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Rochelle Municipal Utilities
Expansion of the Caron Road Substation

Specification 12255-012-02, 15kV Medium Voltage Switchgear with Vacuum Type Breakers
Sargent & Lundy Letter of Recommendation

Mr. Joe Orlikowski
Electric Operations Superintendent
Rochelle Municipal Utilities
700 West 2nd Ave
Rochelle, IL. 61068

Dear Mr. Orlikowski,

This letter summarizes Sargent & Lundy, L.L.C.'s (S&L) evaluation of proposals submitted in response to S&L Specification 12255-012-02, 15kV Medium Voltage Switchgear with Vacuum Type Breakers. Bid packages were received from Siemens, ABB, Electro-tech, TAW, Gexpro Powercon, ESS Metron, and Eaton.

Sargent & Lundy's evaluations of the proposals included review of the cost, delivery, technical exceptions, special terms and conditions, liquidated damages, payment policy, and warranty.

Scope of Supply

The 15kV Medium Voltage Switchgear with Vacuum Type Breakers Specification Scope of Supply includes the design, manufacture, and delivery F.O.B. to the site, one lineup consisting of eleven (11) vacuum circuit breakers with a 31,500 amp interrupting capability, arranged in a thirteen (13) cubicle design. All current and voltage transformers are metering and relaying accuracy. Also included in the specification is complete supply and integration of the protection devices and associated equipment.

In addition to the base bid, the specification requested pricing for Type 2 arc resistant switchgear in accordance with IEEE C37.20 series. Our evaluations for the base and arc resistant bids are as follows.

Base Bid Evaluation

The proposal prices and deliveries for the 15kV Medium Voltage Switchgear are summarized below (if a delivery window was provided, the end date of the window was used):

<u>Bidder/MVSWGR Manufacturer</u>	<u>Original Total Firm FOB Site Price</u>	<u>Delivery Date</u>
Siemens	\$548,933	09/11/2015
ESS Metron	\$668,157	09/11/2015
TAW	\$677,804	10/11/2015*
Electro-tech	\$678,920	09/11/2015
ABB	\$705,580	09/11/2015
Eaton	\$789,367	09/11/2015
Gexpro – Powercon	\$907,671	09/11/2015

*TAW quoted a 9/11/2015 delivery date if awarded the contract by 2/10/2015.

Electro-tech is quoting Siemens gear and Gexpro – Powercon is quoting Eaton gear.

We narrowed the bid review to the following four suppliers based on price, delivery and their compliance to the specification: Siemens, Electro-tech, ESS Metron and ABB.

Compliance to the Specification

For each of the suppliers, the breakers quoted are all rated equally, and come available with multiple auxiliary (52) contacts above what was originally specified. Siemens, ABB and ESS Metron are providing the mandatory spare equipment that is indicated in the specification; Electro-tech included pricing for all except the SEL relays. The evaluation found that none of the bidders took any unacceptable exceptions to the specification. ABB and Siemens have indicated a change in the specified use of the specified States test switches; ABB proposed using ABB FT-1 and Siemens proposed utilizing MPS test switches. The types of test switches identified are equivalent to the States test switches. We recommend that the proposed test switches be accepted. Additionally, Siemens indicated a price reduction of \$2,580 for substituting the specified SEL relays with equivalent Siemens numerical relays. Due to RMU's familiarity with the SEL relays, we are not recommending pursuing the price reduction in this evaluation.

ABBs quote includes provisions for the future feeder cable lugs and insulated boots, and Siemens identified an adder of \$1,260 to add the insulated boots to the proposal.

Of the bidders evaluated, they all are technically acceptable and meet the criteria of the specification provided.

Installation

A crane is recommended to offload the gear on site. The gear can be installed in the building by using a jack and slide method.

Arc Resistant Switchgear Bid Evaluation

Arc resistant switchgear is designed to provide enhanced equipment reliability and personnel safety by containing an arc flashover better than standard switchgear. Arc resistant switchgear is widely used in utility applications. As identified in national standards, its use is optional.

The two classifications of arc resistant switchgear are explained in the following. Type 1 arc resistant gear requires only the front door to the breaker compartment to be rated to withstand and contain an arc from exiting the cubicle. Type 2 arc resistant gear requires the front door and the sides of the cubicles to be rated to withstand and contain an arc from exiting the cubicle. The Specification called for Type 2 switchgear. Per IEEE C37.20.7, there are three types of tests for each type of arc resistant gear, A, B, and C. Test A provides protection in the front, back and sides of the switchgear lineup when doors are properly secured. Test B provides protection in the front, back and sides of the switchgear lineup when the instrument doors are open. Test C was specified in the specification and pertains to the complete isolation of equipment from the effects of an internal arcing fault between all adjacent compartments within the switchgear assembly. Modifications will be required to the exterior of the control building to provide exterior venting of ac arc for all types of gear provided.

Of the seven bid proposals we received, four provided pricing for the arc resistant switchgear addressed in Specification 12255-012-02 15kV Medium Voltage Switchgear Specification. The prices are listed below.

<u>Bidder/MVSWGR Manufacturer</u>	<u>Original Total Firm FOB Site Price</u>	<u>Delivery Date</u>
Siemens	\$561,355	09/11/2015
Electro-tech	\$734,920	09/11/2015
ESS Metron	\$746,796	09/11/2015
ABB	\$830,479	09/11/2015

ABB quoted type 2C arc resistant gear in accordance with the specification, while Siemens, ESS Metron and Electro-Tec quoted type 2B arc resistant gear.

As discussed with Joe Orlikowski the existing switchgear lineup is non-arc resistant. We also understand that the breaker controls are performed from the central relay control room and that the breakers are not operated within the switchgear room, only statuses of the breakers are reported on the switchgear HMI.

The following table summarizes the dimensions for the arc resistant gear:

Vendors	Height		Length		Depth	
	Standard	Arc Resistant	Standard	Arc Resistant	Standard	Arc Resistant
Siemens	7.9 ft	9.7 ft	39 ft	43.3 ft	8.2 ft	8.4 ft
ABB	8.6 ft	10.8 ft	39 ft	39 ft	7.1 ft	7.1 ft
Electro-Tech	7.9 ft	9.7 ft	39 ft	43.3 ft	7.8 ft	8.6 ft
ESS Metron	7.9 ft	9.7 ft	39 ft	43.3 ft	7.8 ft	8.6 ft

As shown in this table, ABB offers arc-resistant switchgear with dimensions that are comparable to those of the non-arc resistant switchgear. The arc resistant switchgear quoted by Siemens, Electro-Tech and ESS Metron would require expansion of the control building. Utilization of the arc resistant gear would also require design of a duct system to vent the arc flashes externally to the building.

As noted above, Siemens, Electro-Tech and ESS Metron proposed the use of type 2B arc resistant switchgear while ABB proposed the use of type 2C. Should RMU decide to proceed with arc resistant switchgear, further evaluation and price adjustments are required for comparison of the vendors proposals.

Terms and Conditions:

All of the bidders provided minor comments to the RMU's General Conditions for Equipment and Material Purchases (Form 201AE-04-18-05) and the Special Conditions information. These comments will be resolved during contract negotiations.

All of the bidders indicated a typical 12 month / 18 month warranty period, with options to purchase extensions of the warranty from ABB and Electro-Tech.

Siemens has not stated a per day rate for the liquidated damages and they have a liquidated damages cap of 5% of the Contract value.

ABB has stated that the same negotiated RMU's General Conditions for Erected Materials and Equipment, and Labor Contracts (Form 305; 03-03-2005) used on RFP #12255-012-01 for the GSU Transformer are acceptable for the Switchgear.

Recommendations:

In summary, all of the bidders were found to be technically acceptable and there are minor comments to the terms and conditions requiring closure during contract negotiation.

For the base bid evaluation, it is our recommendation that Siemens be awarded the contract in the amount of \$550,193 (including insulated cable boots). This amount is within the project budget estimated value for non-arc resistant switchgear.

Should RMU decide to purchase arc resistant switchgear further evaluation is required for comparison. In addition depending on the vendor selected expansion of the control building may be required.

If you have any questions or want to discuss this matter, please call Michelle Hack at (312) 269-6950 or Zafar Ashrafi at (312) 269-3565.

Yours very truly,



Thomas R. Eisenbart
Project Director

MLH/TRE:dg
cc: M. S. Zar
cc: Z. Ashrafi
cc: R. Mrozek