity at time of quote and are valid only during quotation validity stated on quotation. KEMCO reserves the right to review any delivery dates upon receipt of purchase order or acknowledgement to proceed.
- E. Equipment Testing (Electrical):** Unless otherwise stated, KEMCO will check physical wiring by continuity testing only. No functional or any other form of testing will be performed.
- F. Product Inspection:** KEMCO will visually inspect the workmanship of products manufactured to insure accurate and quality craftsmanship. Unless otherwise stated, additional product testing such as welds, paint, seismic, etc will not be performed.
- G. Exporting:** United States law prohibits disposition of some commodities to sanctioned countries. Refer to the U.S. Government website for a complete list of sanctioned countries, <http://www.treas.gov/offices/enforcement/ofac/programs>. In the event the Buyer fails to comply with United States export laws, KEMCO shall not be held responsible legally or by any other means.
- H. Liquidated Damages:** Unless otherwise stated, KEMCO takes exception to all liquidated damages.
- I. Oral Agreements:** No oral agreements or any other agreements not included within the quotation are valid.
- J. Purchase Order Holding or Cancellation:** If customer request Purchase Order to be placed on hold or cancelled, KEMCO reserves the right to invoice for all cost (including any material, labor, profit or overhead) up to the date of written request.
- K. Customer Changes:** In the event the customer changes any aspect of work after receipt of Purchase Order or acknowledgement to proceed, KEMCO reserves the right to issue change orders for the full amount of cost (includes any material, labor, profit or overhead) associated with such changes.
- L. Warranty:** KEMCO Industries, LLC warrants the products and/or equipment furnished shall be free from defects in material and workmanship for a period of one year from date of shipment. The warranty only applies to the original Purchaser. The products shall conform to the original specifications, drawings or industry standards.
 - L1. The defective items will be repaired or replaced at our option, at no charge, upon receipt of prompt written notice from Purchaser detailing the defect or non-conformity. Such repair or replacement is the exclusive remedy available from KEMCO Industries. The company is not liable for labor costs incurred in removal, reinstallation or other unauthorized repair of the item, for damages of any type whatsoever or for shipping charges from the Purchaser. This warranty shall be void in the event of unauthorized modification or use of the product.
 - L2. KEMCO Industries purchases, assembles, and provides components from other suppliers. In those instances when supplier's component problems occur, KEMCO Industries, LLC will handle and resolve these directly with the supplier or their representative.
 - L3. The foregoing warranty is exclusive and in lieu of any other warranties of quality, whether expressed or implied (including any and all warranty of merchantability of fitness of purpose).

KEMCO Industries, LLC

Metal Fabrication and Relay Panels

70 Keyes Court • Sanford, FL 32773

(407) 322-1230 Fax: (407) 322-0032

July 05, 2016

Bill of Materials

Quote No.: 31391

Lake Worth, City of

Panel 1, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
1	1.00 EA	04215615XXXX4H78424XX	Relay, SEL-421, Standard Plus Sub-cycle Elements, Series Compensation Logic, and Full Automation Firmware, 125/250 Vdc or 120/240 Vac Power Supply, 125 Vdc Mainboard Input Voltage, Horizontal Rack Mount, 5RU, Key Code 5335 <i>Mfr.: Schweitzer Engineering Laboratories</i>
2	1.00 EA	0311L1HD03254X2XX	Relay, SEL-311L-1, -7, Firmware Standard with Improved Functions, 48/125 Vdc or 125 Vac Power Supply, 125 Vdc Input Voltage, Horizontal Rack Mount, 3RU, Key code 9905 ****Customer Supplied**** <i>Mfr.: Schweitzer Engineering Laboratories</i>
3	1.00 EA	US2NEM9AFSX	Transmitter, Receiver, Single Transceiver Unit (3RU) w/Single Power Amplifier, 110/125/250 Vdc w/Auxiliary Power Supply for 20/200mA Output Power Supply, Std Outputs (7 SS, 3 Contacts) + 4 Trip Duty Contact Outputs, Front = 1 RJ-45, Rear = 2 RJ-45 (10/100 BaseT) Ethernet ports, DNP3 Compliant, Power Amp with Frequency Selectivity for Reflected Power, <i>Mfr.: Ametek Power Instruments-Rochester</i>
4	2.00 EA	392-XBX-48P-5.0MADC	Auxiliary relay, Series 392, (DPDT) - (2 form C) 5.0 mADC <i>Mfr.: Struthers Dunn</i>
5	2.00 EA	27E122	Relay Socket, 8 Pin, 300VAC, 10A <i>Mfr.: Potter & Brumfield</i>
6	4.00 EA	6319232	Relay, auxiliary, type TIR, 2.5A maximum pull-in. <i>Mfr.: E-Max Instruments, Inc.</i>
7	1.00 EA	0735AX00944EXXXXXX16101XX	Relay, Power Quality and Revenue Meter SEL-735, 125/250 Vdc Power Supply, One EIA-232 Port, One EIA-485 Port, and One 10/100BASE-T Ethernet Port, Horizontal Panel Mount, EIA-232 Port, Key Code 2248 <i>Mfr.: Schweitzer Engineering Laboratories</i>



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Bill of Materials

Quote No.: 31391

Lake Worth, City of

Panel 1, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
8	2.00 EA	74206TT	Control Switch, Series 24, Spring Return to Position 2, 6 Decks, Pistol Grip Handle, Engraving Code 018B-2B23 (Title "BREAKER CONTROL", "TRIP", "CLOSE") <i>Mfr.: Electroswitch</i>
9	1.00 EA	24202VG	Control Switch, Series 24, Maintained, 2 Decks, Yellow Oval Handle Removable in Position 2, Engraving Code 11C-3S23AX (Title "SYNCHROSCOPE", "BKR 2", "OFF", "BKR 1") <i>Mfr.: Electroswitch</i>
10	1.00 EA	74201D-004	Control Switch, Series 24, Spring Return to Position 2, 1 Deck, Pistol Grip Handle, Engraving Code 10B-2M22X (Title "MOTOR OPERATOR", "OPEN", "CLOSE") <i>Mfr.: Electroswitch</i>
11	5.00 EA	C129A501G01	Test Switch, FT-1, Arranged as (P P P P P P P P P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
12	2.00 EA	C498A020G01	Test Switch, FT-1, Arranged as (C-C C-C C-C C-C C-C), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
13	3.00 EA	C129A514G01	Test Switch, FT-1, Arranged as (P P P C-C C-C C-C P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
14	2.00 EA	C837A407G01	Test Switch, FT-1, Arranged as (C-C C-C C-C C-C P P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
15	3.00 EA	116B6708G5	Indicating Light, GE ET-16, 120Vac, Incandescent Bulb, No Cap <i>Mfr.: GE Grid Solutions, LLC</i>
16	3.00 EA	BB4-CW	Lens cap, White clear for ET16 indicating light. <i>Mfr.: Data Display Products</i>
17	8.00 EA	116B6708G3	Indicating Light, GE ET-16, 125Vdc, Incandescent Bulb, No Cap <i>Mfr.: GE Grid Solutions, LLC</i>
18	5.00 EA	UTL1835-1UR	Lamp, LED, red for ET-16 indicating light.



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Lake Worth, City of

Panel 1, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
			<i>Mfr.: Ledtronics Inc.</i>
19	5.00 EA	BB4-CR	Lens cap, red translucent for ET16 indicating light. <i>Mfr.: Data Display Products</i>
20	3.00 EA	UTL1835-1AG	Lamp, LED, Green for ET-16 indicating light. <i>Mfr.: Ledtronics Inc.</i>
21	3.00 EA	BB4-CG	Lens cap, Green translucent for ET16 indicating light. <i>Mfr.: Data Display Products</i>
22	12.00 EA	BM6032SQ	Fuse block, 2-pole, 30amp, 600 volt, class H, screw terminal. <i>Mfr.: Bussmann by Eaton</i>
23	2.00 EA	LP-CC-1	Fuse, Type LP-CC, Class CC, 150VDC or 600VAC, 1A <i>Mfr.: Bussmann by Eaton</i>
24	12.00 EA	LP-CC-30	Fuse, Type LP-CC, Class CC, 300VDC or 600VAC, 30A <i>Mfr.: Bussmann by Eaton</i>
25	8.00 EA	LP-CC-10	Fuse, Type LP-CC, Class CC, 300VDC or 600VAC, 10A <i>Mfr.: Bussmann by Eaton</i>
26	2.00 EA	LP-CC-5	Fuse, Type LP-CC, Class CC, 150VDC or 600VAC, 5A <i>Mfr.: Bussmann by Eaton</i>
27	12.00 EA	EB25B12	Terminal Block, GE EB-25, 12 Pole, 600V, 30A, Standard Connectors <i>Mfr.: GE Grid Solutions, LLC</i>
28	2.00 EA	EB25B06	Terminal Block, GE EB-25, 6 Pole, 600V, 30A, Standard Connectors <i>Mfr.: GE Grid Solutions, LLC</i>
29	2.00 EA	2860351G2	Terminal board, GE, type EB-4, 4 studs <i>Mfr.: GE Grid Solutions, LLC</i>
30	2.00 EA	0801733	Din mounting rail Type NS 35/7.5 Steel, perforated



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Lake Worth, City of

Panel 1, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
			<i>Mfr.: Phoenix Contact Inc.</i>
31	2.00 EA	1004076	Marker Strip, Type UBE/D with ES KMK-3, Gray Snap-On <i>Mfr.: Phoenix Contact Inc.</i>
32	4.00 EA	0800886	End Clamp, E/NS 35 N <i>Mfr.: Phoenix Contact Inc.</i>
33	4.00 EA	2775113	End cover, type UK 2,5, for sectional terminal blocks <i>Mfr.: Phoenix Contact Inc.</i>
34	180.00 EA	2775016	Terminal Block, Sectional, Type UDK-4 Double Connection, 22-10 AWG, 30A, 600 VAC. <i>Mfr.: Phoenix Contact Inc.</i>
35	36.00 EA	1051016	Label, ZB6 white number strip, printed horizontally, consecutive numbers. <i>Mfr.: Phoenix Contact Inc.</i>
36	4.00 EA	1051210	Label, ZB6 Orange number strip, printed horizontally, For numbers multiple of 10. <i>Mfr.: Phoenix Contact Inc.</i>
37	1.00 EA	0801733	Din mounting rail Type NS 35/7.5 Steel, perforated <i>Mfr.: Phoenix Contact Inc.</i>
38	1.00 EA	1004076	Marker Strip, Type UBE/D with ES KMK-3, Gray Snap-On <i>Mfr.: Phoenix Contact Inc.</i>
39	2.00 EA	0800886	End Clamp, E/NS 35 N <i>Mfr.: Phoenix Contact Inc.</i>
40	2.00 EA	2775113	End cover, type UK 2,5, for sectional terminal blocks <i>Mfr.: Phoenix Contact Inc.</i>
41	90.00 EA	2775210	Terminal Block, Sectional, Type UDK-4 Double Connection with Disconnect Knife Switch, 22-10 AWG, 600 V, 15A <i>Mfr.: Phoenix Contact Inc.</i>
42	18.00 EA	1051016	Label, ZB6 white number strip, printed horizontally, consecutive numbers.



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Lake Worth, City of

Panel 1, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
			<i>Mfr.: Phoenix Contact Inc.</i>
43	4.00 EA	1051210	Label, ZB6 Orange number strip, printed horizontally, For numbers multiple of 10. <i>Mfr.: Phoenix Contact Inc.</i>
44	1.00 EA	9491T11	Bolt, J-hook, steel with one hex nut 8-32 thread, 5/8" projection x 1-5/8" length, zinc plated. (10 per package) Larson 113A. <i>Mfr.: McMaster Carr Supply Company</i>
45	2.00 EA	257-103	Binding post, black hex head, 10-32, gold plated. <i>Mfr.: Newark Electronics</i>
46	1.00 EA	257-104	Binding post, Green hex head, 10-32, gold plated. <i>Mfr.: Newark Electronics</i>
47	1.00 EA	BTC3104	Mechanical grounding lug #4-3/0 awg. <i>Mfr.: Newark Electronics</i>
48	4.00 EA	95J10K	Resistor, type 95J, wirewound 5 watt, 10K ohm. <i>Mfr.:</i>



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July 05, 2016

Bill of Materials

Quote No.: 31391

Lake Worth, City of

Panel 2, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
1	1.00 EA	04215615XXXX4H78424XX	Relay, SEL-421, Standard Plus Sub-cycle Elements, Series Compensation Logic, and Full Automation Firmware, 125/250 Vdc or 120/240 Vac Power Supply, 125 Vdc Mainboard Input Voltage, Horizontal Rack Mount, 5RU, Key Code 5335 <i>Mfr.: Schweitzer Engineering Laboratories</i>
2	1.00 EA	0311L1HD03254X2XX	Relay, SEL-311L-1, -7, Firmware Standard with Improved Functions, 48/125 Vdc or 125 Vac Power Supply, 125 Vdc Input Voltage, Horizontal Rack Mount, 3RU, Key code 9905 ****Customer Supplied**** <i>Mfr.: Schweitzer Engineering Laboratories</i>
3	1.00 EA	US2NEM9AFSX	Transmitter, Receiver, Single Transceiver Unit (3RU) w/Single Power Amplifier, 110/125/250 Vdc w/Auxiliary Power Supply for 20/200mA Output Power Supply, Std Outputs (7 SS, 3 Contacts) + 4 Trip Duty Contact Outputs, Front = 1 RJ-45, Rear = 2 RJ-45 (10/100 BaseT) Ethernet ports, DNP3 Compliant, Power Amp with Frequency Selectivity for Reflected Power, <i>Mfr.: Ametek Power Instruments-Rochester</i>
4	2.00 EA	392-XBX-48P-5.0MADC	Auxiliary relay, Series 392, (DPDT) - (2 form C) 5.0 mADC <i>Mfr.: Struthers Dunn</i>
5	2.00 EA	27E122	Relay Socket, 8 Pin, 300VAC, 10A <i>Mfr.: Potter & Brumfield</i>
6	4.00 EA	6319232	Relay, auxiliary, type TIR, 2.5A maximum pull-in. <i>Mfr.: E-Max Instruments, Inc.</i>
7	1.00 EA	0735AX00944EXXXXXX16101XX	Relay, Power Quality and Revenue Meter SEL-735, 125/250 Vdc Power Supply, One EIA-232 Port, One EIA-485 Port, and One 10/100BASE-T Ethernet Port, Horizontal Panel Mount, EIA-232 Port, Key Code 2248 <i>Mfr.: Schweitzer Engineering Laboratories</i>



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Lake Worth, City of

Panel 2, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
8	2.00 EA	74206TT	Control Switch, Series 24, Spring Return to Position 2, 6 Decks, Pistol Grip Handle, Engraving Code 018B-2B23 (Title "BREAKER CONTROL", "TRIP", "CLOSE") <i>Mfr.: Electroswitch</i>
9	1.00 EA	24202VG	Control Switch, Series 24, Maintained, 2 Decks, Yellow Oval Handle Removable in Position 2, Engraving Code 11C-3S23AX (Title "SYNCHROSCOPE", "BKR 2", "OFF", "BKR 1") <i>Mfr.: Electroswitch</i>
10	1.00 EA	74201D-004	Control Switch, Series 24, Spring Return to Position 2, 1 Deck, Pistol Grip Handle, Engraving Code 10B-2M22X (Title "MOTOR OPERATOR", "OPEN", "CLOSE") <i>Mfr.: Electroswitch</i>
11	5.00 EA	C129A501G01	Test Switch, FT-1, Arranged as (P P P P P P P P P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
12	2.00 EA	C498A020G01	Test Switch, FT-1, Arranged as (C-C C-C C-C C-C C-C), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
13	3.00 EA	C129A514G01	Test Switch, FT-1, Arranged as (P P P C-C C-C C-C P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
14	2.00 EA	C837A407G01	Test Switch, FT-1, Arranged as (C-C C-C C-C C-C P P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
15	3.00 EA	116B6708G5	Indicating Light, GE ET-16, 120Vac, Incandescent Bulb, No Cap <i>Mfr.: GE Grid Solutions, LLC</i>
16	3.00 EA	BB4-CW	Lens cap, White clear for ET16 indicating light. <i>Mfr.: Data Display Products</i>
17	8.00 EA	116B6708G3	Indicating Light, GE ET-16, 125Vdc, Incandescent Bulb, No Cap <i>Mfr.: GE Grid Solutions, LLC</i>
18	5.00 EA	UTL1835-1UR	Lamp, LED, red for ET-16 indicating light.



KEMCO Industries, LLC

Metal Fabrication and Relay Panels

70 Keyes Court • Sanford, FL 32773

(407) 322-1230 Fax: (407) 322-0032

July 05, 2016

Bill of Materials

Quote No.: 31391

Lake Worth, City of

Panel 2, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
			<i>Mfr.: Ledtronics Inc.</i>
19	5.00 EA	BB4-CR	Lens cap, red translucent for ET16 indicating light. <i>Mfr.: Data Display Products</i>
20	3.00 EA	UTL1835-1AG	Lamp, LED, Green for ET-16 indicating light. <i>Mfr.: Ledtronics Inc.</i>
21	3.00 EA	BB4-CG	Lens cap, Green translucent for ET16 indicating light. <i>Mfr.: Data Display Products</i>
22	12.00 EA	BM6032SQ	Fuse block, 2-pole, 30amp, 600 volt, class H, screw terminal. <i>Mfr.: Bussmann by Eaton</i>
23	2.00 EA	LP-CC-1	Fuse, Type LP-CC, Class CC, 150VDC or 600VAC, 1A <i>Mfr.: Bussmann by Eaton</i>
24	12.00 EA	LP-CC-30	Fuse, Type LP-CC, Class CC, 300VDC or 600VAC, 30A <i>Mfr.: Bussmann by Eaton</i>
25	8.00 EA	LP-CC-10	Fuse, Type LP-CC, Class CC, 300VDC or 600VAC, 10A <i>Mfr.: Bussmann by Eaton</i>
26	2.00 EA	LP-CC-5	Fuse, Type LP-CC, Class CC, 150VDC or 600VAC, 5A <i>Mfr.: Bussmann by Eaton</i>
27	12.00 EA	EB25B12	Terminal Block, GE EB-25, 12 Pole, 600V, 30A, Standard Connectors <i>Mfr.: GE Grid Solutions, LLC</i>
28	2.00 EA	EB25B06	Terminal Block, GE EB-25, 6 Pole, 600V, 30A, Standard Connectors <i>Mfr.: GE Grid Solutions, LLC</i>
29	2.00 EA	2860351G2	Terminal board, GE, type EB-4, 4 studs <i>Mfr.: GE Grid Solutions, LLC</i>
30	2.00 EA	0801733	Din mounting rail Type NS 35/7.5 Steel, perforated



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Lake Worth, City of

Panel 2, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
			<i>Mfr.: Phoenix Contact Inc.</i>
31	2.00 EA	1004076	Marker Strip, Type UBE/D with ES KMK-3, Gray Snap-On <i>Mfr.: Phoenix Contact Inc.</i>
32	4.00 EA	0800886	End Clamp, E/NS 35 N <i>Mfr.: Phoenix Contact Inc.</i>
33	4.00 EA	2775113	End cover, type UK 2,5, for sectional terminal blocks <i>Mfr.: Phoenix Contact Inc.</i>
34	180.00 EA	2775016	Terminal Block, Sectional, Type UDK-4 Double Connection, 22-10 AWG, 30A, 600 VAC. <i>Mfr.: Phoenix Contact Inc.</i>
35	36.00 EA	1051016	Label, ZB6 white number strip, printed horizontally, consecutive numbers. <i>Mfr.: Phoenix Contact Inc.</i>
36	4.00 EA	1051210	Label, ZB6 Orange number strip, printed horizontally, For numbers multiple of 10. <i>Mfr.: Phoenix Contact Inc.</i>
37	1.00 EA	0801733	Din mounting rail Type NS 35/7.5 Steel, perforated <i>Mfr.: Phoenix Contact Inc.</i>
38	1.00 EA	1004076	Marker Strip, Type UBE/D with ES KMK-3, Gray Snap-On <i>Mfr.: Phoenix Contact Inc.</i>
39	2.00 EA	0800886	End Clamp, E/NS 35 N <i>Mfr.: Phoenix Contact Inc.</i>
40	2.00 EA	2775113	End cover, type UK 2,5, for sectional terminal blocks <i>Mfr.: Phoenix Contact Inc.</i>
41	90.00 EA	2775210	Terminal Block, Sectional, Type UDK-4 Double Connection with Disconnect Knife Switch, 22-10 AWG, 600 V, 15A <i>Mfr.: Phoenix Contact Inc.</i>
42	18.00 EA	1051016	Label, ZB6 white number strip, printed horizontally, consecutive numbers.



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Lake Worth, City of

Panel 2, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
			<i>Mfr.: Phoenix Contact Inc.</i>
43	4.00 EA	1051210	Label, ZB6 Orange number strip, printed horizontally, For numbers multiple of 10. <i>Mfr.: Phoenix Contact Inc.</i>
44	1.00 EA	9491T11	Bolt, J-hook, steel with one hex nut 8-32 thread, 5/8" projection x 1-5/8" length, zinc plated. (10 per package) Larson 113A. <i>Mfr.: McMaster Carr Supply Company</i>
45	2.00 EA	257-103	Binding post, black hex head, 10-32, gold plated. <i>Mfr.: Newark Electronics</i>
46	1.00 EA	257-104	Binding post, Green hex head, 10-32, gold plated. <i>Mfr.: Newark Electronics</i>
47	1.00 EA	BTC3104	Mechanical grounding lug #4-3/0 awg. <i>Mfr.: Newark Electronics</i>
48	4.00 EA	95J10K	Resistor, type 95J, wirewound 5 watt, 10K ohm. <i>Mfr.:</i>



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Lake Worth, City of

Panel 3, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
1	1.00 EA	2730U0ARAX1111AAAAX0	Unmanaged Ethernet Switch, Rack Mount, 125/250 VDC Power Supply A, 125/250 VDC Power Supply B, 16 10/100BASE-T Ports, Rack Mount, Key Code 3166 <i>Mfr.: Schweitzer Engineering Laboratories</i>
2	1.00 EA	24070001B	Satellite Clock, SEL-2407, Standard Firmware, Panel Mount, GPS Antenna (235-0113) with 75 feed of Cable (C960), Key Code 2368 <i>Mfr.: Schweitzer Engineering Laboratories</i>
3	1.00 EA	04215615XXXX4H78424XX	Relay, SEL-421, Standard Plus Sub-cycle Elements, Series Compensation Logic, and Full Automation Firmware, 125/250 Vdc or 120/240 Vac Power Supply, 125 Vdc Mainboard Input Voltage, Horizontal Rack Mount, 5RU, Key Code 5335 <i>Mfr.: Schweitzer Engineering Laboratories</i>
4	1.00 EA	0311L1HD03254X2XX	Relay, SEL-311L-1, -7, Firmware Standard with Improved Functions, 48/125 Vdc or 125 Vac Power Supply, 125 Vdc Input Voltage, Horizontal Rack Mount, 3RU, Key code 9905 ****Customer Supplied**** <i>Mfr.: Schweitzer Engineering Laboratories</i>
5	1.00 EA	3530HB0AX211X0XXXXXX	Real Time Automation Controller (RTAC), SEL-3530, 48/125 Vdc or 120 Vac Power Supply, Two 10/100BASE-T, Horizontal Panel Mount, 3U, Key Code 5589 ****Customer Supplied**** <i>Mfr.: Schweitzer Engineering Laboratories</i>
6	1.00 EA	251603114X	Remote I/O Module, SEL-2516, 48/125 Vdc or 125 Vac Power Supply, 125Vdc Control Input Voltage, SEL-2800 Compatible (V-pin connector, 200 µm core multimode fiber, 650 nm, 500 m range), Key Code 3148 ****Customer Supplied**** <i>Mfr.: Schweitzer Engineering Laboratories</i>
7	2.00 EA	392-XBX-48P-5.0MADC	Auxiliary relay, Series 392, (DPDT) - (2 form C) 5.0 mADC



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Panel 3, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
			<i>Mfr.: Struthers Dunn</i>
8	2.00 EA	27E122	Relay Socket, 8 Pin, 300VAC, 10A <i>Mfr.: Potter & Brumfield</i>
9	4.00 EA	6319232	Relay, auxiliary, type TIR, 2.5A maximum pull-in. <i>Mfr.: E-Max Instruments, Inc.</i>
10	1.00 EA	0735AX00944EXXXXXX16101XX	Relay, Power Quality and Revenue Meter SEL-735, 125/250 Vdc Power Supply, One EIA-232 Port, One EIA-485 Port, and One 10/100BASE-T Ethernet Port, Horizontal Panel Mount, EIA-232 Port , Key Code 2248 <i>Mfr.: Schweitzer Engineering Laboratories</i>
11	2.00 EA	74206TT	Control Switch, Series 24, Spring Return to Postion 2, 6 Decks, Pistol Grip Handle, Engraving Code 018B-2B23 (Title "BREAKER CONTROL", "TRIP", "CLOSE") <i>Mfr.: Electroswitch</i>
12	1.00 EA	24202VG	Control Switch, Series 24, Maintained, 2 Decks, Yellow Oval Handle Removable in Postion 2, Engraving Code 11C-3S23AX (Title "SYNCHROSCOPE", "BKR 2", "OFF", "BKR 1") <i>Mfr.: Electroswitch</i>
13	1.00 EA	74201D-004	Control Switch, Series 24, Spring Return to Postion 2, 1 Deck, Pistol Grip Handle, Engraving Code 10B-2M22X (Title "MOTOR OPERATOR", "OPEN", "CLOSE") <i>Mfr.: Electroswitch</i>
14	5.00 EA	C129A501G01	Test Switch, FT-1, Arranged as (P P P P P P P P P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
15	2.00 EA	C498A020G01	Test Switch, FT-1, Arranged as (C-C C-C C-C C-C C-C), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
16	3.00 EA	C129A514G01	Test Switch, FT-1, Arranged as (P P P C-C C-C C-C P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>



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Lake Worth, City of

Panel 3, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
17	2.00 EA	C837A407G01	Test Switch, FT-1, Arranged as (C-C C-C C-C C-C P P), Clear Cover, Screw Terminals <i>Mfr.: ABB, Inc.</i>
18	3.00 EA	116B6708G5	Indicating Light, GE ET-16, 120Vac, Incandescent Bulb, No Cap <i>Mfr.: GE Grid Solutions, LLC</i>
19	3.00 EA	BB4-CW	Lens cap, White clear for ET16 indicating light. <i>Mfr.: Data Display Products</i>
20	8.00 EA	116B6708G3	Indicating Light, GE ET-16, 125Vdc, Incandescent Bulb, No Cap <i>Mfr.: GE Grid Solutions, LLC</i>
21	5.00 EA	UTL1835-1UR	Lamp, LED, red for ET-16 indicating light. <i>Mfr.: Ledtronics Inc.</i>
22	5.00 EA	BB4-CR	Lens cap, red translucent for ET16 indicating light. <i>Mfr.: Data Display Products</i>
23	3.00 EA	UTL1835-1AG	Lamp, LED, Green for ET-16 indicating light. <i>Mfr.: Ledtronics Inc.</i>
24	3.00 EA	BB4-CG	Lens cap, Green translucent for ET16 indicating light. <i>Mfr.: Data Display Products</i>
25	12.00 EA	BM6032SQ	Fuse block, 2-pole, 30amp, 600 volt, class H, screw terminal. <i>Mfr.: Bussmann by Eaton</i>
26	2.00 EA	LP-CC-1	Fuse, Type LP-CC, Class CC, 150VDC or 600VAC, 1A <i>Mfr.: Bussmann by Eaton</i>
27	12.00 EA	LP-CC-30	Fuse, Type LP-CC, Class CC, 300VDC or 600VAC, 30A <i>Mfr.: Bussmann by Eaton</i>
28	8.00 EA	LP-CC-10	Fuse, Type LP-CC, Class CC, 300VDC or 600VAC, 10A <i>Mfr.: Bussmann by Eaton</i>



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Panel 3, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
29	2.00 EA	LP-CC-5	Fuse, Type LP-CC, Class CC, 150VDC or 600VAC, 5A <i>Mfr.: Bussmann by Eaton</i>
30	12.00 EA	EB25B12	Terminal Block, GE EB-25, 12 Pole, 600V, 30A, Standard Connectors <i>Mfr.: GE Grid Solutions, LLC</i>
31	2.00 EA	EB25B06	Terminal Block, GE EB-25, 6 Pole, 600V, 30A, Standard Connectors <i>Mfr.: GE Grid Solutions, LLC</i>
32	2.00 EA	2860351G2	Terminal board, GE, type EB-4, 4 studs <i>Mfr.: GE Grid Solutions, LLC</i>
33	2.00 EA	0801733	Din mounting rail Type NS 35/7.5 Steel, perforated <i>Mfr.: Phoenix Contact Inc.</i>
34	2.00 EA	1004076	Marker Strip, Type UBE/D with ES KMK-3, Gray Snap-On <i>Mfr.: Phoenix Contact Inc.</i>
35	4.00 EA	0800886	End Clamp, E/NS 35 N <i>Mfr.: Phoenix Contact Inc.</i>
36	4.00 EA	2775113	End cover, type UK 2,5, for sectional terminal blocks <i>Mfr.: Phoenix Contact Inc.</i>
37	180.00 EA	2775016	Terminal Block, Sectional, Type UDK-4 Double Connection, 22-10 AWG, 30A, 600 VAC. <i>Mfr.: Phoenix Contact Inc.</i>
38	36.00 EA	1051016	Label, ZB6 white number strip, printed horizontally, consecutive numbers. <i>Mfr.: Phoenix Contact Inc.</i>
39	4.00 EA	1051210	Label, ZB6 Orange number strip, printed horizontally, For numbers multiple of 10. <i>Mfr.: Phoenix Contact Inc.</i>
40	1.00 EA	0801733	Din mounting rail Type NS 35/7.5 Steel, perforated <i>Mfr.: Phoenix Contact Inc.</i>



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Lake Worth, City of

Panel 3, Lake Worth, Scheme 173C-DFR, 1 Carrier

Item	Quantity	Part Number	Description
41	1.00 EA	1004076	Marker Strip, Type UBE/D with ES KMK-3, Gray Snap-On <i>Mfr.: Phoenix Contact Inc.</i>
42	2.00 EA	0800886	End Clamp, E/NS 35 N <i>Mfr.: Phoenix Contact Inc.</i>
43	2.00 EA	2775113	End cover, type UK 2,5, for sectional terminal blocks <i>Mfr.: Phoenix Contact Inc.</i>
44	90.00 EA	2775210	Terminal Block, Sectional, Type UDK-4 Double Connection with Disconnect Knife Switch, 22-10 AWG, 600 V, 15A <i>Mfr.: Phoenix Contact Inc.</i>
45	18.00 EA	1051016	Label, ZB6 white number strip, printed horizontally, consecutive numbers. <i>Mfr.: Phoenix Contact Inc.</i>
46	4.00 EA	1051210	Label, ZB6 Orange number strip, printed horizontally, For numbers multiple of 10. <i>Mfr.: Phoenix Contact Inc.</i>
47	1.00 EA	9491T11	Bolt, J-hook, steel with one hex nut 8-32 thread, 5/8" projection x 1-5/8" length, zinc plated. (10 per package) Larson 113A. <i>Mfr.: McMaster Carr Supply Company</i>
48	2.00 EA	257-103	Binding post, black hex head, 10-32, gold plated. <i>Mfr.: Newark Electronics</i>
49	1.00 EA	257-104	Binding post, Green hex head, 10-32, gold plated. <i>Mfr.: Newark Electronics</i>
50	1.00 EA	BTC3104	Mechanical grounding lug #4-3/0 awg. <i>Mfr.: Newark Electronics</i>
51	4.00 EA	95J10K	Resistor, type 95J, wirewound 5 watt, 10K ohm. <i>Mfr.:</i>



Date: / /		Job #:	Panel #:		
Project Specialist:		Initials	Emp#	Customer:	
Step	COMMENCEMENT CHECKS	Accepted (√)	Initials/Emp#	Date	
1	Verify equipment installed against elementary drawings to ensure equipment operating voltages match the input voltage on the elementary drawings before inducing voltage into circuits. This applies to AC voltage circuits, AC current circuits and DC control and power circuits.				
2	Check fuse ratings to verify they match the elementary drawings.				
3	Check the color of lamps and lens covers of indicating lights.				
Step	DC CIRCUITS	Accepted (√)	Initials/Emp#	Date	
DC Power Circuits					
4	Apply DC voltage to individual circuits at the terminal blocks and verify magnitude and polarity of each sub-circuit.				
5	Verify correct isolation of circuits when fuses are pulled.				
6	Verify magnitudes and polarities of DC power on relays and meters.				
7	Verify each microprocessor powers up and displays no hardware errors.				
Relay Operation					
8	Verify proper operation of electromechanical relays (this includes Lockout Relays and Aux. Relays) by applying current to the device to cause operation and check if the relay operations it's contacts.				
9	Verify nominal (Normally Open or Normally Closed) status of all relay contacts. (Note: Output contacts on microprocessor type relays will not be operated during functional test. Operation of contacts is tested by the relay manufacturer and documented on the relay's test report.)				
Control Wiring Continuity and Sequence Operation Test					
10	Where applicable, connect a dummy breaker to a control circuit and cause all trips to occur and verify all lockout conditions, including lockout contacts and external inputs (like customer DCS inputs or generator protection). The dummy breaker should be connected to only one trip coil at a time in order to verify which trip coil is energized from which contact.				
11	Verify the sequence of operation by devices to ensure devices operate in the correct sequence and functions properly.				
12	Make sure that all control and local/remote switches function as designed. Verify any pre-installed jumpers match the elementary drawings and wiring diagrams.				
13	Check miscellaneous circuits (such as motor operated switch, indicating lights, lockout and trip circuit monitors, annunciators, transducer and meter outputs).				
14	Any incomplete circuits shall be tested by continuity checks based on elementary drawings.				
Step	AC CIRCUITS	Accepted (√)	Initials/Emp#	Date	
15	Test all AC voltage circuits by injecting voltage at the terminal block and verifying the correct circuit is energized. Verify the correct phase drop out when the test switch finger is open and the proper side of the test switch remains live (perform on a per phase basis).				
16	Test all AC current circuits by injecting three phase current at the terminal block and verifying the correct circuit is energized. Use a FT probe to check test switch currents and read meter or relay display to confirm proper input to devices. Verify the correct phase drop out when the test switch finger is open and the proper side of the test switch remains live (perform on a per phase basis).				
17	Verify the factory installed CT and VT ratios of meters match ratios shown on elementary. (Note: Only applicable when meters are ordered with pre-installed CT and VT ratios.)				
18	Check panel light and receptacle circuit.				

Sugey Moreno

From: Ryan DeGaten <rdegaten@kemco.com>
Sent: Thursday, June 30, 2016 8:14 AM
To: George Guirguis
Subject: RE: CLWU quote for relay panels - Hypoluxo Station
Attachments: 31391 - Proposal - CLWU.pdf

George,

Thank you for the opportunity to provide a quote for the Hypoluxo Substation. I have attached our proposal along with a copy of the bill of materials. If you have any questions don't hesitate to ask.

Best Regards,

Ryan DeGaten
KEMCO Industries LLC
70 Keyes Ct.
Sanford, FL 32773
407-322-1230

From: George Guirguis [mailto:GGuirguis@LakeWorth.org]
Sent: Friday, June 24, 2016 12:26 PM
To: Ryan DeGaten <rdegaten@kemco.com>
Subject: CLWU quote for relay panels - Hypoluxo Station

Good afternoon Ryan,

CLWU is interested in quotes for Qty. 3 relay panels based on the attached design.

Exceptions:

- Panels 1&2
 - Using SEL 311L (P/N 0311L1HD03254X2XX) rather than GE D60 relays (CLWU provided – will ship to panel manufacturer)
 - No Secondary carrier/pilot schemes (Primary only)
 - No DFR
- Panel 3
 - Using SEL 311L (P/N 0311L1HD03254X2XX) rather than GE D60 relays (CLWU provided – will ship to panel manufacturer)
 - No Primary or Secondary carrier/pilot schemes
 - NO DFR
 - Refer to attached for additional changes

The part numbers for the CLWU provided items as per Note 5 of the attached are:

MANUFACTURER	MODEL	PART NUMBER	QUANTITY
SEL	311L	0311L1HD03254X2XX	3
SEL	RTAC 3530	3530HBOBX211X0	1
SEL	2516	251603114X	1

Please let me know if you require any additional information.

Thank you,

George M. Guirguis, P.E.
Electrical Engineer

City of Lake Worth Electric Utilities
1900 2nd Avenue North
Lake Worth, FL 33461
Office: (561)586-1792
Mobile: (561)719-9037

gguirguis@lakeworth.org



SEL Enclosure Products



Proposal for City of Lake Worth

Hypoluxo Sub

Proposal #: SELMX16-0455 Rev. 1

Date Submitted: June 17, 2016

Customer Contact Information

George M. Guirguis
Electrical Engineer
City of Lake Worth
1900 2nd Ave North
Lake Worth, FL 33461
Office: 561-586-1792
Cell: 954-258-7917

SEL Contact Information

SEL Enclosure Products
Schweitzer Engineering Laboratories (“SEL”)
2401 Whitehall park Drive, Suite 200
Charlotte, NC 28273-3590, USA
Phone: 704-587-3605
Fax: 704-504-5969

Angelo DeMatteo
Email: angelo_DeMatteo@selinc.com

Sales Representative Contact Information

Tim Venters, P.E.
Utility & Industrial Sales Engineer
Power Connections
Cell: 561-909-7964
Email: tim@powerconnections.com

Document Revision Table

Rev.	Issue Date	Notes
0	6/17/2016	Initial Revision
1	6/22/2016	Revised pricing / schedule to include installation of customer supplied material.



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1 Scope of Services

1.1 General

This proposal is provided in response to City of Lake Worth Request for Quotation dated June 17, 2016, for Hypoluxo Sub and drawings and specifications indicated below:

Drawing / Spec Number	Rev.	Drawing / Spec Number	Rev.
Single panel primary & secondary scheme 173C with FDR Panel arrangement	-	Single panel primary & secondary scheme 173C with FDR Wiring Diagram	4
Single panel primary & secondary scheme 173C with FDR AC Elementary Diagram	1	Single panel primary & secondary scheme 173C with FDR DC Elementary Diagram	2
Transmission line directional comparison single panel relay system using SEL 421 and GE D60 relays Specification RS-173C DFR	6	Customer Email Dated 6/22/2016 Hypoluxo_Panel_Model_REV 1 (attached)	1

1.2 Price Schedule

Service Description	Qty	Unit Price	Total Price
1. 173C W/Out DFR Panel 1 & Panel 2 per Hardware Defined in Table 1	1	\$38,292.50	\$76,585.00
2. 173C W/Out DFR and UPLC Panel 3 per Hardware Defined in Table 2	1	\$27,540.00	\$27,540.00
3. Freight DDP to City of Lake Worth, FL	1	\$1,870.00	\$1,870.00
Total Price			\$105,995.00

Notes:

- Where applicable, SEL can offer a 15% discount in price of the specified LOR's and Control Switches devices to convert to the SEL Rotary Switches (see Section 4). SEL switches and lock out relays have higher ratings (see attached flyer), carry SELs standard 10-year warranty, are more durable, and utilize captive screws for a wiring time reduction of 50% (fifty percent). By agreeing to such conversion, SEL will update project specific drawings where the specified LOR's and Control Switches devices are currently depicted free of charge. For more information please visit <https://www.selinc.com/RotarySwitches/>.
- This price does not include any sales or use tax.



1.3 Deliverables to Customer

Table 1. Panels 1, 2 BOM

Item	Qty	Manufacturer	Part/Model Number	Description
1	1	SEL	04215615XXXX4H78424XX	Protection, Automation and Control System
2	1	SEL	0735AX20944CXXXXXX26101XX	Power quality and revenue meter
3	1	SEL	040-00001-0000	Open Back Rack (30x24x90)
4	5	ABB	C129A501G01	Test Block FT-1 10 poles. 10 P
5	3	ABB	C129A514G01	Test Block FT-1 10 poles. 3P-3C-1P
6	2	ABB	C498A020G01	Test Block FT-1 10 poles.. 5 C
7	2	ABB	C837A407G01	Test Block FT-1 10 poles. 8C shorting-2P
8	3	Phoenix	801733	Din mounting rail Type NS 35/7.5 Steel perforated
9	3	Phoenix	1004076	Terminal strip Marker carrier with cover
10	6	Phoenix	800886	E/NS 35 N End Clamp
11	6	Phoenix	2775113	D-UDK 4 End Cover
12	270	Phoenix	2775016	UDK4 Terminal Block
13	54	Phoenix	1051016	ZB6 White number strip label mount on both sides of block, printed horizontally
14	8	Phoenix	1051210	ZB6 Orange number strip label, mount on both sides of block, printed horizontally
15	2	Abbatron/H.H. Smith	257-103	binding post, black hex head, 10-32, gold plated
16	1	Abbatron/H.H. Smith	257-104	Binding post, black hex head, 10-32 gold plated
17	4	Ohmite	95J10k	Wirewound resistor, 10Kohm, 5 watt
18	1	Ametek	US2NEM9AFSX	(UPLC-II) Universal Power - Line Carrier
19	2	Potter & Brumfield	27E122.	Octal Relay Socket
20	4	E-MAX	6319232	Relay 2.5A DC Maximum Pull-IN.
21	2	Struthers-Dunn	392XBX-48P-M-5.0mA/DC	Auxiliary Relay, 125Vdc, 10kOhm
22	2	Electroswitch	74206TT	Electroswitch; Breaker control switch, pistol grip handle, red/green flag
23	1	Electroswitch	24202VG	Electroswitch; Synchronizing Control switch with removable handle
24	1	Electroswitch	74201D-004	Electroswitch; Motor Operator control switch with pistol grip handle
25	12	BUSSMANN	BM6032SQ	Midget Fuse Block, 2 pole, 30 amp, 600V
26	2	BUSSMANN	LP-CC-1	Fuse Type LP-CC, cartridge, 1A, 600V
27	12	BUSSMANN	LP-CC-30	Fuse Type LP-CC, cartridge, 30A, 600V



28	8	BUSSMANN	LP-CC-10	Fuse Type LP-CC, cartridge, 10A, 600V
29	2	BUSSMANN	LP-CC-5	Fuse Type lp-cc, cartridge, 5A, 600V
30	3	Ledtronics	1835	Incandescent bulb
31	3	Data Display Products	BB4-CW	Clear white cap
32	5	Ledtronics	UTL1835-1UR	Red Led
33	5	Data Display Products	BB4-CR	Clear Red cap
34	3	Ledtronics	UTL1835-1AG	Green Led
35	3	Data Display Products	BB4-CG	Clear Green cap
36	3	GE	116B6708G5	Lamp type ET-16, 120 VAC, 1900 Ohm
37	8	GE	116B6708G3	Lamp type ET-16, 125 VAC, 2 kOhm
38	12	GE	EB25B12	Terminal Block Type EB-25, 12 point
39	2	GE	EB25B06	Terminal block Type EB-25, 6 point
40	2	GE	2860351G2	Terminal Block Type EB-4, 4 point.
*	0	SEL	311L1HD03254X2XX	CUSTOMER SUPPLIED SEL-311L

Table 2. Panel 3 BOM

Item	Qty	Manufacturer	Part/Model Number	Description
1	1	SEL	04215615XXXX4H78424XX	Protection, Automation and Control System
2	1	SEL	0735AX20944CXXXXXX26101XX	Power quality and revenue meter
3	1	SEL	2730U0ARCX1111AAAAX0	Unmanaged Ethernet Switch
4	1	SEL	24070001B	Satellite-Synchronized Clock
5	1	SEL	040-00001-0000	Open Back Rack (30x24x90)
6	5	ABB	C129A501G01	Test Block FT-1 10 poles. 10 P
7	3	ABB	C129A514G01	Test Block FT-1 10 poles. 3P-3C-1P
8	2	ABB	C498A020G01	Test Block FT-1 10 poles.. 5 C
9	2	ABB	C837A407G01	Test Block FT-1 10 poles. 8C shorting-2P
10	3	Phoenix	801733	Din mounting rail Type NS 35/7.5 Steel perforated
11	3	Phoenix	1004076	Terminal strip Marker carrier with cover
12	6	Phoenix	800886	E/NS 35 N End Clamp
13	6	Phoenix	2775113	D-UDK 4 End Cover
14	270	Phoenix	2775016	UDK4 Terminal Block
15	54	Phoenix	1051016	ZB6 White number strip label mount on both sides of block, printed horizontally
16	8	Phoenix	1051210	ZB6 Orange number strip label, mount on both sides of block, printed horizontally



17	2	Abbatron/H.H. Smith	257-103	binding post, black hex head, 10-32, gold plated
18	1	Abbatron/H.H. Smith	257-104	Binding post, black hex head, 10-32 gold plated
19	4	Ohmite	95J10k	Wirewound resistor, 10Kohm, 5 watt
20	2	Potter & Brumfield	27E122.	Octal Relay Socket
21	4	E-MAX	6319232	Relay 2.5A DC Maximum Pull-IN.
22	2	Struthers-Dunn	392XBX-48P-M-5.0mA/DC	Auxiliary Relay, 125Vdc, 10kOhm
23	2	Electroswitch	74206TT	Electroswitch; Breaker control switch, pistol grip handle, red/green flag
24	1	Electroswitch	24202VG	Electroswitch; Synchronizing Control switch with removable handle
25	1	Electroswitch	74201D-004	Electroswitch; Motor Operator control switch with pistol grip handle
26	12	BUSSMANN	BM6032SQ	Midget Fuse Block, 2 pole, 30 amp, 600V
27	2	BUSSMANN	LP-CC-1	Fuse Type LP-CC, cartridge, 1A, 600V
28	12	BUSSMANN	LP-CC-30	Fuse Type LP-CC, cartridge, 30A, 600V
29	8	BUSSMANN	LP-CC-10	Fuse Type LP-CC, cartridge, 10A, 600V
30	2	BUSSMANN	LP-CC-5	Fuse Type lp-cc, cartridge, 5A, 600V
31	3	Ledtronics	1835	Incandescent bulb
32	3	Data Display Products	BB4-CW	Clear white cap
33	5	Ledtronics	UTL1835-1UR	Red Led
34	5	Data Display Products	BB4-CR	Clear Red cap
35	3	Ledtronics	UTL1835-1AG	Green Led
36	3	Data Display Products	BB4-CG	Clear Green cap
37	3	GE	116B6708G5	Lamp type ET-16, 120 VAC, 1900 Ohm
38	8	GE	116B6708G3	Lamp type ET-16, 125 VAC, 2 kOhm
39	12	GE	EB25B12	Terminal Block Type EB-25, 12 point
40	2	GE	EB25B06	Terminal block Type EB-25, 6 point
41	2	GE	2860351G2	Terminal Block Type EB-4, 4 point.
*	0	SEL	311L1HD03254X2XX	CUSTOMER SUPPLIED SEL-311L
*	0	SEL	3530HB0BX211X0	CUSTOMER SUPPLIED SEL-3530
*	0	SEL	251603114X	CUSTOMER SUPPLIED SEL-2516



1.3.1 Table A. Engineering Deliverables

This proposal does not include:

- On site work.
- Customer training.
- Supply of equipment necessary for testing of relays.
- Special tools for maintenance or installation.
- Setting of protective relays or programming of HMI.

Deliverables	By Customer	By SEL	Schedule
IFC Protective One Line Diagram	✓		Within one week of receipt of PO.
IFC BOMS	✓		Within one week of receipt of PO.
IFC Panel Layout and Structural Drawings	✓		Two weeks after receipt of PO.
IFC Nameplate List	✓		Three weeks after receipt of PO.
Customer Supplied Equipment Arrives at Laredo, TX Warehouse	✓		Four weeks after receipt of PO.
IFC AC / DC Schematics	✓		Five weeks after receipt of PO.
IFC Wiring Diagrams	✓		Five weeks after receipt of PO.
Factory Acceptance Testing		✓	Ten weeks after receipt of PO.
Panels Ship from Facility		✓	Eleven weeks after receipt of PO.
Panels Arrive at Customer Site		✓	Twelve weeks after receipt of PO.
Instruction Manuals: One (1) CD		✓	With the panel shipment.
As Built One (1) Hardcopy / CD		✓	With the panel shipment.

Note 1: AFC = Approved For Construction

Note 2: If Drawing templates, standards, and reference drawings are not supplied by the Customer, SEL will develop drawings per SEL standards.

Note 3: Instruction manuals are to include catalog information for Non-SEL devices, SEL Relay manuals (i.e. one for each type supplied).

Note 4: As Built are to include BOMs, Nameplate Lists, Panel Layout and Structural Drawings, AC/DC Schematics, Internal Panel Wiring Diagrams, Panel to Panel Wiring Diagrams and Factory Acceptance Test Reports.



1.4.1 Control Open Rack Specifications

1. Equipment, materials, and accessories will be furnished, mounted, and connected as indicated on the drawings. Equipment, materials, and accessories listed by catalog number will be furnished as specified.
2. The Open Rack will be vertical and freestanding self-supporting, supports on sides of open racks for mounting terminal blocks and miscellaneous equipment. Nominal 1/8", 11 gauge, cold-rolled sheet steel, formed with rolled lip on top, bottom and sides. The Open Racks will be installed indoors.
3. Open Rack size will be 30" wide x 24" deep x 90" high.
4. SEL will also provide miscellaneous nuts and screws, cable ties, insulated ring tongue connectors, cable troughs for horizontal wiring, wire, nameplates, and any other miscellaneous material required to complete open rack wiring not specifically listed on the Open Rack Front View Drawings supplied by the customer.
5. Color of finish will be ANSI No. 61 Light Gray.
6. Insulated compression type ring tongue connectors will be used for all terminations except for devices designed for direct wire terminations. A direct wire connection terminal will accommodate a maximum of two (2) wires.
7. There will be no splices in the Open Rack wiring.
8. Equipment terminals will be readily accessible from rear of the open rack, without removal of equipment or fixed auxiliary rack.
9. The Open Rack will be arranged to allow adequate space for termination and testing. The terminals shall be readily accessible for operating the sliding links.
10. SEL will provide complete factory wiring for the control panel and equipment mounted in the panel. Wire and Cable will be type SIS, rating 600 Volts, 90 °C.

2 Payment and Work Schedule

2.1 Milestone Activity

- 100% Upon Delivery

Unless indicated otherwise in this proposal:

1. Panels will be packaged for ground shipping.
2. This price does not include any field service or special services.
3. For time and expense (T&E) projects, please see the rate table in Section 3.3: Time and Expense Added Work. T&E projects will be invoiced monthly.
4. Price does not include the cost of any payment, performance, and/or warranty security instrument.
5. This proposal is valid for 60 days. SEL reserves the right to withdraw this offer if mutually accepted credit terms cannot be agreed upon.

2.2 Payment and Credit Terms

If your company does not have established credit terms sufficient to cover this purchase, SEL reserves the right to require any of the following: credit information, prepayment, Letter of Credit, or progress payments prior to acceptance.

Payment Terms: Net 30 days after invoice date.

2.3 Schedule

Delivery of Equipment will be Twelve (12) weeks after receipt of an acceptable Purchase Order. Delivery is contingent upon the following:

- Customer supplying “Approved for Construction” Drawings defined in Table A per the schedule defined in Table A.
- SEL submitting “Approval” Drawings defined in Table A per the schedule defined in Table A.
- Customer reviewing/approving SEL drawings submitted for approval within one (1) week of receipt.

Drawings will be transmitted electronically by email to expedite approval turnaround time.

SEL will furnish a schedule for the project within one week after receipt of an acceptable purchase order.

Failure to supply requested information in a timely manner will affect the schedule.

Upon customer request, digital photos of the panels will be provided as they progress in manufacturing.

3 Clarifications and Exceptions

SEL developed the scope of work, schedule, and price based on the information provided to us as listed in the proposal. Should additional or changed work be required, including such work resulting from unusual conditions or for any other reasons that are not evident from the information provided, changes to the price or schedule may result.

SEL will assign a project manager to the project. The project manager will be responsible for overseeing and maintaining the schedule within SEL. He will also be the point of contact with the customer in order to maintain a smooth flow of information.

3.1 Clarifications

1. SEL's scope is limited to the hardware defined in drawings listed in Table 1-1; and the engineering deliverables defined in Table A. Should there be a change in hardware or a change in engineering content, there may be a change in price and schedule.
2. SEL will be providing approval drawings electronically via email to minimize processing and approval times. Hard copies of as builts and instruction manuals will be provided in hard copy quantities required by the RFQ.
3. SEL requests that AFC drawings be provided in .dwg format to reduce hours spent in developing layouts for approval as required by specification.
4. SEL will load customer-supplied settings if supplied in appropriate format (i.e. 5010 or AcSELERator format) and one month prior to shipment free of charge.
5. SEL is only including manuals in digital format on CD, if customer desires some paper manual (i.e. hardcopy), could be supplied with extra cost.
6. SEL is offering ABB models for test block as shown in Table 1 and Table 2 above.
7. SEL is not offering fault recorder chassis according to the email received on March 26, 2016.
8. SEL is offering only one of the pulsar UPLC chassis according to the email received on March 26, 2016.
9. SEL is considering only operational testing per Section 3.4 below. If the customer requires testing of customer supplied relay settings SEL will provide a revised proposal.
10. SEL is not supplying the following equipment marked "NOTE 5 - CLWU Supplied": SEL-311L Line Current Differential Protection and Automation System, SEL-3530 RTAC, SEL-2516 Rack-Mount Remote I/O Module.
11. SEL is including the cost for importation and installation of customer supplied equipment (Drawing Note 5). In order to meet proposed delivery schedule customer supplied equipment must arrive at Laredo, TX warehouse per Section 1.1.3 above. Customer is responsible for cost associated with shipping equipment to Laredo, TX.

3.2 Exceptions

1. No exceptions applied to this proposal.

3.3 Time and Expense Added Work

SEL will do added work on an actual time and expense basis, unless SEL and the customer agree on other arrangements. The party identifying a potential change in scope will request the change of scope to the other in writing (fax, email, or letter). SEL will identify any budget or schedule impact and submit it for approval. SEL will proceed with the work as soon as SEL receives written approval, in accordance with established contract provisions.

The control panels, the PowerCORE® and other electrical control enclosure products are manufactured in SEL's subsidiary in Mexico, Schweitzer Engineering Laboratories, S.A. de C.V. Installation, commissioning, Factory Acceptance Testing and other testing and warranty services may be performed on-site by qualified personnel of Schweitzer Engineering Laboratories, S.A. de C.V.

Work performed on an actual time and expense basis will be in accordance with the following schedule of charges, **unless specifically modified in this proposal**:

	Base Rate	Travel Rate	Overtime Rate ¹	Travel Expenses & Per Diem
Field Application Engineer	\$135/Hr.	\$135/Hr.	\$203/Hr.	Actual/Reasonable
Engineer	\$115/Hr.	\$115/Hr.	\$173/Hr.	Actual/Reasonable
Testing Technician	\$85/Hr.	\$85/Hr.	\$128/Hr.	Actual/Reasonable
Installation Supervisor	\$75/Hr.	\$75/Hr.	\$113/Hr.	Actual/Reasonable
Designer	\$65/Hr.	\$65/Hr.	\$98/Hr.	Actual/Reasonable
Installation Labor	\$55/Hr.	\$55/Hr.	\$83/Hr.	Actual/Reasonable

¹Overtime is defined as time in excess of eight hours and is applied only when working away from SEL offices. The overtime rate is also charged for weekends and U.S. holidays.

Customer is to reimburse SEL for actual and reasonable travel expenses such as airline tickets, meals, lodging, rental car, parking, and fuel (where applicable). Airline tickets are coach rate to the commercial airport nearest the work site.

The hourly rates quoted include clerical support and the use of personal computers loaded with Microsoft® Office, Lotus® Notes, MATLAB®, MathCAD®, and SEL developed software (including SEL-5010 Relay Assistant, SEL-5020 Settings Assistant, ACSELERATOR® SEL-5030 Software, and SEL-5040 Power System Report Manager) used in the preparation, documentation, and processing of settings for SEL products.

SEL does not bill for long distance telephone, fax, low-volume copying, and document shipping. Other expenses directly related to performance of approved work, including but not limited to travel, subsistence, and bound document preparation will be billed at actual cost (no mark-up). Hourly rates quoted are for work performed in calendar year **2016**.



3.4 Factory Acceptance Testing (FAT)

After factory assembly and wiring of equipment, SEL will conduct functional tests to verify correct wiring operation of equipment.

FAT activities include the following:

- Pre-functional test checkout (i.e., general workmanship, wire continuity, isolation, etc.)
- Loading customer supplied settings into all relays and communications processors (i.e. if supplied by customer) or loading of standard basic settings defined by SEL.
- DC Control Circuit Functional Tests.
- AC Sensing Circuit Functional Tests.

SEL has the adequate and certified test equipment, in quality and quantity, in order to perform the above Tests.

FAT testing does not include:

- Switchboard testing.
- Data cable connection checkout.
- Communications status checkout.
- Insulation testing (1000 Volt DC Megger).

There is no charge for the customer being present during factory acceptance testing. The customer will be notified at least two weeks prior to the FAT.

3.5 Compliance

SEL will comply with state and local codes, standards, rules, regulations, and laws insofar as they do not exceed national codes, standards, rules, regulations, and laws.

In the event a part, other than protective relays, is not obtainable or develops a lengthy lead time, SEL will consult with the customer to determine if the project deadline can be extended or the part can be substituted with an alternate manufacturer's model that will meet or exceed the specifications of the original part.

4 SEL Rotary Switches

Where applicable, SEL can offer a 15% discount in price of the specified LOR's and Control Switches devices to convert to the SEL Rotary Switches (see Section 4). SEL switches and lock out relays have higher ratings (see attached flyer), carry SEL's standard 10-year warranty, are more durable, and utilize captive screws for a wiring time reduction of 50% (fifty percent). By agreeing to such conversion, SEL will update project specific drawings where the specified LOR's and Control Switches devices are currently depicted free of charge. For more information please visit <https://www.selinc.com/RotarySwitches/>.

SEL-RS86

LOCKOUT



MODEL-SPECIFIC FEATURES

- Up to 60 contacts in 15 decks to allow direct trip and close block signals for bigger bus arrangements
- High-speed tripping
- Maintained action
- Electromechanical target
- LEDs for internal trip coil monitor and permanent fault indication

SEL-RS52

BREAKER CONTROL



MODEL-SPECIFIC FEATURES

- Up to 20 contacts in 5 decks
- Spring return actions
- Electromechanical target
- Up to 3 configurable main LEDs

SEL-RS43

SELECTOR SWITCH



MODEL-SPECIFIC FEATURES

- Up to 16 contacts in 4 decks
- Up to 8 positions
- Maximum contact arrangement flexibility
- Maintained action
- Up to 3 configurable main LEDs
- Standard and custom configurations

SEL ROTARY SWITCHES ARE THE STRONGEST, MOST RELIABLE, AND MOST VERSATILE SWITCHES AVAILABLE

FEATURES AND BENEFITS

The SEL family of rotary switches meets or exceeds UL, IEEE, and IEC standards. SEL expertise in protection, automation, and electronics, combined with the latest manufacturing technology, enables us to offer the first rotary switch in the world with a ten-year warranty.

SEL has applied innovative technology across the family of lockout relay, breaker control, and selector switches to increase reliability, security, ease of use, and flexibility while reducing costs and lead times. We monitor and control processes to exceed the ISO 9001 Quality Management Systems Standard. Our state-of-the-art manufacturing facilities reflect SEL's commitment to offering customers unmatched value in products and services.

STANDARD FEATURES INCLUDE:

- Rated for 30 A, 600 Vac/250 Vdc nominal
- High breaking capacity: 8 A @ 125 Vdc, 2 A @ 250 Vdc
- High dielectric strength: 3,100 Vdc HiPot, 5 kV impulse
- Tested to 500,000 mechanical operations and 6,000 electrical operations at breaking capacity
- Captive screws for ring or fork terminals
- Configurable labels for maximum flexibility and safety
- Ergonomic handles for maximum torque
- Operating temperature: -40° to +85°C
- UL and seismic Class 2 certification



5 Quality

SEL takes quality seriously to ensure that modern power systems are safer, more reliable, and more economical. We strive to contribute to our industry through innovating, listening to our customers, focusing on quality, keeping things simple, and creating useful capabilities, services, solutions, and products.

SEL is certified to the ISO 9001 Quality Systems Standard. The scope of the quality system includes the design, manufacture, and service of complete solutions for the protection, monitoring, control, automation, cybersecurity, and metering of electric power systems. SEL provides engineering, procurement, and construction services and delivers complete solutions. SEL University delivers the education and training needed for designing and operating safe, reliable electric power systems. The SEL quality system meets all of the requirements of ISO 9001:2008 and conforms to Federal Regulation 10 CFR 50 Appendix B and CAN3-Z299.3-85, a national standard of Canada. The SEL quality system has been certified to ISO 9001 since July 1994; the latest certificate is available at www.selinc.com.



6 SEL Terms and Conditions

To accept this proposal and attached terms please return this sheet, signed and dated.

City of Lake Worth("Customer")

Schweitzer Engineering Laboratories, Inc. ("SEL")

2350 NE Hopkins Court

Pullman, WA, 99163

USA

FAX: 509-332-7990

Signature: _____

Signature: _____

Print Name: _____

Print Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Contract Information (to be completed by client):

Contract Amount: \$ _____

Client PO/
Reference/Contract#: _____

Ship To Address: _____

Bill To Address: _____

1. General Terms. These terms ("Terms") shall govern all sales of Products and Services to Buyer by Schweitzer Engineering Laboratories, Inc. ("SEL, Inc."), its affiliates, subsidiaries, and/or divisions, (collectively, "SEL"), unless otherwise agreed by SEL, Inc. in writing. For the purposes of these Terms and unless stated otherwise, "Products" shall mean the products manufactured by SEL, including SEL systems or control enclosure structures, specified on the SEL sales order acknowledgment, including without limitation any accessories, enclosed documentation and embedded software; and "Services" shall mean any SEL training, consulting, technical support and any other services specified on the SEL sales order acknowledgment, except for projects governed by an SEL Engineering Services Proposal. By accepting delivery of Products or Services, Buyer agrees to be bound by these Terms. No order shall be deemed accepted until the SEL sales order acknowledgment has been sent to Buyer, and all orders are subject to SEL's ability to obtain, on appropriate terms and within a reasonable amount of time, any export or import license or permit required by applicable law or regulation. SEL shall have the right to cancel any order at any time for failure of Buyer to agree to these Terms or for any material breach by Buyer of these Terms, including without limitation failure to pay any amounts due, violation of the then-current SEL Software License Agreement or noncompliance with the then-current SEL credit requirements.

2. Prices, Taxes and Payment Terms. Prices shall be the prices in effect on the date of the SEL sales order acknowledgment, and are subject to change without notice. Each quotation or proposal is valid for sixty (60) days from its date, unless specified otherwise. For sales to Buyers within the continental United States, prices include ground freight prepaid to Buyer's place of business. For sales to Buyers outside the continental United States, prices are exclusive of any freight, packing or insurance charges and any customs, sales, use, value-added, property or similar taxes, tariffs or duties. For Services performed on a time and expense basis, charges shall include time and expenses incurred in the previous calendar month. For Services performed on a fixed-price basis, charges shall include the price of major deliverables substantially completed in the previous calendar month. For Services, additional charges may result from modifications to the desired Services or from unforeseen conditions. Payment terms for all Products and Services are net thirty (30) days from date of invoice. All payments shall be made in United States Dollars, unless specified otherwise. Buyer must meet the then-current SEL credit requirements to purchase on credit. If, in the judgment of SEL, the financial condition of Buyer at any time prior to delivery does not justify the payment terms, SEL may require payment in advance or postpone or cancel any outstanding order, whereupon SEL shall be entitled to receive reasonable cancellation charges. Delays in delivery or non-conformities in any installments shall not relieve Buyer of its obligation to pay any remaining installments.



SEL may, at its sole discretion, impose a late charge equal to the lesser of 1.5% per month or the highest applicable rate allowed by law on all amounts not paid when due. Any payment made by Buyer shall be applied to amounts due before being applied to current orders. Notwithstanding the foregoing, Buyer's failure to pay amounts due shall be deemed a material breach of these Terms, and any acceptance by SEL of late payments shall not be deemed a waiver of such breach. To the extent allowed by law, SEL shall be entitled to recover all costs incurred in collecting amounts due from Buyer, including without limitation legal fees and other costs (including without limitation disbursements).

3. Delivery, Documentation and Disclosure of Information. Delivery dates are approximate, based upon prompt receipt of all necessary information from Buyer and do not constitute a contractual obligation. If drawing approval is required, drawings must be returned on schedule to maintain estimated shipping dates. SEL shall pack and ship Products according to its standard procedure, and all shipments shall be sent to Buyer using the SEL standard freight forwarder or carrier. Buyer shall pay for any increased costs due to special packing, shipment (including freight forwarders or carriers required by Buyer) or insurance requests, as well as any detention charges. For Products shipped to addresses within the United States, title and risk of loss or damage shall pass to Buyer upon delivery to Buyer's place of business. Buyer must unpack and examine Products immediately and, if damage is discovered, (i) maintain Products at the place of examination, (ii) retain the shipping container and packing material, (iii) notify the carrier of any apparent damage in writing on carrier's delivery receipt and request carrier to make an inspection, (iv) notify SEL within three (3) days of delivery and (v) send SEL a copy of carrier's inspection report. For Products shipped to addresses outside the United States, title and risk of loss or damage shall pass to Buyer at the SEL factory upon delivery to the freight forwarder or carrier, and Buyer shall have a reasonable time after receipt of Products to inspect and reject or accept Products. In any event, acceptance shall be deemed to have occurred no later than fifteen (15) days after shipment. Buyer may not return any Product without prior written consent of SEL. When applicable, SEL shall provide Buyer with one (1) copy of instructions for each Product. Buyer may not reproduce such instructions. Buyer may order additional copies from SEL. All instructions and related documentation shall be in English. Although SEL or its representatives may from time to time provide translations of such instructions and documentation as a courtesy, the English version shall govern in the event of, and SEL shall not be liable for, any discrepancies. The English versions are available at selinc.com. Any information, suggestions or ideas transmitted by Buyer to SEL in connection with performance hereunder shall not be regarded as proprietary or confidential, unless identified in writing by Buyer and acknowledged in writing by SEL.

4. Intellectual Property. Buyer shall not challenge the validity of any SEL intellectual property, including without limitation any trademarks, service marks, trade dress, patents, copyrights, trade secrets or licenses. Buyer acknowledges that SEL intellectual property is the sole property of SEL. By sale of Products or Services to Buyer, SEL does not transfer any SEL intellectual property rights (including without limitation rights to designs or other work product). Buyer shall not remove or alter any trademarks, service marks or trade dress that identify SEL, nor use any trademarks, service marks, trade dress or any other intellectual property that, in the sole discretion of SEL, is confusingly similar to those of SEL. Any software (including firmware) included with Products is owned by SEL (or its licensors) and is licensed, not sold, to Buyer. Buyer may use such software only with Products and only as intended by SEL. All software shall be provided subject to the then-current SEL Software License Agreement.

5. Product Warranty and Services Commitment. SEL warrants to Buyer that Products are free from defects in material and workmanship for ten (10) years after shipment for all SEL Products, including SEL-manufactured control enclosure structures and panels. Such warranty shall be for five (5) years after shipment for Fault Indicator and Sensor Division Products. This warranty is conditioned upon proper storage, installation, connection, operation and maintenance of products, prompt written notice to SEL of any defects and, if required, prompt availability of Products to SEL for correction. This warranty shall be void in its entirety if Buyer fails to implement required Product upgrades, modifies Products without prior written consent to and subsequent approval of any such modifications by SEL or uses Products for any applications that require product listing or qualification not specifically included in the SEL written quotation or proposal. If any Product fails to conform to this warranty, Buyer properly notifies SEL of such failure and Buyer returns the Product to SEL factory for diagnosis (and pays all expenses for such return), SEL shall correct any such failure by, at its sole discretion, either repairing any defective or damaged Product part(s) or making available, freight prepaid, by SEL (Carriage Paid To (CPT) customer's place of business) any necessary replacement part(s) or Product(s). Any Product repair or upgrade shall be covered by this warranty for the longer of one (1) year from date of repair or the remainder of the original warranty period. TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER STATUTORY, EXPRESS OR IMPLIED (INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE OR DEALING OR USAGE OF TRADE), EXCEPT TITLE AND PATENT INFRINGEMENT. SEL shall, whenever possible, pass the original manufacturer warranty to Buyer for non-SEL products. SEL does not warrant non-SEL products, including non-SEL control enclosure structures, and non-SEL products within SEL panels, control enclosure structures and systems, and products or prototypes provided by SEL for testing, marketing, or loan purposes. SEL shall perform Services in a manner consistent with the



degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances. SEL shall reperform (or, at SEL's option, pay a third party to reperform) any defective Services (including Services performed in conjunction with SEL systems) at no cost upon receipt of notice detailing the defect(s) within one (1) year of performance of the original Services.

6. Limitation of Liability, Indemnity and Insurance. In no event, whether as a result of breach of contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall SEL liability to Buyer or its insurers for any loss or damage exceed the price of the specific Product or Service that gave rise to the claim, and any liability shall terminate upon the expiration of the warranty period. No claim, regardless of form, arising from these Terms may be brought by Buyer more than one (1) year from the date such claim accrues. In no event, whether as a result of breach of contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall SEL be liable for any special, consequential, incidental, liquidated or punitive damages, including without limitation any loss of profit or revenues, loss of use of Products or associated equipment, damage to associated equipment, cost of capital, cost of substitute products, facilities, services or replacement power, downtime costs or claims of Buyer's customers for such damages. If SEL or its subcontractors or suppliers provide Buyer with advice or other assistance, including input of customer-provided or customer-requested settings and advice related thereto, concerning any Product or any system or equipment in which any such Product may be installed, the provision of such advice or assistance shall not subject SEL to any liability, whether as a result of breach of contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. SEL shall not be liable for any claims or losses resulting from any unauthorized access to Products. Buyer confirms that it has read the manuals and instructions for use of Products (or that it will do so) and shall not install or operate Products unless Buyer is competent to do so. Buyer shall indemnify, defend and hold harmless SEL and all related parties from and against any claims, demands, causes of action, losses, costs and expenses, including without limitation legal fees and other costs, arising directly or indirectly from, as a result of or in connection with the acts or omissions of Buyer, its officers, employees, agents or representatives, including without limitation (i) Buyer's modification or integration of any Product, (ii) Buyer's specifications, (iii) Buyer's relay settings, which may or may not be based on relay setting examples or guides from SEL, (iv) any changes made by Buyer or others related to design documents produced by SEL, (v) any unauthorized use or reuse of the designs, drawings, plans and specifications furnished by SEL, (vi) Buyer's failure to fully utilize the password protection available in any Product (including without limitation Buyer's failure to use passwords or to change default passwords to unique Buyer passwords) or (vii) any breach of these Terms by Buyer. Buyer shall maintain commercially reasonable insurance (including waiver of subrogation) against liability and property damage, including without limitation all standard commercial, environmental and, for any Products used in connection with any nuclear facility or activity, nuclear incident insurance.

7. Patent Indemnity. SEL shall defend any action brought against Buyer based on a claim that any Product as provided by SEL infringes any United States patent, and SEL shall pay any award or settlement recovered against Buyer in any such action and shall reimburse Buyer for reasonable costs incurred by Buyer in the defense of any such action, provided that Buyer gives SEL prompt notice of such action, reasonable assistance in the defense thereof and full opportunity to control all aspects thereof, including settlement, and does not take any position adverse to SEL in connection with such action. In the event such Product is held to constitute infringement and use of the Product is enjoined (or SEL foresees a substantial risk of such event), SEL shall, at its sole discretion, exchange the Product with a non-infringing Product, acquire the right for Buyer to continue using it, modify it so that it becomes non-infringing or repurchase it from Buyer for a fair portion of the original price. SEL shall not be liable for damages that arise after SEL offers one of the foregoing remedies in good faith. SEL shall not be liable for any patent infringement claim arising from any custom Product, modification of any Product, integration of any Product not as intended by SEL, or integration of any Product with any non-SEL product, and Buyer shall fully indemnify, defend and hold harmless SEL and all related parties from and against any such patent infringement claim.

8. Transfer to End-User Other Than Buyer. Prior to resale of any Product, Buyer shall obtain written authorization from SEL for any such resale. To obtain such authorization, Buyer shall provide SEL, initially and on an ongoing basis, with complete and accurate end-user data for each Product. Buyer shall provide the end-user of each Product with all product notices, warnings, instructions, recommendations, bulletins and similar materials provided directly or indirectly by SEL. In the event Buyer transfers to a third party any Product or any right or interest therein, Buyer shall indemnify, defend and hold harmless SEL and all related parties from and against any claims against SEL in excess of any SEL obligations under these Terms by such transferee or any other party. Any assignment or transfer of any Product without prior written authorization from SEL shall void the SEL warranty. Buyer may not assign or transfer any Product where such assignment or transfer would violate any applicable export laws, regulations or orders. Buyer warrants that the shipping information is true and accurate to the best of their knowledge. The attempted assignment or transfer by Buyer of these Terms or any rights or duties hereunder without prior written consent of SEL shall not relieve Buyer of any obligations to SEL.

9. Contract Variations. If Buyer requires approval of drawings, such approval must be received by SEL no later



than ten (10) working days after submittal of drawings by SEL to Buyer. Buyer's failure to comply with this requirement may result in additional costs and delays, which shall be Buyer's sole responsibility. Where Buyer's specifications lack sufficient detail, SEL reserves the right to design Products in accordance with good commercial practice, as determined at the sole discretion of SEL. If at any time Buyer makes changes to its design specifications, the SEL sales order acknowledgment shall be subject to renegotiation of price terms and delivery to reasonably cover any resulting costs or delays. Any order may be terminated by Buyer only upon written notice and payment of reasonable termination charges, including without limitation a reasonable restocking fee plus all costs incurred up to the date of termination. Any order delayed at Buyer's request shall be subject to the prices and Terms in effect at the time of release of such delay. Any such order delayed beyond a reasonable period shall be treated as a Buyer termination, and Buyer shall be responsible for reasonable delay and termination costs.

10. Governing Law and Dispute Resolution. The laws of the State of Washington, USA, excluding conflict of laws principles, shall govern these Terms. The parties reject any applicability of the United Nations Convention on Contracts for the International Sale of Goods. Any controversy or claim arising out of or relating to these Terms, or the breach thereof, shall be settled by binding arbitration administered by the American Arbitration Association in accordance with its Commercial Arbitration Rules, and judgment on the arbitration award may be entered in any court of competent jurisdiction. Arbitration shall be held in Seattle, Washington, or another location agreed upon by the parties, and shall be conducted in English. The prevailing party to any dispute shall be entitled to recover legal fees and other costs (including without limitation arbitration fees, disbursements, and collection costs).

11. Miscellaneous. These Terms constitute the entire agreement between SEL and Buyer, and supersede any prior or contemporaneous verbal or written agreements, negotiations, commitments, representations or correspondence between the parties, including without limitation any terms on any purchase order form. SEL rejects any representation, express or implied warranty, course of performance or dealing, trade usage or any different or additional terms not set forth herein. SEL reserves the right to modify or revoke any quote or order to comply with applicable laws and market conditions. Any notice pursuant to these Terms shall be deemed given when sent by registered mail, certified mail (return receipt requested), overnight delivery, or fax (receipt confirmed) to an authorized officer at the address or fax number provided on the SEL sales order acknowledgment or, if no such address or fax number is provided, at the registered headquarters of the other party. All rights and duties hereunder shall be for the sole and exclusive benefit of Buyer and SEL, and not for the benefit of any other party. No failure or delay by either party in exercising any right or remedy, or insisting upon strict compliance by the other party with any obligation in these Terms, shall constitute a waiver of any right thereafter to demand exact compliance with these Terms. The invalidity, in whole or part, of any provision in these Terms shall not affect the remainder of such provision or any other provision and, where possible, shall be replaced by a valid provision that effects as close as possible the intent of the invalid provision. Neither party shall be liable for failure to perform or delay in performance of any obligation under these Terms (except payment of amounts already due and owing) where such failure or delay results from any event beyond its reasonable control. Any modification of these Terms must be in a writing signed by an authorized officer of SEL.





SCHWEITZER ENGINEERING LABORATORIES, INC.

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Phone: +1.509.332.1890 • Fax: +1.509.332.7990

www.selinc.com • info@selinc.com

TEN-YEAR PRODUCT WARRANTY

SEL warrants to Buyer that Products are free from defects in material and workmanship for ten (10) years after shipment for all SEL Products, including SEL-manufactured control enclosure structures and panels. Such warranty shall be for five (5) years after shipment for Fault Indicator and Sensor Division Products. This warranty is conditioned upon proper storage, installation, connection, operation and maintenance of Products, prompt written notice to SEL of any defects and, if required, prompt availability of Products to SEL for correction.

This warranty shall be void in its entirety if Buyer fails to implement required Product upgrades, modifies Products without prior written consent to and subsequent approval of any such modifications by SEL or uses Products for any applications that require product listing or qualification not specifically included in the SEL written quotation or proposal. If any Product fails to conform to this warranty, Buyer properly notifies SEL of such failure and Buyer returns the Product to SEL factory for diagnosis (and pays all expenses for such return), SEL shall correct any such failure by, at its sole discretion, either repairing any defective or damaged Product part(s) or making available, freight prepaid, by SEL (Carriage Paid To (CPT) customer's place of business) any necessary replacement part(s) or Product(s). Any Product repair or upgrade shall be covered by this warranty for the longer of one (1) year from date of repair or the remainder of the original warranty period.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER STATUTORY, EXPRESS OR IMPLIED (INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE OR DEALING OR USAGE OF TRADE), EXCEPT TITLE AND PATENT INFRINGEMENT.

SEL shall, whenever possible, pass the original manufacturer warranty to Buyer for non-SEL products. SEL does not warrant non-SEL products, including non-SEL control enclosure structures, and non-SEL products within SEL panels, control enclosure structures and systems, and products or prototypes provided by SEL for testing, marketing, or loan purposes. SEL shall perform Services in a manner consistent with the degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances. SEL shall reperform (or, at SEL's option, pay a third party to reperform) any defective Services (including Services performed in conjunction with SEL systems) at no cost upon receipt of notice detailing the defect(s) within one (1) year of performance of the original Services.

ABS Quality Evaluations

Certificate Of Conformance

This is to certify that the Quality Management System of:

Schweitzer Engineering Laboratories, S.A. de C.V.

Av. Central No. 205, Parque WTC Industrial

Delegación la Pila

San Luis Potosí, San Luis Potosí 78395

México

(WITH ADDITIONAL FACILITIES LISTED ON ATTACHED ANNEX)

has been assessed by ABS Quality Evaluations, Inc. and found to be in conformance with the requirements set forth by:

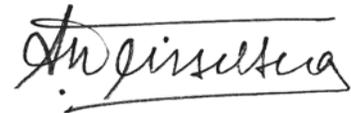
ISO 9001:2008

The Quality Management System is applicable to:

DESIGN, MANUFACTURING, INSTALLATION, COMMISSIONING, TECHNICAL SUPPORT AND SALES OF COMPONENTS, PANELS AND SYSTEMS FOR PROTECTION, CONTROL, METERING AND INTEGRATION.

DISEÑO, MANUFACTURA, INSTALACIÓN, PUESTA EN SERVICIO, SOPORTE TÉCNICO Y VENTA DE COMPONENTES, TABLEROS Y SISTEMAS DE PROTECCIÓN, CONTROL, MEDICIÓN E INTEGRACIÓN.

Certificate No: 37411
Original Certification Date: 15 October 2002
Effective Date: 22 September 2014
Expiration Date: 13 October 2017
Revision Date: 30 September 2014



Alex Weisselberg, President



Validity of this certificate is based on the periodic audits of the management system defined by the above scope and is contingent upon prompt, written notification to ABS Quality Evaluations, Inc. of significant changes to the management system or components thereof.

ABS Quality Evaluations, Inc. 16855 Northchase Drive, Houston, TX 77060, U.S.A.

Validity of this certificate may be confirmed at www.abs-qe.com/cert_validation.

ABS Quality Evaluations

ISO 9001:2008

Certificate Of Conformance

ANNEX

Certificate No: 37411

Schweitzer Engineering Laboratories, S.A. de C.V.

At Below Facilities:

Facility: Oficina de Ventas y Soporte Técnico Cd. de México
Lamartine No. 129 Col. Chapultepec Morales
Delegación Miguel Hidalgo
México, Distrito Federal 11570
México
Activity: Technical Support and Sales

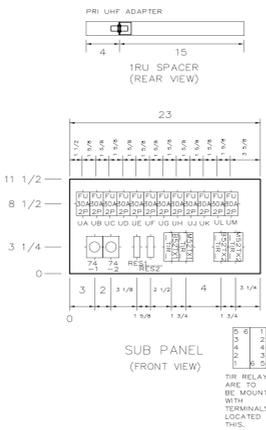
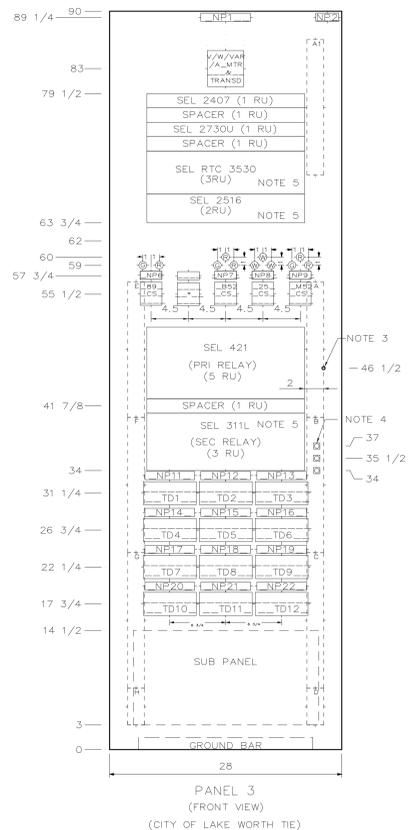
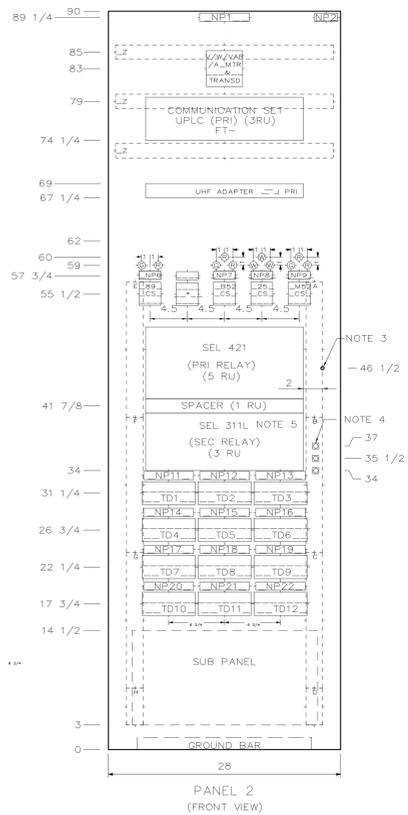
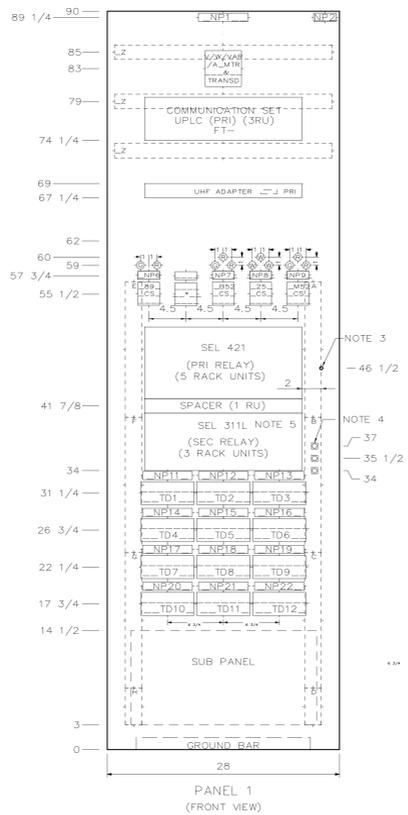
Facility: Oficina de Ventas y Soporte Técnico Guadalajara
W. Amadeus Mozart No. 5112 Local-2,
Fracc. Residencial La Estancia
Zapopan, Jalisco 45130
México
Activity: Technical Support and Sales

Facility: Oficina de Ventas y Soporte Técnico Monterrey
Ave. Fundidora No. 501, local 135-136 Planta Baja
Col. Obrera
Monterrey, Nuevo León 64010
México
Activity: Technical Support and Sales

Facility: Oficina de Ventas y Soporte Técnico Villahermosa
Macayos #106 Local 3 Plaza Macayo
Col. El Recreo
Villahermosa, Tabasco 86020
México
Activity: Technical Support and Sales



Validity of this certificate may be confirmed at www.abs-qe.com/cert_validation.



- NOTES:
- ALL DIMENSIONS ARE IN INCHES
 - DRILL & COVER WHEN NOT SPECIFIED
 - OPEN EYE HOOK
 - TEST JACKS
 - CLWU SUPPLIED

- REFERENCE DRAWINGS
- E-230389 AC ELEMENTARY DIAGRAM
 - E-230390 DC ELEMENTARY DIAGRAM
 - E-230391 PANEL WIRING DIAGRAM
 - E- LOGIC DIAGRAM
 - E-220945 TD NAMEPLATE DIAGRAM
 - RS-173C SPECIFICATION WITH DFR

SYSTEM RELAY STANDARDS
 DIRECTIONAL COMPARISON
 SINGLE PANEL PRIMARY & SECONDARY
 SCHEME 173C WITH DFR
 PANEL ARRANGEMENT

PANEL FRONT VIEW
 CITY OF LAKE WORTH UTILITIES

HYPOLUXO STATION
 FOR QUOTATION ONLY
 PANELS 1-3

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE				
										1	06/22/2016	0	06/16/2016								
										REMOVED SECONDARY UPLC COMM. SET FROM PANELS 1&2											
BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	
															GMG						

CITY OF LAKE WORTH
PROJECT SCOPE FOR QUOTE
HYPOLUXO SWITCH STATION RELAY PANELS
ENGINEERING & TECHNICAL SERVICES

Rev.001



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1. SCOPE

- 1.1. The purpose of this specification is to select a qualifying contractor that shall perform equipment installation, engineering support, and technical oversight for the City of Lake Worth Utilities (CLWU).
- 1.2. The project entails the replacement of three (3) existing electromechanical relay panels and one (1) metering panel with new three (3), microprocessor-based, transmission line protective relaying panels at Hypoluxo Switch Station.
- 1.3. The new panels are being procured by CLWU directly.

2. PROJECT ENGINEER

- 2.1. The project engineer and contact person for technical questions and clarifications concerning this specification is:

George Guirguis, P.E.
Electrical Engineer
City of Lake Worth Utilities
1900 2nd Ave North
Lake Worth, FL 33461
Office (561) 586-1792
Cell (561) 719-9037
Fax (561) 586-1702
E-Mail gguirguis@lakeworth.org

3. BIDDER PREQUALIFICATIONS

- 3.1. The bidder shall show proof of having successfully performed projects of similar scope and application.
 - 3.1.1. Proof of relevant experience should be presented in the form of a list of projects and references including contact information.

4. GENERAL

- 4.1. All work shall be performed in coordination with CLWU and Florida Power & Light (FP&L) and under the direction of CLWU engineering staff.

5. WORK SCOPE

5.1. PREPARATION WORK (OPTIONAL)

- 5.1.1. This section shall be quoted as a separate line item for evaluation by CLWU
- 5.1.2. Removal of existing panel #2 (metering panel) as per drawing # E-92460 to allow space for new panel #1
 - 5.1.2.1. This work is to be completed while existing panel #'s 1, 3, 4, & sync. scope to remain energized, feeding the entire CLWU electric service territory and completing FP&L ring bus

- 5.1.2.2. Relocate sync. scope and associated wiring to a temporary location in advance to allow disassembly of panel #4

6. PANEL REMOVAL/INSTALLATION

- 6.1.1. CLWU shall assure de-energized panel prior to commencement of each panel removal and installation
 - 6.1.1.1. Tagged out and Clearance issued from both CLWU and FP&L
- 6.1.2. Panel installation is to be completed while adjacent panel to remain energized; great care is expected as to not disturb panel in service.
 - 6.1.2.1. New panel interconnection wiring as needed
 - 6.1.2.1.1. New wire to be cable (non-SIS)
 - 6.1.2.1.2. Wire/cable will be provided by CLWU
 - 6.1.2.2. Verify and install new cable markers as per cable schedule (Provided by CLWU)
 - 6.1.2.3. All conductors to be labeled
- 6.1.3. Existing panel #'s 3 & 4 services to be transitioned independently in an order consistent with FP&L schedule
- 6.1.4. Physically install new panel #1 in position of existing panel #2 and complete all associated field and adjacent panel(s) interconnections as necessary
 - 6.1.4.1. Transition field wiring to new panel #1 from existing panel #3
 - 6.1.4.1.1. Field wiring to be cut, re-terminated, and labeled (all conductors)
 - 6.1.4.1.2. Field wiring to be used (assuming good condition and feasibility)
 - 6.1.4.1.3. CLWU will provide manpower to support any field wiring modifications as necessary
- 6.1.5. Contractor to remove existing panel #3 and associated interconnecting wiring
 - 6.1.5.1. CLWU will retain panel equipment
- 6.1.6. Physically install new panel #2 in position of existing panel #3 and complete all associated field and adjacent panel(s) interconnections as necessary
 - 6.1.6.1. Transition field wiring to new panel #2 from existing panel #4
 - 6.1.6.1.1. Field wiring to be cut, re-terminated, and labeled (all conductors)
 - 6.1.6.1.2. Field wiring to be used (assuming good condition and feasibility)
 - 6.1.6.1.3. CLWU will provide manpower to support any field wiring modifications as necessary
- 6.1.7. Contractor to remove existing panel #4 and associated interconnecting wiring
 - 6.1.7.1. CLWU will retain panel equipment
- 6.1.8. Physically install new panel #3 in position of existing panel #4 and complete all associated field and adjacent panel(s) interconnections as necessary
 - 6.1.8.1. Transition field wiring to new panel #3 from existing ABB REL-512 panel located under sync. scope

- 6.1.8.1.1. Field wiring to be cut, re-terminated, and labeled (all conductors)
- 6.1.8.1.2. Field wiring to be used (assuming good condition and feasibility)
- 6.1.8.1.3. CLWU will provide manpower to support any field wiring modifications as necessary
- 6.1.8.1.4. Reinstall Sync Scope mounted to right of new panel 3

6.1.9. Contractor to remove existing panel #1 and ABB REL-512 panel located under sync and associated interconnecting wiring

6.1.9.1. This work shall be supervised by CLWU Engineering staff

6.1.9.2. CLWU will retain panel equipment

7. ENGINEERING

7.1.1. Modify FP&L provided settings for the purpose of CLWU use for new panels 1&2

7.1.1.1. Migration from GE-D60 to SEL-311L setting modifications

7.1.1.1.1. Non-line current differential, step distance only

7.1.1.1.2. Breaker failure scheme

7.1.1.2. FP&L SEL-421 to CLWU SEL-421

7.1.1.3. FP&L UPLC settings

7.1.2. Modify CLWU provided settings for new CLWU Panel #3

7.1.2.1. CLWU will provide settings from existing ABB REL-512 relay to be modified for SEL-311L and SEL-421 (Dual Primary application)

7.1.3. CLWU shall complete the following tasks in panel 3 and shall be omitted from contractor proposal

7.1.3.1. RTAC Settings

7.1.3.2. GPS Clock (SEL-2407)

7.1.3.3. IP Switch (SEL-2730U)

7.1.3.4. I/O Module (SEL-2516)

7.1.4. CLWU shall perform removal of legacy communication equipment and shall be omitted from contractor proposal

7.1.5. Contractor shall receive the following from CLWU

7.1.5.1. Complete drawing package including interconnections

7.1.5.2. Cable schedule

7.1.6. CLWU shall receive the following from the contractor

7.1.6.1. Engineering Deliverables

7.1.6.1.1. Relay(s) database

7.1.6.1.2. Settings documentation

7.1.6.1.3. Any relevant engineering analysis/study performed to determine relay settings

8. COMMISSIONING & TESTING

8.1.1. All relays to be tested using Omicron Test Universe software

8.1.2. Collaborate with FP&L engineering contractors for end-to-end testing of new panels 1&2

8.1.2.1. Functional testing to include but not limited to:

8.1.2.1.1. Breaker trip

8.1.2.1.2. Blocking schemes

8.1.2.1.3. Breaker failure schemes

8.1.2.1.4. Close, reclose, and synchronism

8.1.2.1.5. Any other schemes identified/enabled in settings

8.1.2.1.6. All inputs and outputs used/wired by relay

8.1.3. Collaborate with CLWU engineering for testing of new panel 3

8.1.3.1. Functional testing to include but not limited to:

8.1.3.1.1. Breaker trip

8.1.3.1.2. Blocking schemes

8.1.3.1.3. Breaker failure schemes

8.1.3.1.4. Close, reclose, and synchronism

8.1.3.1.5. Any other schemes identified/enabled in settings

8.1.3.1.6. All inputs and outputs used/wired by relay Close, reclose, and synchronism

8.1.3.2. All above tests to not result in an actual breaker trip but verified at terminal block

8.1.4. Commissioning & Testing deliverables

8.1.4.1. All Relay test records

8.1.4.2. Commissioning reports

8.1.4.2.1. Documentation to validate completed commissioning and testing tasks (i.e. highlighted drawings)

9. DOCUMENTATION

9.1. The contractor shall provide all of the requested SEL relay settings in the format of SEL database

9.2. All SEL relays test records shall be provided in OMICRON (.occ) files and in PDF formats

10. WORK SCHEDULE

10.1. The schedule for installation and commissioning of new panels 1 & 2 is subject to coordination with FP&L.

10.1.1. Projected in 1st Quarter of 2017

10.2. The schedule for installation and commissioning of panel 3 is subject to coordination with CLWU

10.2.1. Projected in 1st Quarter of 2017