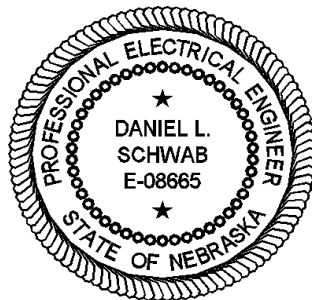


**CITY OF GRAND ISLAND, NEBRASKA  
CONTRACT # 14-PCC-02**

**SPECIFICATIONS AND CONTRACT DOCUMENTS  
FOR  
SUBSTATION J CONTROL BUILDING**

**February 2014**



**ADVANTAGE ENGINEERING, INC.  
769 SPIRIT OF ST. LOUIS BLVD.  
CHESTERFIELD, MO 63005  
Tel: 636-530-0470 Fax: 636-530-0670**

**ADVERTISEMENT TO BIDDERS  
CONTRACT # 14-PCC-02  
SUBSTATION J CONTROL BUILDING**

**CITY OF GRAND ISLAND, NEBRASKA  
ELECTRIC DEPARTMENT**

Sealed bids will be **received at the office of the City Clerk**, 100 E. First St., Grand Island, NE 68801 or P.O. Box 1968, Grand Island, Nebraska, 68802 until 2:00 P.M. (local time), on Tuesday, March 25, 2014, for furnishing Substation J Control Building to the City of Grand Island. Bids will be publicly opened at this time in the Conference Room #1 located on 1st floor of City Hall. Bids received after specified time will be returned unopened to sender.

Specifications are on file in the Utilities Department. Bids shall be submitted on forms which will be furnished by the City.

Each bidder shall submit with their bid a certified check, a cashiers check or bid bond payable to the City Treasurer in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within twenty (20) days, at the bid price, if accepted by the City. **Your certified check, cashiers check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid.** Each envelope must be clearly marked indicating its contents. Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened or considered. Bid bonds must be issued by surety companies authorized to do business in the State of Nebraska.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S. 73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska.

Successful bidder shall comply with the City's insurance requirements and supply performance and payment bonds.

Bids will be evaluated by the Purchaser based on price, quality, adherence to schedule, plan and specification, economy and efficiency of operation, experience and reputation of bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The Purchaser reserves the right to reject any or all bids and to waive irregularities therein and to accept whichever bid that may be in the best interest of the City, at its sole discretion.

No bidder may withdraw their bid for a period of sixty (60) days after date of opening bids.

RaNae Edwards, City Clerk

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**CITY OF GRAND ISLAND, NEBRASKA  
INSTRUCTIONS TO BIDDERS**

**EXCEPTIONS TO SPECIFICATIONS:** Each bidder shall carefully check all requirements herein set forth and shall offer items which fully comply with these requirements or shall plainly set forth all points, features, conditions, specifications, etc., wherein the items offered do not meet these specifications. Such exceptions as are made shall be listed by page number in the following blanks and shall be marked in ink on the pages of these specifications. If additional space is required for exception explanation, please reference and attach a letter to bid. Reference shall not be made to other attachments for exceptions and supplementary terms. Failure to outline such exceptions as specifically stated herein will require the successful bidder to comply with these specifications. In case of conflict between the bid and these specifications, these specifications shall govern unless specific exceptions are listed by the bidder.

Exceptions to specifications, pages \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SUBMISSION OF BIDS:** All bids shall be submitted using the City's bid form. Bids shall **be addressed to the City Clerk** and plainly marked, "**BID FOR SUBSTATION J CONTROL BUILDING**".

**INSURANCE COVERAGE:** The Contractor shall purchase and maintain at their expense as a minimum insurance coverage of such types and in such amounts as are specified herein to protect Contractor and the interest of Owner and others from claims which may arise out of or result from Contractor's operations under the Contract Documents, whether such operations be by Contractor or by any subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be legally liable. Failure of Contractor to maintain proper insurance coverage shall not relieve them of any contractual responsibility or obligation.

**BASE BID:** The Bidder is expected to base their bid on materials and items complying fully with these specifications, and in the event Bidder names in their bid materials or items which do not conform, Bidder will be responsible for furnishing materials and items which fully conform at no change in the bid price. It is the intent to award one contract for this work but the Owner reserves the right to separate the building and panel portion of this work. The building provider will have overall responsibility for providing a complete building.

**ALTERNATE BIDS:** It is the desire of the Owner that the Bidder base their bid price for this project on the written specifications. If an alternate bid or bids are submitted by Bidder, it is desired that Bidder first submit a bid price as above described and then describe the alternate bid. Failure to do so may be reason for not extending any consideration to alternate bids.

**BIDDER QUALIFICATION:** Bids will be received only from qualified bidders. A bidder will be considered qualified if they are a recognized electric utility contractor and have experience in the construction of projects of equal or greater size than that specified herein. If requested, the Bidder shall supply experience data. Such data will be used to assist in determining the qualifications of the Bidder. Bidder must comply with all applicable Federal, State and Local rules and regulations.

**CHECKS OR BID BONDS:** Checks or bid bonds of the unsuccessful bidders will be returned after their bids have been rejected and not to exceed sixty (60) days from the date bids are opened. All bids shall remain in force for this sixty (60)-day period. The check or bid bond of the successful bidder will be returned after the Contracts are signed by both parties and necessary bonds supplied. Should the Purchaser make an award to a Contractor who refuses to enter into Contract and furnish the required bonds within twenty (20) days after notification of acceptance, then the bid security which has been deposited with the Purchaser will be forfeited to the Purchaser as liquidated damages.

**PERFORMANCE BOND:** On award of the Contract, the successful Contractor shall furnish a Performance Bond which shall be in an amount equal to the full Contract price, guaranteeing faithful compliance with all requirements of the Contract Documents and complete fulfillment of the Contract, and payment of all labor, material and other bills incurred in carrying out this Contract. According to Nebraska Law, the surety company executing the Performance Bond must be authorized to do business in the State of Nebraska.

**PAYMENT BOND:** On award of the Contract, the successful Contractor shall furnish a Payment Bond which shall be in an amount equal to the full Contract price, guaranteeing protection of all persons supplying labor and materials

to the Contractor or its subcontractors for the performance of the work provided for in the Contract. In accordance with Nebraska Law, the surety company executing the Payment Bond must be authorized to do business in the State of Nebraska.

**TAXES:** The City Utilities Department pays sales tax amounting to 5.5% State and 1.5% City; payment of 7% sales tax must be in the Contractor's bid. Contractor must pay any other tax which might be applicable.

**REQUESTS FOR PAYMENT:** The City of Grand Island will make payments only after approval at regularly scheduled City Council meetings. These meetings typically occur the second and fourth Tuesday each month. Requests for payment must be received no less than ten (10) working days prior to the designated meeting to allow time for proper review and consideration. Payments will only be made after final completion of the project to City's satisfaction unless otherwise stated in bidding documents.

**REQUEST FOR INTERPRETATION:** If any person contemplating submitting a bid for this Contract is in doubt as to the true meaning of any part of the specifications or other proposed Contract documents, they may submit to the Purchasing Department a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addendum duly issued and/or delivered to each person receiving a set of such documents. The addenda upon closing shall become a part of the Contract. The Purchasing Department will not be responsible for any other explanation or interpretation of the proposed documents.

**ADDENDA:** Any addendum to the specifications issued during the time allowed for preparation of bids shall be covered in the bid and shall become a part of the specifications. One copy of each addendum issued before the date of the letting will be sent to all bidders. One signed copy is to be returned immediately to the City as acknowledgment of receipt.

**TIME OF COMPLETION:** Time of completion is the essence of this Contract, and all work shall be completed no later than July 31, 2014.

**MODIFICATION OF BIDS:** Bids may be modified or withdrawn by an appropriate document duly executed in the manner that a bid must be executed and delivered to the place where bids are to be submitted at any time prior to the final time set for receiving bids. Bidders may modify or withdraw bids by Fax communication at any time prior to the time set for receiving bids provided this instruction is positively identified. Any Fax modification should not reveal the amended bid price but should provide only the addition, subtraction or other modifications. A duly-executed document confirming the Fax modification shall be submitted within three (3) days after bids are opened. Bids may not be modified or withdrawn after the date of bid opening.

**BID DATA:** Bidders shall submit the original and three (3) copies of the bid documents and data. The document and data sheets supplied by the Purchasing Department shall be filled out legibly in ink to permit reproduction.

**BIDDER SECURITY:** Bidder security shall be enclosed in a separate envelope marked, "**BIDDER SECURITY / BID FOR SUBSTATION J CONTROL BUILDING,**" the envelope shall contain only a cashier's check, certified check or bidder's bond.

This separate envelope shall be attached to the outside of a sealed envelope containing the bid and any other bid materials. This second envelope shall be marked "**BID FOR SUBSTATION J CONTROL BUILDING**" and be **addressed to the "City Clerk."** Bids of an incomplete nature or subject to multiple interpretations may, at the option of the Purchaser, be rejected as being irregular.

**FINANCIAL STATEMENT:** The Bidder shall furnish upon request a complete financial statement signed by the bidder, if an individual, by all partners if the bidder is a partnership and, by the President or Secretary, if the bidder is a corporation.

**EQUAL EMPLOYMENT OPPORTUNITY:** The successful bidder agrees that during the performance of this Contract not to discriminate in hiring or any other employment practice on the basis of race, color, religion, sex, disability, age or national origin, and to comply with Executive Order 11,246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor, and Chapter 20 of the Reissue Revised Statutes of the State of Nebraska.

**GRATUITIES AND KICKBACKS:** City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefore. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated there within, as an inducement for the award of a subcontract or order.

**LOCAL CONDITIONS:** Each Bidder shall have an authorized representative visit the site of the work and thoroughly inform themselves of all conditions and factors which would affect the work and the cost thereof, including the arrangement and conditions of existing or proposed structures affecting or affected by the proposed work; the procedure necessary for maintenance of uninterrupted operation; the availability and cost of labor and facilities for transportation, handling, and storage of materials and equipment.

It must be understood and agreed that all such factors have been investigated and considered in the preparation of every bid submitted. No claims for financial adjustment to any Contract awarded for the work under these Specifications and documents will be permitted by the City, which are based on lack of such prior information, or its effect on the cost of the work.

**CORRESPONDENCE:** Correspondence regarding drawings, instruction manuals, and other engineering data shall be sent to:

Attn: Travis W. Burdett P.E.  
City of Grand Island  
Utility Department  
P.O. Box 1968  
Grand Island, NE 68802-1968  
(308) 385-5466

**LOCAL BIDDER PREFERENCE:** In case of tied low bids, all other things being equal, preference shall be given in the following order:

1. To those bidders who manufacture their products within the limits of the City of Grand Island.
2. To those bidders who manufacture their products within the limits of the County of Hall.
3. To those bidders who package, process, or through some other substantial operation have employees and facilities for these purposes in the City of Grand Island.
4. To those bidders who package, process, or through some other substantial operation have employees and facilities for these purposes in the County of Hall.
5. To those bidders who maintain a bona fide business office in the City of Grand Island, whose products may be made outside the confines of the City of Grand Island.
6. To those bidders who maintain a bona fide business office in the County of Hall, whose products may be made outside the confines of the County of Hall.
7. To those bidders whose commodities are manufactured, mined, produced, or grown within the state of Nebraska, and to all firms, corporations, or individuals doing business as Nebraska firms, corporations or individuals, when quality is equal or better, and delivered price is the same or less than the other bids received.
8. To those bidders whose commodities are manufactured, mined, produced, or grown within the United States of America, and to all firms, corporations, or individuals doing business as firms registered in states other than Nebraska, when quality is equal or better, and delivered price is the same or less than the other bids received.

**SUBSTATION J CONTROL BUILDING  
CITY OF GRAND ISLAND, NEBRASKA  
CONTRACT # 14-PCC-02  
CONTRACTOR'S BID**

TO THE MEMBERS OF THE COUNCIL  
CITY OF GRAND ISLAND  
GRAND ISLAND, NEBRASKA

THE UNDERSIGNED BIDDER, having examined the plans, specifications, general and special conditions, and other proposed contract documents, and all addenda thereto and being acquainted with and fully understanding (a) the extent and character of the work covered by this Bid, (b) the location, arrangement, and specified requirements for the proposed work, (c) the location, character, and condition of existing streets, roads, highways, railroad, pavements, surfacing, walks, driveways, curbs, gutters, trees, sewers, utilities, drainage courses and structures, and other installations, both surface and underground which may affect or be affected by the proposed work, (d) the nature and extent of the excavations to be made and the handling and re-handling of excavated materials, (e) the location and extent of necessary or probable dewatering requirements, (f) the difficulties and hazards to the work which might be caused by storm and flood water, (g) local conditions relative to labor, transportation, hauling and rail delivery facilities, and (h) all other factors and conditions affecting or which may be affected by the work.

HEREBY PROPOSES to furnish all required materials, supplies, equipment, tools and plans, to perform all necessary labor and supervision, and to construct, install, erect, equip and complete all work stipulated in, required by and in accordance with the contract documents and the plans, specifications and other documents referred to therein (as altered, amended or modified by all addenda thereto) for and in consideration of the following prices:

1.1 BID PRICE: The bidder shall complete the work as stated in these specifications and as shown on the plans and drawings for the total lump sum firm contract price of:

- a. Building including panel coordination and communications equipment.

\_\_\_\_\_ Dollars

\$ \_\_\_\_\_

- b. Panels

\_\_\_\_\_ Dollars

\$ \_\_\_\_\_

c. Combined – Building and Panels

\_\_\_\_\_ Dollars

\$ \_\_\_\_\_

If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.

According to Nebraska Sales and Use Tax Requirements, Section 1-017, Contractors, check which option you have selected to file with the Nebraska Department of Revenue:

- Option 1 (Section 1-017.05)
- Option 2 (Section 1-017.06)
- Option 3 (Section 1-017.07)

The choice of option is made by completing and mailing to the Department of Revenue, a Nebraska Sales and Use Tax Election for Contractors. This form must be filed within three months after beginning to operate as a contractor. If this form is not filed, the contractor will be treated as a retailer under Option 1 for sales and use tax purposes.

EXPERIENCE DATA:

Each bidder shall supply the following data on his experience:

Name of Bidder:

Project Owner      Contact      Phone No.      Project Location      Completion Date

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Additional Data: \_\_\_\_\_

INSURANCE: Bidder acknowledges that bid includes compliance with the attached insurance requirements.

ADDENDA: Bidder acknowledges that Addenda Number(s) \_\_\_\_\_ were received and considered in Bid preparation.

SCHEDULE: Bidder acknowledges and accepts the delivery and installation schedule as outlined in the General Specification, Schedule, Section 5.

The undersigned bidder agrees to furnish the certificate of insurance and bonds, and to enter into a contract within twenty (20) days after acceptance of this Bid, and further agrees to complete all work covered by the foregoing bid in accordance with specified requirements. The proposed work will commence as soon as possible after the contract execution with completion of the total contract to be no later than July 31, 2014. **No work shall commence until the certificate of insurance and bonds are approved by the City and the contract is executed.**

Enclosed herewith is the bid security in the amount of:

\_\_\_\_\_ Dollars

(\$ \_\_\_\_\_)

which the undersigned bidder agrees is to be forfeited to and become the property of the City of Grand Island, Nebraska, as liquidated damages should this Bid be accepted and a contract be awarded to them and they fail to enter into a contract in the form prescribed and to furnish the required bond within twenty (20) days, but otherwise the aforesaid bid guarantee will be returned upon them signing the contract and delivering the approved bond.

It is understood and agreed that time is the essence of the contract.

In submitting this bid it is understood that the right is reserved by the City to reject any and all bids; to waive irregularities therein and to accept whichever bid that may be in the best interest of the City, at its sole discretion. It is understood that this bid may not be withdrawn until after sixty (60) days from bid opening.

In submitting this bid, the bidder states that bidder fully complies with, and will continue to comply with, applicable State fair labor standards as required by section 73-102 RRS, 1943 and also complies with, and will continue to comply with, section 48-657 RRS, 1943 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska.

In submitting this bid, the bidder states that bidder fully complies with, and will continue to comply with the following;

#### **GRATUITIES AND KICKBACKS**

City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefore. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

#### **FAIR EMPLOYMENT PRACTICES**

Each proposer agrees that they will not discriminate against any employee or applicant for employment because of age, race, color, religious creed, ancestry, handicap, sex, or political affiliation.

#### **SECTION 504/ADA NOTICE TO THE PUBLIC**

The City of Grand Island does not discriminate on the basis of disability in admission of its programs, services, or activities, in access to them, in treatment of individuals with disability, or in any aspect of their operations. The City of Grand Island also does not discriminate on the basis of disability in its hiring or employment practices.

This notice is provided as required by Title II of the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973. Questions, complaints, or requests for additional information or accommodation regarding the ADA and Section 504 may be forwarded to the designated ADA and Section 504 compliance coordinator.

The undersigned bidder hereby certifies (a) that this bid is genuine and is not made in the interest of or in the behalf of any undisclosed person, firm or corporation, and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation, (b) that they have not directly or indirectly induced or solicited any person, firm or corporation to refrain from bidding, (c) that they have not sought, by collusion or otherwise, to obtain for themselves an advantage over any other bidder or over the City of Grand Island, and (d) that they have not directly or indirectly induced or solicited any other bidder to put in a false or sham bid.

DATED \_\_\_\_\_

SIGNATURE OF BIDDER:

If an Individual: \_\_\_\_\_ doing business

as \_\_\_\_\_

If a Partnership: \_\_\_\_\_

by \_\_\_\_\_, member of firm.

If a Corporation: \_\_\_\_\_

by \_\_\_\_\_ (Seal)

Title \_\_\_\_\_

BUSINESS ADDRESS OF BIDDER \_\_\_\_\_

\_\_\_\_\_

TELEPHONE NUMBER OF BIDDER \_\_\_\_\_

FAX NUMBER OF BIDDER \_\_\_\_\_

LIST ALL SUBCONTRACTORS:

<u>Company Name</u>	<u>Work Subcontracted</u>	<u>Business Address</u>	<u>Business Telephone Number</u>
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\_\_\_\_\_

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**MINIMUM INSURANCE REQUIREMENTS**

**BIDS FOR CONSTRUCTION, DEMOLITION OR BOILER RELATED PROJECTS**

**CITY OF GRAND ISLAND, NEBRASKA**

The Bidder shall take out, throughout the duration of the Contract, insurance of such types and in such amounts as may be necessary to protect himself and the interests of the City against all hazards or risks of loss as hereinafter specified. This insurance shall cover all aspects of the Bidder's operations to the fullest extent possible and provide no exclusions relative to any aspect of the work being performed for the City. The form and limits of such insurance, together with the underwriter thereof in each case, shall be approved by the City but regardless of such approval, it shall be the responsibility of the Bidder to maintain adequate insurance coverage at all times. Failure of the Bidder to maintain adequate coverage shall not relieve him of any contractual responsibility or obligation.

1. **WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY**

This insurance shall protect the Bidder against all claims under applicable State worker's compensation laws. The Bidder shall also be protected against claims for injury, disease or death of employees which, for any reason, may not fall within the provisions of a workers' compensation law. This policy shall include an "all states" endorsement.

The liability limits shall not be less than the following:

Workers' Compensation	Statutory
Employer's Liability	\$100,000 each person
	\$100,000 per disease
	\$500,000 policy limit

2. **COMPREHENSIVE AUTOMOBILE LIABILITY**

This insurance shall be written in comprehensive form and shall protect the Bidder against all claims for injuries to members of the public and damage to property of others arising out of any act or omission of the Bidder, their agents, employees or subcontractors.

The liability limits shall not be less than the following:

Bodily Injury & Property Damage	\$ 500,000 combined single limit each occurrence
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3. **COMPREHENSIVE GENERAL LIABILITY**

This insurance shall be written in comprehensive form and shall protect the Bidder against all claims arising from injuries to members of the public or damage to property of others arising out of any action or omission of the Bidder, their agents, employees or subcontractors.

If the Bidder's work involves construction of sanitary sewers, storm sewers or water mains, the comprehensive general liability coverage shall contain no exclusion relative to blasting, explosion, collapse of buildings or damage to underground property.

The liability limits shall not be less than the following:

Bodily Injury & Property Damage	\$ 500,000 each occurrence
	\$1,000,000 aggregate

4. OWNER'S PROTECTIVE LIABILITY AND PROPERTY DAMAGE

The Bidder shall purchase and maintain owner's protective liability and property damage insurance issued in the name of the City, which shall protect the latter against any and all claims which might arise as a result of the operations of the Bidder or their subcontractors or the City and its agents and employees in fulfilling this Contract during the life of the Contract. The minimum amounts and coverage of such insurance shall be the same as required for comprehensive general liability.

5. UMBRELLA LIABILITY INSURANCE

This insurance shall protect the Bidder against claims in excess of the limits provided under workers' compensation and employer's liability, comprehensive automobile liability, and commercial general liability policies. The umbrella policy shall follow the form of the primary insurance, including the application of the primary limits.

If the Bidder's work involves construction of sanitary sewers, storm sewers or water mains, the comprehensive general liability coverage shall contain no exclusion relative to blasting, explosion, collapse of buildings or damage to underground property.

The liability limits shall not be less than the following:

Bodily Injury & Property Damage	\$1,000,000 each occurrence
	\$1,000,000 general aggregate

6. RAILROAD PROTECTIVE LIABILITY INSURANCE

This Bidder shall purchase this insurance for each of the railroad companies where work will be done on or across railroad property. The limits and coverage shall be in accordance with the requirements of the railroad company.

7. ADDITIONAL REQUIREMENTS

The City may require insurance covering a Bidder or subcontractor in character and more or less than the standard requirements set forth herein depending upon the character and extent of the work to be performed by such Bidder or subcontractor.

Insurance as herein required shall be maintained in force until the City releases the Bidder of all obligations under the Contract.

The Bidder shall provide and carry any additional insurance as may be required by special provisions of these specifications.

8. CERTIFICATE OF INSURANCE

Satisfactory certificates of insurance shall be filed with the City prior to starting any work on this Contract. The certificates shall show the City as an additional insured on all coverage except Workers Compensation. The certificate shall state that thirty (30) days written notice shall be given to the City before any policy is cancelled (strike the "endeavor to" wording often shown on certificate forms). If the bidder cannot have the "endeavor to" language stricken, the bidder may elect to provide a new certificate of insurance every thirty (30) days during the contract. Bidder shall immediately notify the City if there is any reduction of coverage because of revised limits or claims paid which affect the aggregate of any policy.

**CONTRACT AGREEMENT**

THIS AGREEMENT made and entered into by and between \_\_\_\_\_ hereinafter called the Contractor, and the City of Grand Island, Nebraska, hereinafter called the City.

WITNESSETH:

THAT, WHEREAS, in accordance with law, the City has caused contract documents to be prepared and an advertisement calling for bids to be published, for construction of **SUBSTATION J CONTROL BUILDING**; and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined, and canvassed the bids submitted, and has determined the aforesaid Contractor to be the lowest responsive and responsible bidder, and has duly awarded to the said Contractor a contract therefore, for the sum or sums named in the Contractor's bid, a copy thereof being attached to and made a part of this contract;

NOW, THEREFORE, in consideration of the compensation to be paid to the Contractor and of the mutual agreements herein contained, the parties have agreed and hereby agree, the City for itself and its successors, and the Contractor for itself, or themselves, and its, or their successors, as follows:

**ARTICLE I.** That the Contractor shall (a) furnish all tools, equipment, superintendence, transportation, and other construction materials, services and facilities; (b) furnish, as agent for the City, all materials, supplies and equipment specified and required to be incorporated in and form a permanent part of the completed work; (c) provide and perform all necessary labor; and (d) in a good substantial and workmanlike manner and in accordance with the requirements, stipulations, provisions, and conditions of the contract documents as listed in the attached General Specifications, said documents forming the contract and being as fully a part thereof as if repeated verbatim herein, perform, execute, construct and complete all work included in and covered by the City's official award of this contract to the said Contractor, such award being based on the acceptance by the City of the Contractor's bid;

**ARTICLE II.** That the City shall pay to the contractor for the performance of the work embraced in this contract and the contractor will accept as full compensation therefore the sum (subject to adjustment as provided by the contract) of \_\_\_\_\_ Dollars  
\$ \_\_\_\_\_

for all services, materials, and work covered by and included in the contract award and designated in the foregoing Article I; payments thereof to be made in cash or its equivalent in the manner provided in the General Specifications.

**ARTICLE III.** The contractor hereby agrees to act as agent for the City in purchasing materials and supplies for the City for this project. The City shall be obligated to the vendor of the materials and supplies for the purchase price, but the contractor shall handle all payments hereunder on behalf of the City. The vendor shall make demand or claim for payment of the purchase price from the City by submitting an invoice to the contractor. Title to all materials and supplies purchased hereunder shall vest in the City directly from the vendor. Regardless of the method of payment, title shall vest immediately in the City. The contractor shall not acquire title to any materials and supplies incorporated into the project. All invoices shall bear the contractor's name as agent for the City. This paragraph will apply only to these materials and supplies actually incorporated into and becoming a part of the finished product of **SUBSTATION J CONTROL BUILDING**.

**ARTICLE IV.** That the contractor shall start work as soon as possible after the contract is signed and the required bonds and insurance are approved, and that the Contractor shall complete the work on or before July 31, 2014. It is understood and agreed that time is the essence of the contract.

CONTRACT AGREEMENT (Continued)

ARTICLE V. The Contractor agrees to comply with all applicable State fair labor standards in the execution of this contract as required by Section 73-102, R.R.S. 1943. The Contractor further agrees to comply with the provisions of Section 48-657, R.R.S. 1943, pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. During the performance of this contract, the contractor and all subcontractors agree not to discriminate in hiring or any other employment practice on the basis of race, color, religion, sex, national origin, age or disability. The Contractor agrees to comply with all applicable Local, State and Federal rules and regulations.

IN WITNESS WHEREOF, the parties hereto have executed this Contract Agreement.

Contractor \_\_\_\_\_

By \_\_\_\_\_

Date \_\_\_\_\_

Title \_\_\_\_\_

CITY OF GRAND ISLAND, NEBRASKA,

By \_\_\_\_\_  
Mayor

Date \_\_\_\_\_

Attest: \_\_\_\_\_  
City Clerk

The contract, insurance, and any required bonds are in due form according to law and are hereby approved.

\_\_\_\_\_  
Attorney for the City

Date \_\_\_\_\_

# GENERAL SPECIFICATIONS SUBSTATION J CONTROL BUILDING

## PROJECT REQUIREMENTS

### 1.0 PROJECT OVERVIEW AND SCOPE

The City of Grand Island currently owns an electric system consisting of a 115 kV loop around the City. This transmission loop connects four distribution substations and two generation substations. The loop also has three 115 kV interconnections, at two substations, to the Nebraska Public Power District. A new substation, Substation J is being installed by another contractor.

This project furnishes and installs a prewired control building complete with an emergency dispatch room, including relay/control panels, termination cabinet, AC/DC distribution panels, battery and charger, communication, fiber termination and automation equipment for Substation J. All terminations to equipment outside the building is the responsibility of others. In addition, the entire fiber communication loop will be upgraded, the associated equipment has been identified and will be purchased under this contract with installation by others. The fiber loop is being installed because the reduced distance between substations requires use of differential protection, rather than impedance relaying, on the transmission lines.

The following building loadings will be required;

UL752 Level 4 Bullet Resistant Walls & Roof  
FEMA 361 – Tornado impact loads zone IV  
250MPH Wind Rated Construction  
Seismic Rated Construction – Category E  
2 Hour Fire Rated Construction

Due to the Pre engineered nature of this type of building a general layout has been provided, it is not meant to dictate the exact size or materials used, but to provide guidance for the supplier to meet the requirements of the owner while realizing the efficiencies of supplying their standard building.

It is the intent to award one contract for this work but the Owner reserves the right to separate the building and panel portion of this work. The building provider will have overall responsibility for coordinating the installation of the panels to provide a complete building.



## 2.0 DEFINITIONS

- A. Owner - Shall refer to The City of Grand Island its engineer or engineering representative.
- B. Engineer - Shall refer to Advantage Engineering and all correspondence shall be sent to:

Advantage Engineering  
769 Spirit of St. Louis Blvd.  
Chesterfield, MO 63005

Attn: Dan Schwab  
Tel. 314-530-0470 ext. 107  
Fax 314-530-0670  
dschwab@advanteng.com
- C. Contractor - Shall refer to the party entering in to this contract or to any party that they have assigned any portion of the proposed construction or material provision.

## 3.0 EXTENT OF CONTRACT

- A. The Contractor is completely responsible for delivering a fully functional and operational substation control system upon completion of this work.
- B. The Contractor shall furnish, deliver and install the building, equipment and material, except that furnished by the Owner, as specified and shown on the drawings. Miscellaneous materials not specifically shown shall be included in the bid by contractor to provide a complete building.
- C. The Contractor shall furnish, all transportation, materials, other incidentals, and supervision necessary for the installation of the proposed building.
- D. The Contractor shall wire all internal equipment and provide and wire to a termination cabinet to be used for all field termination's to the prewired control and relay panels that will be supplied by the Contractor.
- E. The Contractor shall be responsible for all owner furnished material supplied for inclusion in the panels, after receiving delivery.
- F. Another Contractor will facilitate the placing of major substation equipment.

#### 4.0 DRAWINGS

- A. Anything appearing in either the specifications or the drawings and not the other shall be considered as appearing in both unless they appear conflicting. In case of conflict or of any questions concerning the drawings and specifications, the Contractor shall refer them to the Engineer for clarification. The contract shall be considered executed on the most expensive of conflictive alternatives.
- B. Physical drawings for this project, as detailed in the drawing list, are included as a part of this specification.
- C. All detail wiring drawings, circuit lists and manufacturer's installation information will be provided prior to the start of construction work.
- D. The Contractor IS NOT TO PROCEED with the actual work until drawings stamped "Approved for Construction" are issued.
- E. Contractor Supplied Equipment
  - 1. Drawing Submittal:
    - a. Furnish to the Engineer for approval two (2) copies of all general and detail drawings for the design, installation and operation of the equipment being furnished under this contract, and any other supplemental drawings required in the prosecution of the work. Drawings shall be submitted according to the schedule specified. These drawings shall be reviewed by the Engineer and one (1) copy returned to the Contractor marked approved or with corrections noted thereon. Also furnish one (1) copy of Approval drawings to Owner.
    - b. After the drawings have been approved, forward to the Engineer two (2) sets of construction drawings marked final. Also furnish one (1) copy of Final drawings to Owner.
    - c. After erection is complete, furnish the Owner one (1) copy of as-built drawings and the Engineer one (1) copy. So that field changes can be incorporated into record drawings.
  - 2. Drawing Approval:
    - a. The Engineer will check submittal drawings to ensure compliance with the purpose and intent of the specifications and to assist the Contractor in interpreting the specifications so as to eliminate errors in the design or manufacture of the equipment shipped to the Owner.

- b. The formal approval given to the Contractor is to be considered in conformance with these purposes and in no manner shall be construed so as to relieve the Contractor from any reliability or responsibility for proper design, fabrication or compliance with the specifications.
- c. The approval of the shop drawings by the Engineer does not relieve the Contractor from any obligations set forth in the contract documents.
- d. Obtain the Engineer's approval of drawings before equipment is fabricated or purchased. This requirement does not relieve the Contractor from meeting the required schedules. It is the Contractor's responsibility to schedule drawings to allow the normal exchange of drawings and to call it to the Engineer's attention if the required schedules are not being maintained.
- e. It is to be understood by the Contractor that final distribution copies of a previously approved drawing are not rechecked. It is also to be understood that only those portions requiring change on "approved except as noted" and "returned for correction and resubmittal" drawings will be checked. It is the responsibility of the Contractor to ensure that any change made on resubmittal drawings are clearly indicated as a revision to the drawing, and called to the Engineer's attention in the transmittal letter.

3. Instruction Books:

- a. Provide instruction books for all apparatus furnished under the contract.
- b. Bind all instruction books in a permanent manner. Books shall be prepared by the manufacturer and show the address of the nearest authorized service facility. Books shall contain instructions for installation, start up, operation, inspection, maintenance, parts list, recommended spare parts, and data sheets with model numbers and serial numbers of the equipment furnished.
- c. Supply at least four (4) copies, to the Owner.
- d. Installation instructions shall be delivered at least one (1) month prior to the contract shipment date.
- e. Operating instructions and parts lists shall be delivered prior to the contract shipment date.

5.0 SCHEDULE

- A. The Contractor shall submit and update monthly, a bar chart type project schedule. The schedule shall indicate the following "milestones" as a minimum:

- \* Order material

- \* Start panel assembly (relay and control, communication, automation)
- \* System test
- \* Ship system
- \* Install system in the field

B. Delivery dates for Owner furnished equipment:

1. Relays - Presently in storage at Grand Island

## 6.0 CHANGES IN CONTRACT PRICE

- A. The contractor must include in their bid any item of material or labor that they feel is required in order to deliver a complete substation control system as outlined in the extent of contract section of this specification.
- B. The individual items of material and work are identified in the Bid Units sections of the specification. The quantities listed are an estimate of the amount of material and the extent of work required for the project. Bid Units and quantities shall be used to adjust the contract price only for changes authorized in writing by the Owner. No adjustments will be made for lost or damaged material.
- C. Where Owner furnished material is provided, the Contractor shall provide a price for labor to transport and install the material. Contractor furnished material shall indicate separately the material price and the labor price for installation, in the Bid Units.

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## TECHNICAL SECTION 01090

### REFERENCE STANDARDS

#### 1.0 GENERAL

- a. Perform work in accordance with the best present-day installation and manufacturing practices. Conform to "Manual of Accident Prevention in Construction" by The Associated General Contractors of America, Inc. and Occupational Safety and Health Act requirements.
- b. Comply with all applicable laws, building and construction codes and requirements of governmental agencies under whose jurisdiction work is being performed; fees for permits and licenses shall be paid by the contractor.
- c. Unless specifically noted to the contrary, conform with and test in accordance with the applicable sections of the latest revisions of codes and standards listed.
- d. Conflicts
  - 1) Between referenced codes and standards: code or standard establishing the more stringent requirements shall be followed.
  - 2) Between referenced codes, standards, specifications or plans: One establishing the most stringent requirements shall be followed.
- e. The latest revisions of the following codes and standards shall apply for all labor and material furnished under this specification.
  - 1) National Fire Protection Agency (NFPA)
  - 2) National Electric Code (NEC)
  - 3) National Electric Safety Code (ANSI C2)
  - 4) National Electric Manufacturers Association (NEMA)
  - 5) Underwriter's Laboratories (UL)
  - 6) American National Standards Institute (ANSI)
  - 7) Uniform Building Code (UBC)

- 8) Occupational Safety and Health Act (OSHA)
- 9) American Institute of Steel Construction (AISC)
  - a) Manual of Steel Construction
  - b) Quality Criteria and Inspection Standards
- 10) American Iron and Steel Institute (AISI)
- 11) American Welding Society (AWS)
  - a) Structural Welding Code
- 12) American Society of Testing and Materials (ASTM)
- 13) Steel Door Institute (SDI)
- 14) Insulated Power Cable Engineers Association (ICEA)
- 15) Certified Ballast Manufacturers (CBM)
- 16) Electrical Testing Laboratory (ETL)
- 17) Institute of Electrical and Electronic Engineers (IEEE)
- 18) American Concrete Institute (ACI)
- 19) Steel Structures Painting Council (SSPC)
- 20) Federal Specifications (FS)
- 21) American Association State Highway Officials (AASHO)
- 22) American Society of Civil Engineers (ASCE)

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## TECHNICAL SECTION 13 34 00

### FABRICATED ENGINEERED STRUCTURE

#### 1.0 GENERAL REQUIREMENTS

##### A. SUMMARY OF WORK

1. This section covers requirements for furnishing, including the design, fabrication and erection of a engineered structure to serve as a substation control house with an emergency dispatch room, including relay/control panels, termination cabinet, AC/DC distribution panels and battery and charger.
2. The conditions of this Section apply to the Contractor and to all subcontracted suppliers.

##### B. STANDARDS

UL752 Level 4 Bullet Resistant Walls & Roof  
FEMA 361 – Tornado impact loads zone IV  
250MPH Wind Rated Construction  
Seismic Rated Construction – Category E  
2 Hour Fire Rated Construction

##### C. SYSTEM DESCRIPTION

1. The building shall include all primary and secondary structural framing members, wall and roof system, connection bolts, canopies, roof extensions, covering, windows, doors, flashing, trim, fasteners, closures, sealer, insulation, gutter, down spouts, louvers, fans, heating/cooling units, lighting, electrical work, suspended ceiling and other miscellaneous items such as stated herein and/or shown on the drawings.
2. Building details shall be developed to provide a 9'-0" clearance between floor and suspended ceiling.

#### 2.0 TECHNICAL REQUIREMENTS

##### A. DESIGN LOADS

1. Design loads shall conform to those given in FEMA 361 as they apply to a structure located in Grand Island, Nebraska.

2. Loads imposed by the cable tray, suspended ceiling, lighting fixtures and heating/cooling units shall be accommodated in the design.

B. MATERIALS

1. Doors and Frames
  - a. Doors and frames shall be similar to the manufacturers standard.
  - b. A lock set shall be provided at each doorway.
  - c. An aluminum threshold shall be provided.
  - d. Weatherproofing shall be provided.
2. Wall Louvers
  - a. Wall louvers shall have weatherproof type blades, frame and blades of material and finish same as adjacent material and provided with galvanized metal bird screen.
  - b. Louvers shall be designed by the manufacturer to meet design wind loads.
3. Gutters and Down spouts
  - a. Eave gutters shall be a manufacturer's standard and formed from 26 gauge (minimum) galvanized steel with a minimum cross-sectioned area of 30 square inches.
  - b. Down spouts shall be a manufacturer's standards formed from 26 gauge (minimum) galvanized steel with a minimum cross-sectioned area of 20 square inches.
4. Lighting
  - a. Lighting fixtures shall be flush with the suspended ceiling.
  - b. Lighting shall consist of three essentially continuous rows of fixtures running longitudinally. Each fixture shall have a minimum of two fluorescent tubes.
5. Heating/Cooling Units



- a. Two heat pump type heating/cooling units shall be provided and located outside the building. The units shall be sized so that either unit can supply the entire load.
- b. Building frame shall be provided to adequately support the units and any auxiliary heat that may be required.

6. Electrical

- a. Two AC Power 200A, 40 pole panels, with copper busses, and main and sub feed lugs. Similar to Square D NQ0D40L200CU. Power to be supplied from a manual throw over switch, similar to Square D 92255, through two-200A fused safety switches, similar to Square D H225N.
- b. DC power consisting of: 125V, 60 Cell, 200AH, DC battery, Flooded Lead Selenium, SBS type STT, BAE. Battery charger with 240VAC input, 125VDC 16A output, LaMarche Constavolt, GNB Model GAF, C&D ARE Series or Exide, emergency eye wash station and one-225A, 48 pole panel.
- c. An electrical system shall be provided to service the following:
  - 1) Two three way switches to control lights - one at each doorway.
  - 2) Heating/cooling unit.
  - 3) outlets - one near each corner of the building and every 8' along the long walls.
- d. All wiring shall be in conduit.

7. Insulation

- a. Insulation Rating shall be R-11 walls and R-19 Ceiling.

3.0 OTHER REQUIREMENTS

A. SUBMITTALS

- 1. The building manufacturer shall submit anchor bolt placement plan and reactions within 30 days of receiving order for the building.

2. The building manufacturer shall provide the manufacturer's standard warranty to the Owner.
3. The Contractor shall furnish all operating instructions and warranties for the building service equipment to the Owner.

B. QUALIFICATIONS

1. Manufacturer
  - a. The company manufacturing the products specified in this Section shall be certified, by proposed building type, such as the National Precast Concrete Association or American Institute of Steel Construction's MB Certification Program.
  - b. Structural framing and covering shall be the design of a licensed Professional Engineer experienced in design of this work.

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## TECHNICAL SECTION 16120

### POWER, CONTROL AND INSTRUMENTATION CABLE

#### 1.0 GENERAL REQUIREMENTS

##### A. SUMMARY OF WORK

1. This section covers the requirements for furnishing, handling, and installing power, control, and instrumentation cable in an outdoor substation. Work under this section includes purchase, receipt, installing, and placing in continuous service a power, control, and instrumentation cable system.
2. All cables shall be furnished by contractor in quantities sufficient for a complete installation as specified.
3. Wiring and conductor accessories shall be furnished by Contractor in quantities sufficient for a complete installation as specified. Accessories shall include cable terminals, ring lugs, tape, cable ties, terminal blocks, and cable identification tags.

##### B. STANDARDS

1. The power, control, and instrumentation cable will be manufactured, installed, assembled, and tested in accordance with the applicable standards listed in Section 01090, Reference Standards.
2. Contractor shall conform to the manufacturer's recommendations in all respects. Any conflict between the contract drawings and specifications, standards and the manufacturer's written or verbal recommendations shall be referred to the Engineer for final decision.

#### 2.0 TECHNICAL REQUIREMENTS

- A. All conductor cables rated 600V and higher are to be supplied by the Contractor as specified on the drawings.
- B. All power and control cable shall conform to the following specifications.
  1. Power Cable shall be 600 volt, nonshielded, stranded, single conductor copper cable conforming to the following:
    - a. Cable shall be type USE, VW-1.

- b. Cables shall be insulated with ethylene propylene (FR-EP) under a chlorosulphonated polyethylene (Hypalon) jacket.
    - 2. Control Cable shall be 600 volt, non-shielded, stranded, multiple conductor copper cable conforming to the following:
      - a. Cables shall be insulated with flame retardent ethylene propylene (FR-EP) under a chlorosulphonated polyethylene (Hypalon) jacket.
      - b. Color coded per electric utility color scheme in accordance with ICEA S-168 516, Method 1, color sequence Table K-2. (BK, R, BL, O, Y, BR, R-BK, BL-BK, O-BK, Y-BK, BR-BK, BK-R)
- C. Wiring and conductor accessories shall be furnished in accordance with the following specifications or as indicated on the drawings:
  - 1. Terminal Blocks
    - a. Designed and sized for the cables being terminated.
    - b. Rated 600 volts.
    - c. Tubular screw type contacts for power cables requiring no cable connectors and strap screw type contacts for control and instrument cables having ring tongue cable connectors.
    - d. Rated current carrying capacity equal to or greater than the cable being terminated.
    - e. Concentric Devices type 30TB for PT junction boxes and control and instrumentation cable.
    - f. Concentric Devices type 30CT04 for all CT current circuits.
  - 2. Cable Identification Tags
    - a. Markers for wire and cable circuits shall be of an opaque nylon material arranged to include a marker board, nonreleasing holding device, and cable fastening tail similar to Panduit Corp. Part No. SSM markers. The marker board shall not be less than 3/8 inch wide, 3/4 inch long, and 25 mils thick. One side shall be roughened to hold black nylon marking ink from marking pen similar to Thomas & Betts Company "TY-RAP" Catalog No. WT163M-1, or Panduit Corp. Part No. PX. Identification shall be

permanent and waterproof. The holding device shall be designed to allow the fastening tail to pass around the cable through the holding device and prevent the removal of the tail without cutting it loose from the marker.

3. Cable Ties

- a. Lacing materials for field installed cable shall be nonreleasing nylon ties manufactured by Thomas & Betts Company, Elizabeth, New Jersey; Weckesser Company, Chicago, Illinois; Panduit Corporation, Tinley Park, Illinois; or equal.

3.0. INSTALLATION

A. GENERAL

1. Install all cabling in conduit, duct, or cable tray complete as specified, as required for operation and continuous service, and as recommended by manufacturers.
2. Installation shall be defined to include placement, coiling and taping of conductors, identification, testing, and verification of each circuit, cable, and conductor for AC and DC power, instrumentation, and control circuits.
3. All equipment and hardware shall be inspected for visual defects and missing parts prior to installation. Missing pieces shall be replaced and damage corrected prior to installation by Contractor.
4. Install at times as required to meet the specified construction schedule.
5. Cabling and accessories shall be thoroughly cleaned of all shipping material, dust, and dirt prior to installation.
6. Splicing
  - a. Installed cable shall be continuous between terminal points as indicated without intermediate splices or taps.
  - b. No splices shall be permitted in any current circuits.
7. Attach manufacturer approved pulling grips over the cable sheath to prevent slipping the insulation. Flat fish tape with ball and flexible leader

or polyethylene or manila rope to be used for pulling. Use of steel pulling cable is not permitted.

8. Do not subject non-shielded cables to a bending radius of less than 8 times the cable outside diameter during or after installation. Do not subject shielded cables to a bending radius of less than 12 times the cable outside diameter during or after installation.
9. Cable Ties and Supports.
  - a. Install cable supports in vertical runs of conduit, at boxes, and at terminations in equipment as required to meet the intermediate support requirements of the NEC.
  - b. Clamp, snub, and tie for proper support at each terminal block or connection so that any strain on the cable will not be transmitted to the terminal connections.
  - c. Do not tie wires from different cables together.
10. Attach a cable identification tag with a cable tie to each cable at termination points and pull boxes. Each cable identification tag shall bear the number of the corresponding circuit according to the Contract Drawings.

Cable identification tags shall be laminated plastic or fiber with the circuit number (and phase number where specified) stamped or engraved thereon. Handwritten tags are not acceptable. Tags shall have provisions for attachment to cable by tying and shall be subject to the Owner's approval.
11. All cable installed in trays shall be carefully laid in or pulled through the tray systems so that neither the cable nor the trays are damaged. Cable may be laid along the side of the tray system during placement provided it is protected from dirt, water, oil, or other detrimental materials and from mechanical injury. Cable shall be cut sufficiently long to conform to the contour of the trays, with particular attention paid to vertical inside bends. All excessive slack shall be removed from the cable so that it lies parallel to the sides of the trays. Multiple single conductor cable which constitutes a single power circuit shall be grouped together to minimize magnetic influence on other cable in the area.
12. All spare conductors of multi-conductor cable shall be left at their maximum lengths for possible replacement of any other conductors in the cable. Each spare conductor shall be neatly coiled and then taped to the conductors being used.

4.0. TESTING

- A. Contractor shall test all cabling in accordance with Section 16950 of this specification.

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## TECHNICAL SECTION 16425

### SWITCHBOARD PANELS

#### 1.0 GENERAL REQUIREMENTS

##### A. SUMMARY OF WORK

1. This section covers the requirements for handling and installing switchboard panels in outdoor substations. Work under this section includes receipt, installation and placing in continuous service switchboard panels.
2. Materials for leveling, shimming, grounding, and anchoring switchboard panels shall be supplied by Contractor.

##### B. STANDARDS

1. The switchboard panels will be installed, assembled and tested in accordance with the applicable standards listed in Section 01090, Reference Standards.
2. Contractor shall conform to the manufacturer's recommendations in all respects. Any conflict between the contract drawings and specifications, standards and the manufacturer's written or verbal recommendations shall be referred to the Engineer for final decision.

##### C. TECHNICAL REQUIREMENTS

1. Substation J:
  - a. Panels for the above substation will be supplied under this contract. Also, this contract requires on site functional testing of these panels and the system. However installation and cable termination to substation equipment is covered under another Contractor. Coordination with the other Contractor will be required for setting the panels and terminating cables.
  - b. Control and relay panels are vertical free standing three sided switchboard. Control panels shall be made of 1/8" or #11 U.S.S. gauge stretcher-level steel. Panel vertical side members will include raceways with covers for routing of all external wiring and terminal blocks for external wire terminations. Rack mount angle shall be welded to the control panel to provide adequate support for



the equipment. Spacer panels shall be provided and mounted between rack mount equipment to provide a continuous surface (no open spaces) on the front of the panel.

- c. Instruments, meters, control switches and protective relays are mounted on the front of panels and grouped according to function and station arrangement. Auxiliary devices and transducers are mounted inside panels on mounting brackets.
- d. Terminal blocks shall be rated 600 volts and 30 amperes. They shall be Concentric Devices type 30CT04 for CT's and 30TB12 or 30TB04 for control.
- e. Control panel wire shall be copper, #12 AWG, 7 strand, 600 volt gray Vulkene flameproof insulation, Type SIS, General Electric type SI-57275 or equivalent.
- f. All wires shall be terminated with AMP (American Pamcor, Inc.) compression-type, tubular insulated, ring-tongue lugs applied only with certified AMP tools. When installing the lugs, care must be used in the removal of the insulation so the wire will not be cut or nicked.
- g. Fuse holders having heavy duty phenolic bases with side barriers, 250 volt, 30 ampere, 3-pole with tinned fuse clips shall be supplied. Fuse holders shall be General Electric Type GE8453-3 or approved equal.
- h. Fuses of the NEMA Class K5 rated 250 volts with current ratings as specified on contract drawings shall be supplied. Fuses shall be Gould or approved equal.
- i. Fuse holders and terminal blocks are to be furnished in accordance with drawings including mounting plates and bracket assemblies.
- j. A copper ground bus 1/4" x 1" x 10" shall be furnished and installed, extending across the rear of the panel near the bottom with a 9/16" diameter hole drilled at each end for connecting a #4/0 solid copper ground wire. This bus must not hinder accessibility to the terminals of the front-mounted components.
- k. Nameplates for identifying panels and equipment shall be furnished and installed by the supplier on both the front and rear of the control panel.

D. INSTALLATION

1. General

- a. Install equipment and materials complete as specified, as required for operation, continuous service and as recommended by manufacturer at the locations inside control building as shown on the drawings. Work includes setting in place, leveling, shimming, grounding, and anchoring to floor with cinch type anchors.
- b. All equipment and hardware shall be inspected for visual defects and missing parts prior to installation. Missing pieces shall be replaced and damage corrected prior to installation by Contractor.
- c. Connect all internal wiring circuits including control, power, PT and CT circuits.
- d. A field engineer may be provided by the Owner to supervise and/or check installation. Provide all labor required to assist field engineers in checking and testing equipment.
- e. Connect switchboard panels to control building ground 4/0 copper cable as shown on drawings. Routing of the grounding conductors not specifically shown on drawings shall be installed such that they are out of the way and will not interfere with removal of any equipment within panels.
- f. Check all internal and external circuit connections for tightness.
- g. Equipment shall be thoroughly cleaned of all shipping material, dust and dirt.
- h. Connect convenience outlets and lights.
- i. Switchboard panels shall be thoroughly cleaned of all shipping material, dust and dirt. Painted surfaces which have been scratched or marred shall be repaired with manufacturer's supplied paint.

E. TESTING

1. Contractor shall test switchboard panels in accordance with Section 16950 of this specification. Complete end to end relay system tests will be by others.

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**BILL OF MATERIAL  
(FOR BID, 2/24/2014)**

**PANEL 1**

<b>Item</b>	<b>Qty</b>	<b>Device</b>	<b>Mfr.</b>	<b>Catalog No./Model #</b>	<b>Description</b>	<b>Remarks</b>
1	2	FU1, FU2			2-pole, Fuse Block with 10 Amps fuses, 250V	
2	4	RA,RB,RC,RD,	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	
3	2	FIBER PATCHING PANEL	Ortronics	OR-FC02U-C	Rack mount 2U Fiber enclosure	
4	6	FIBER PATCHING PANEL	Ortronics	OR-OFP-SCD12AC	Panel 6/SC/DX w/single mode SC duplex blue couplers	
5		OTHER DEVICES				Instock/Owner Furnished

**SUB J CONTROL/RELAY PANEL  
BILL OF MATERIAL  
(FOR BID, 2/15/2014)**

**PANEL 2**

Item	Qty	Device	Mfr.	Catalog No./Model #	Description	Remarks
1	1	11S-1061B	ABB	#REL670*1.2-B32AX00-X00-B2-A-A-LB-C-B13-D1A-AGF-	Line Distance Relay	Instock/Owner Furnished
2	1	11P-1061B	SEL	#0387L0HC03X54X1	Line Differential Relay	Instock/Owner Furnished
3	1	MET-1061B	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Multifunction meter	
4	1	52CS/J11	ELECTROSWITCH	#2457D	Circuit breaker control switch, 5 decks	
5	1	86BF/J11	ELECTROSWITCH	#7806D	Breaker Failure lockout relay, 125VDC operate coil, 6 decks	
6	1	87DIS	ELECTROSWITCH	KW12-1102B4	240VAC, Single-throw switch, 1 deck, 2 poles, 0-90 degree position, 0 position "OFF"	
7	1	W	GE	116B6708G43A73W4	Indication Light, 125V DC, LED, Whight LED, Clear Cap	
8	2	A	GE	116B6708G43A73A4	Indication Light, 125V DC, LED, Amber LED, AmberCap	
9	2	R1,R2	GE	116B6708G43A73R4	Indication Light, 125V DC, LED, Amber LED, Red Cap	
10	1	G	GE	116B6708G43A73G4	Indication Light, 125V DC, LED, Amber LED, Green Cap	
11	1	TS2-1	ABB	FR3G000137000	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cover plate, middle-4 pot., 3 current shorting pair, right-cover plate,	Red handle for pot. and Black handle for current circuits.
12	1	TS2-2,TS2-3,TS2-4	ABB	FR3G137137036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot.3 current shorting pair, middle-4 pot., 3 current shorting pair, right-10 pot.	Red handle for pot. and Black handle for current circuits.
13	2	TS2-5, TS2-6	ABB	FR3G000036000	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cover plate., , middle-10 pot, right-cover plate	Red handle for pot. and Black handle for current circuits.
14	1	TS2-7, TS2-8	ABB	FR3G137000036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot.3 current shorting pair, middle-cover plate, right-10 pot.	Red handle for pot. and Black handle for current circuits.
15	3	FU1, FU2, FU3			2-pole, Fuse Block with 10 Amps fuses, 250V	
16	2	UA, UD			3-pole, Fuse Block with 6 Amps fuses, 250V	
17	3	UB,UC,UX			1-pole, Fuse Block with 6 Amps fuses, 250V	
18	8	LA,LB,LC,LD,LE,LF,LG,LH,LG,	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
19	10	RA,RB,RC,RD,RE,RF, RG,RH, LJ,LK	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

**SUB J CONTROL/RELAY PANEL  
BILL OF MATERIAL  
(FOR BID, 2/15/2014)**

**PANEL 3**

Item	Qty	Device	Mfr.	Catalog No./Model #	Description	Remarks
1	1	11P-T/E	SEL	#0487E3X411XXC4X4H644XXX	Transformer Differential Relay	
2	1	11S-T/E	SEL	#0501003X561C2B	Transformer Backup Relay	
3	1	11-J20	SEL	#0351S6XHB4E54X2	13KV Main breaker relay	No push button
4	1	87B/E	SEL	#0587Z0X325H22XX	13KV Bus differential Relay	
5	3	86BF/J12,86T/E,86B/E	ELECTROSWITCH	#7806D	Lockout relay, 125VDC operate coil, 6 decks	
6	1	MET-T/E	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Mutifunction meter	
7	2	52CS/J12, 52CS/J20	ELECTROSWITCH	#2457D	Circuit breaker control switch, 5 decks, pistol handle, code 18B-2B23	
8	3	A	GE	116B6708G43A73A4	Indication Light, 125V DC, LED, Amber LED, Amber Cap	
9	2	W	GE	116B6708G43A73W4	Indication Light, 125V DC, LED, Whight LED, Clear Cap	
10	4	R1,R2	GE	116B6708G43A73R4	Indication Light, 125V DC, LED, Amber LED, Red Cap	
11	2	G	GE	116B6708G43A73G4	Indication Light, 125V DC, LED, Amber LED, Green Cap	
12	1	TS3-1	ABB	FR3G000137000	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cover plate, middle-4 pot., 3 current shorting pair, right-cover plate	Red handle for pot. and Black handle for current circuits.
13	1	TS3-2,TS3-3,TS3-4	ABB	FR3G137137137	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot.3 current shorting pair, middle-4 pot., 3 current shorting pair, 4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
14	1	TS3-5,TS3-6,TS3-7	ABB	FR3G137036137	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray,clear cover, left-4 pot., 3 current shorting pair , middle-10 pot, right-4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
15	1	TS3-8	ABB	C129A539G01	FT-1, test switch, 10 pot.clear cover, all red handles	Red handle for pot. and Black handle for current circuits.
16	1	TS3-9, TS3-10, TS3-11	ABB	FR3G036036036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-10 pot., middle-10 pot., right-10 pot.	Red handle for pot. and Black handle for current circuits.
17	1	TS3-12, TS3-13, TS3-14	ABB	FR3G084036036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-2 pot., 4 current shorting pair., middle-10 pot., right-10 pot.	Red handle for pot. and Black handle for current circuits.
18	1	TS3-15, TS3-16	ABB	FR3G137000036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot., 3 current shorting pair , middle-cover plate, right-10 pot,	Red handle for pot. and Black handle for current circuits.
19	6	FU1, FU2, FU3, FU4, FU5, FU6			2-pole, Fuse Block with 10 Amps fuses, 250V	
20	3	UA, UB, UC			3-pole, Fuse Block with 6 Amps fuses, 250V	
21	3	UX, UY, UZ			1-pole, Fuse Block with 6 Amps fuses, 250V	
22	17	LA, LB, LC, LD, LE, LF, LG, LH, LG, LH, LJ, LK, LL, LM, LN, LP, LZA, LZB, LZC	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
23	16	RA, RB, RC, RD, RE, RF, RG, RH, RJ, LR, LS, LT, LU, LV, LW, LX	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

**SUB J CONTROL/RELAY PANEL  
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(FOR BID, 2/15/2014)**

**PANEL 4**

<b>Item</b>	<b>Qty</b>	<b>Device</b>	<b>Mfr.</b>	<b>Catalog No./Model #</b>	<b>Description</b>	<b>Remarks</b>
1	1	86BF/J13	ELECTROSWITCH	#7806D	Breaker Failure lockout relay, 125VDC operate coil, 6 decks	
2	1	52CS/J13	ELECTROSWITCH	#2457D	Circuit breaker control switch, 5 decks, pistol handle, code 18B-2B23	
3	1	A	GE	116B6708G43A73A4	Indication Light, 125V DC, LED, Amber LED, Amber Cap	
4	2	R1,R2	GE	116B6708G43A73R4	Indication Light, 125V DC, LED, Amber LED, Red Cap	
5	1	G	GE	116B6708G43A73G4	Indication Light, 125V DC, LED, Amber LED, Green Cap	
6	1	TS4-6	ABB	FR3G000036000	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cover plate, middle-10 pot, right-cover plate	Red handle for pot. and Black handle for current circuits.
7	1	FU1			2-pole, Fuse Block with 10 Amps fuses, 250V	
8	8	LA, LB, LC, LD, LE, LF, LG, LH,	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
9	9	RA, RB, RC, RD, RE, RF, RG, RH, RJ, RK	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

**SUB J CONTROL/RELAY PANEL  
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(FOR BID, 2/15/2014)**

**PANEL 5**

Item	Qty	Device	Mfr.	Catalog No./Model #	Description	Remarks
1	1	11P-T/W	SEL	#0487E3X411XXC4X4H644XXX	Transformer Differential Relay	
2	1	11S-T/W	SEL	#0501003X561C2B	Transformer Backup Relay	
3	1	11-J30	SEL	#0351S6XHB4E54X2	13KV Main breaker relay	No push button
4	1	87B/W	SEL	#0587Z0X325H22XX	13KV Bus differential Relay	
5	2	86TW,86B/W	ELECTROSWITCH	#7806D	Lockout relay, 125VDC operate coil, 6 decks	
6	1	MET-T/E	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Mutifunction meter	
7	1	52CS/J30	ELECTROSWITCH	#2457D	Circuit breaker control switch, 5 decks, pistol handle, code 18B-2B23	
8	2	A	GE	116B6708G43A73A4	Indication Light, 125V DC, LED, Amber LED, Amber Cap	
9	2	W	GE	116B6708G43A73W4	Indication Light, 125V DC, LED, Whight LED, Clear Cap	
10	2	R1,R2	GE	116B6708G43A73R4	Indication Light, 125V DC, LED, Amber LED, Red Cap	
11	1	G	GE	116B6708G43A73G4	Indication Light, 125V DC, LED, Amber LED, Green Cap	
12	1	TS5-1	ABB	FR3G000137000	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cover plate, middle-4 pot., 3 current shorting pair, right-cover plate	Red handle for pot. and Black handle for current circuits.
13	1	TS5-2,TS5-3,TS5-4	ABB	FR3G137137137	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot.3 current shorting pair, middle-4 pot., 3 current shorting pair, 4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
14	1	TS5-5,TS5-6,TS5-7	ABB	FR3G137036137	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray,clear cover, left-4 pot., 3 current shorting pair , middle-10 pot, right-4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
15	1	TS5-8	ABB	C129A539G01	FT-1, test switch, 10 pot.clear cover,	Red handle for pot. and Black handle for current circuits.
16	1	TS5-10, TS5-11	ABB	FR3G000036036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cove plate., middle-10 pot., right-10 pot.	Red handle for pot. and Black handle for current circuits.
17	1	TS5-12, TS5-13, TS5-14	ABB	FR3G084036036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-2 pot., 4 current shorting pair., middle-10 pot., right-10 pot.	Red handle for pot. and Black handle for current circuits.
18	1	TS5-15, TS5-16	ABB	FR3G137000036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot., 3 current shorting pair , middle-cover plate, right-10 pot,	Red handle for pot. and Black handle for current circuits.
19	6	FU1, FU2, FU3, FU4, FU5, FU6			2-pole, Fuse Block with 10 Amps fuses, 250V	
20	3	UA, UB, UC			3-pole, Fuse Block with 6 Amps fuses, 250V	
21	3	UX, UY, UZ			1-pole, Fuse Block with 6 Amps fuses, 250V	
22	14	LA, LB, LC, LD, LE, LF, LG, LH, LG, LH, LJ, LK, LL, LM, LN, LP	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
23	19	RA, RB, RC, RD, RE, RF, RG, RH, RL, RM, LR, LS, LT, LU, LV, LW, LX	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	



**SUB J CONTROL/RELAY PANEL  
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**PANEL 6**

Item	Qty	Device	Mfr.	Catalog No./Model #	Description	Remarks
1	1	11S-1061A	ABB	#REL670*1.2-B32AX00-X00-B2-A-A-LB-C-B13-D1A-AGF-	Line Distance Relay	Instock/Owner Furnished
2	1	11P-1061A	SEL	#0387L0HC03X54X1	Line Differential Relay	Instock/Owner Furnished
3	1	MET-1061A	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Multifunction meter	
4	1	52CS/J15	ELECTROSWITCH	#2457D	Circuit breaker control switch, 5 decks, pistol handle, code 18B-2B23	
5	1	86BF/J15	ELECTROSWITCH	#7806D	Breaker Failure lockout relay, 125VDC operate coil, 6 decks	
6	1	87DIS	ELECTROSWITCH	KW12-1102B4	240VAC, Single-throw switch, 1 deck, 2 poles, 0-90 degree position, 0 position "OFF"	
7	1	W	GE	116B6708G43A73W4	Indication Light, 125V DC, LED, Whight LED, Clear Cap	
8	2	A	GE	116B6708G43A73A4	Indication Light, 125V DC, LED, Amber LED, Amber Cap	
9	2	R1,R2	GE	116B6708G43A73R4	Indication Light, 125V DC, LED, Amber LED, Red Cap	
10	1	G	GE	116B6708G43A73G4	Indication Light, 125V DC, LED, Amber LED, Green Cap	
11	1	TS6-1	ABB	FR3G000137000	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cover plate, middle-4 pot., 3 current shorting pair, right-cover plate	Red handle for pot. and Black handle for current circuits.
12	1	TS6-2,TS6-3,TS6-4	ABB	FR3G137137036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot.3 current shorting pair, middle-4 pot., 3 current shorting pair, right-10 pot.	Red handle for pot. and Black handle for current circuits.
13	2	TS6-5, TS6-6	ABB	FR3G000036000	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-cover plate., , middle-10 pot, right-cover plate	Red handle for pot. and Black handle for current circuits.
14	1	TS6-7, TS6-8	ABB	FR3G137000036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot.3 current shorting pair, middle-cover plate, right-10 pot.	Red handle for pot. and Black handle for current circuits.
15	3	FU1, FU2, FU3			2-pole, Fuse Block with 10 Amps fuses, 250V	
16	2	UA, UD			3-pole, Fuse Block with 6 Amps fuses, 250V	
17	3	UB,UC,UX			1-pole, Fuse Block with 6 Amps fuses, 250V	
18	8	LA,LB,LC,LD,LE,LF,LG,LH,LG,	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
19	12	RA,RB,RC,RD,RE,RF, RG,RH, LJ,LK,LL,LM	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

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**PANEL 8**

Item	Qty	Device	Mfr.	Catalog No./Model #	Description	Remarks
1	1	11/J-21	SEL	#0351S6XHB4E54X2	Tie breaker relay	No push bottom
2	2	11/J-22, J23	SEL	#0351S6XHD4E54X2	Feeder relay, with control buttons	
3	3	MET-J21,MET-J22, MET-J23	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Mutifunction meter	
4	1	52CS/J21	ELECTROSWITCH	#2457D	Circuit breaker control switch, 5 decks, pistol handle, code 18B-2B23	
5	1	R	GE	116B6708G43A73R4	Indication Light, 125V DC, LED, Amber LED, Red Cap	
6	1	G	GE	116B6708G43A73G4	Indication Light, 125V DC, LED, Amber LED, Green Cap	
7	1	TS8-1, TS8-2, TS8-3	ABB	FR3G137137137	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot., 3 current shorting pair, middle-4 pot., 3 current shorting pair, right-4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
8	3	TS8-4, TS8-5, TS8-6 TS8-7, TS8-8, TS8-9 TS8-10, TS8-11, TS8-12	ABB	FR3G137036036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, clear cover, left-4 pot., 3 current shorting pair, middle-10 pot, right-10 pot.	Red handle for pot. and Black handle for current circuits.
9	3	FU1, FU2, FU3			2-pole, Fuse Block with 10 Amps fuses, 250V	
10	3	UA, UB, UC			3-pole, Fuse Block with 6 Amps fuses, 250V	
11	8	LA, LB, LC, LD, LE, LF, LG, LH	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
12	8	RA, RB, RC, RD, RE, RF, LM, LN	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

**SUB J CONTROL/RELAY PANEL  
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(FOR BID, 2/15/2014)**

**PANEL 9**

Item	Qty	Device	Mfr.	Catalog No./Model #	Description	Remarks
1	2	11/J-24, J25	SEL	#0351S6XHD4E54X2	Feeder relay, with control buttons	
2	2	MET-J24,MET-J25,	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Mutifunction meter	
3	1	TS9-1, TS9-2	ABB	FR3G137000137	FT-19R, test switch, 3RU hgt. steel, ANSI 61 gray, left-4 pot., 3 current shorting pair, middle-cover plate, right-4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
4	2	TS9-3, TS9-4, TS9-5 TS9-6, TS9-7, TS9-8	ABB	FR3G137036036	FT-19R, test switch, 3RU hgt. steel, ANSI 61 gray, left-4 pot., 3 current shorting pair , middle-10 pot, right-10 pot.	Red handle for pot. and Black handle for current circuits.
5	2	FU1, FU2			2-pole, Fuse Block with 10 Amps fuses, 250V	
6	2	UA, UB,			3-pole, Fuse Block with 6 Amps fuses, 250V	
7	6	LA,LB,LC,LD,LE, LF	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
8	7	RA,RB,RC,RD,RE, LJ,LK	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

**SUB J CONTROL/RELAY PANEL  
BILL OF MATERIAL  
(FOR BID, 2/15/2014)**

**PANEL 10**

<b>Item</b>	<b>Qty</b>	<b>Device</b>	<b>Mfr.</b>	<b>Catalog No./Model #</b>	<b>Description</b>	<b>Remarks</b>
1	2	11/J-32, J33	SEL	#0351S6XHD4E54X2	Feeder relay, with control buttons	
2	2	MET-J32, MET-J33	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Mutifunction meter	
3	1	TS10-1, TS10-2	ABB	FR3G137000137	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, left-4 pot., 3 current shorting pair, middle-cover plate, right-4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
4	2	TS10-3, TS10-4, TS10-5 TS10-6, TS10-7, TS10-8	ABB	FR3G137036036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, left-4 pot., 3 current shorting pair , middle-10 pot, right-10 pot.	Red handle for pot. and Black handle for current circuits.
5	2	FU1, FU2			2-pole, Fuse Block with 10 Amps fuses, 250V	
6	2	UA, UB,			3-pole, Fuse Block with 6 Amps fuses, 250V	
7	6	LA, LB, LC, LD, LE, LF	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
8	7	RA, RB, RC, RD, RE, LJ, LK	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

**SUB J CONTROL/RELAY PANEL  
BILL OF MATERIAL  
(FOR BID, 2/15/2014)**

**PANEL 11**

Item	Qty	Device	Mfr.	Catalog No./Model #	Description	Remarks
1	2	I1/J-34, J35	SEL	#0351S6XHD4E54X2	Feeder relay, with control buttons	
2	2	MET-J34,MET-J35	SATEC	PM172E-N-U-60Hz-5-ACDC-ETH	Multifunction meter	
3	1	TS11-1, TS11-2	ABB	FR3G137000137	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, left-4 pot., 3 current shorting pair, middle-cover plate, right-4 pot., 3 current shorting pair	Red handle for pot. and Black handle for current circuits.
4	2	TS11-3, TS11-4, TS11-5 TS11-6, TS11-7, TS11-8	ABB	FR3G137036036	FT-19R, test switch, 3RU hgt, steel, ANSI 61 gray, left-4 pot., 3 current shorting pair , middle-10 pot, right-10 pot.	Red handle for pot. and Black handle for current circuits.
5	2	FU1, FU2,			2-pole, Fuse Block with 10 Amps fuses, 250V	
6	2	UA, UB,			3-pole, Fuse Block with 6 Amps fuses, 250V	
7	6	LA,LB,LC,LD,LE, LF	Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	
8	7	RA,RB,RC,RD,RE, LJ,LK	Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	

**SUB J CONTROL/RELAY PANEL  
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(FOR BID, 2/15/2014)**

**TERMINAL CABINET**

<b>Item</b>	<b>Qty</b>	<b>Device</b>	<b>Mfr.</b>	<b>Catalog No./Model #</b>	<b>Description</b>	<b>Remarks</b>
1	70		Concentric Devices	30CT04	4 Pole CT terminal block, with shunt. 600V, 30A	with spare for future J14,J16
2	42		Concentric Devices	30TB12	12 Pole terminal block, 600V, 30A	with spare for future J14,J16



## QUOTATION

<b>Quote No.:</b> H0034 Amendment "A"	<b>Date:</b> December 3, 2013
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<b>Customer:</b> City of Grand Island Utilities	<b>For Questions Regarding this Quotation</b>
<b>Address:</b> 100 E First Street Grand Island, NE 68801	<b>Prepared by :</b> Mike Reinhold <b>E-mail:</b> Mike.reinhold@rflect.com <b>Phone:</b> 973-334-3100
<b>Attention:</b> Cory Priester <b>E-Mail:</b> coryp@grand-island.com <b>Phone:</b> 308-385-5460- x150 <b>Fax:</b> <b>Cell:</b>	<b>Validity:</b> January 31, 2014 <b>Terms:</b> Net 30 days <b>FOB:</b> Boonton Twp. prepay and add <b>Delivery:</b> 60 days after receipt of an order
	<b>To Place An Order</b>
<b>Reference:</b> <b>Inquiry No.:</b> <b>Inquiry Date:</b> October 15, 2013	<b>Email:</b> Sales@RFLElect.com <b>FAX:</b> 973-334-3863

Item	Quantity	Model	Description	Unit Price	Extension
<b>Refer to Block Diagram H0034"A" Rev4</b>					
<b><u>PCC IMUX HEAD</u></b>					
<b>Refer to Drawing H0034-01A</b>					
1-1	1	2000s CCM	IMUX 2000S SONET Upgrade Kit to convert existing terminal IMUX 2000 T1 Multiplexer to a SONET OC-12 MUX consisting of: -2000s SONET Module with I/O equipped with: -Two (2) OC-12 ports with 1310nm 15km singlemode SFPs -Two (2) OC-3 ports with no SFP's -Two (2) GigE ports with one SFP -Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O - One (1) CM-4 Module -One (1) T1 cable, RJ-48c to DB-15 -Replacement front panel for existing IMUX chassis -Two (2) 38-150 Vdc 75W Power Supplies -IMUX 2000s Upgrade Kit Instructions with software <b>RFL Smart Number 2KS1AA00A000002221</b>	\$ 8,295	\$ 8,295
1-2	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
1-3	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63
1-4	1	2000 CCM	DS-562NC Wideband Synchronous Data Module <b>RFL Part Number 107695</b>	\$ 575	\$ 575
1-5	1	2000 CCM	MA-620 Multimode C37.94 Module Adapter <b>RFL Part Number 107245</b>	\$ 565	\$ 565

**Total PCC Head = \$ 9,938**

All quotations are subject to the terms and conditions listed and subject to acceptance by RFL unless otherwise stated.



**QUOTATION**

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
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**PCC IMUX TAIL**  
Refer to Drawing H0034-02A

2-1	1	2000 CCM	CM-4 Common Logic Module <b>RFL Part Number 9547-15886</b>	\$ 1,320	\$ 1,320
2-2	1	2000 CCM	T1 Cable to PCC Head 2000s Chassis, RJ-48 to DB-15 <b>RFL Part Number 304079-2</b>	\$ 65	\$ 65
2-3	2	2000 CCM	I-TMR Telemetry Receiver Module <b>RFL Part Number 106805</b>	\$ 2,035	\$ 4,070
2-4	2	2000 CCM	MA-700 Telemetry I/O Module <b>RFL Part Number 106810</b>	\$ 435	\$ 870
2-5	1	2000	Front Panel with new color scheme to match other front panels <b>RFL Part Number 105592</b>	\$ 50	\$ 50

**OPTIONAL**

The following is required only if the Power Supplies in this chassis will be upgraded. This upgrade is **not required** in this chassis since no SONET Module will be installed in it, but it will standardize the power supply and I/O for all the chassis in then network.

2-7	2	2000 CCM	38-150 Vdc 75W Power Supply <b>RFL Part Number 9547-965</b>	\$ 910	\$ 1,820
2-8	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
2-9	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63

**Total PCC Tail = \$ 8,698**

**CONFIDENTIALITY NOTE**

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**QUOTATION**

H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
<b><u>SUB A</u></b>					
<b>Refer to Drawing H0034-03A</b>					
3-1	1	2000s CCM	IMUX 2000S SONET Upgrade Kit to convert existing terminal IMUX 2000 T1 Multiplexer to a SONET OC-12 MUX consisting of: -2000s SONET Module with I/O equipped with: -Two (2) OC-12 ports with 1310nm 15km singlemode SFPs -Two (2) OC-3 ports with no SFP's -Two (2) GigE ports with one SFP -Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O -Two (2) CM-4 Module -Two (2) T1 cable, RJ-48c to DB-15 -Replacement front panel for existing IMUX chassis -Two (2) 38-150 Vdc 75W Power Supplies -IMUX 2000s Upgrade Kit Instructions with software <b>RFL Smart Number 2KS1AA00A000002222</b>	\$ 9,680	\$ 9,680
3-2	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
3-3	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63
3-4	2	2000 CCM	DS-562NC Wideband Synchronous Data Module <b>RFL Part Number 107695</b>	\$ 575	\$ 1,150
3-5	2	2000 CCM	MA-620 Multimode C37.94 Module Adapter <b>RFL Part Number 107245</b>	\$ 565	\$ 1,130
3-6	1	2000 CCM	VF-5C 2 port 4-Wire E&M Module <b>RFL Part Number 9547-14985</b>	\$ 610	\$ 610
3-7	1	2000 CCM	MA-301 50 pin TELCO Connector I/O Module <b>RFL Part Number 9547-1635</b>	\$ 175	\$ 175
<b><u>Total Sub A =</u></b>					<b><u>\$ 13,248</u></b>

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**QUOTATION**

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
<b><u>SUB B</u></b>					
<b>Refer to Drawing H0034-04A</b>					
4-1	1	2000s CCM	IMUX 2000S SONET Upgrade Kit to convert existing terminal IMUX 2000 T1 Multiplexer to a SONET OC-12 MUX consisting of: -2000s SONET Module with I/O equipped with: -Two (2) OC-12 ports with 1310nm 15km singlemode SFPs -Two (2) OC-3 ports with no SFP's -Two (2) GigE ports with one SFP -Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O -Two (2) CM-4 Module -Two (2) T1 cable, RJ-48c to DB-15 -Replacement front panel for existing IMUX chassis -Two (2) 38-150 Vdc 75W Power Supplies -IMUX 2000s Upgrade Kit Instructions with software <b>RFL Smart Number 2KS1AA00A000002222</b>	\$ 9,680	\$ 9,680
4-2	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
4-3	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63
4-4	1	2000 CCM	DS-562NC Wideband Synchronous Data Module <b>RFL Part Number 107695</b>	\$ 575	\$ 575
4-5	1	2000 CCM	MA-620 Multimode C37.94 Module Adapter <b>RFL Part Number 107245</b>	\$ 565	\$ 565
<b><u>Total Sub B =</u></b>					<b><u>\$ 11,323</u></b>

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**QUOTATION**

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
<b><u>SUB C</u></b>					
<b>Refer to Drawing H0034-05A</b>					
5-1	1	2000s CCM	IMUX 2000S SONET Upgrade Kit to convert existing terminal IMUX 2000 T1 Multiplexer to a SONET OC-12 MUX consisting of: -2000s SONET Module with I/O equipped with: -Two (2) OC-12 ports with 1310nm 15km singlemode SFPs -Two (2) OC-3 ports with no SFP's -Two (2) GigE ports with one SFP -Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O -Two (2) CM-4 Module -Two (2) T1 cable, RJ-48c to DB-15 -Replacement front panel for existing IMUX chassis -Two (2) 38-150 Vdc 75W Power Supplies -IMUX 2000s Upgrade Kit Instructions with software <b>RFL Smart Number 2KS1AA00A000002222</b>	\$ 9,680	\$ 9,680
5-2	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
5-3	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63
5-4	2	2000 CCM	DS-562NC Wideband Synchronous Data Module <b>RFL Part Number 107695</b>	\$ 575	\$ 1,150
5-5	2	2000 CCM	MA-620 Multimode C37.94 Module Adapter <b>RFL Part Number 107245</b>	\$ 565	\$ 1,130
<b><u>Total Sub C =</u></b>					<b><u>\$ 12,463</u></b>

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**QUOTATION**

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
<b><u>SUB D</u></b>					
<b>Refer to Drawing H0034-06A</b>					
6-1	1	2000s CCM	IMUX 2000S SONET Upgrade Kit to convert existing terminal IMUX 2000 T1 Multiplexer to a SONET OC-12 MUX consisting of: -2000s SONET Module with I/O equipped with: -Two (2) OC-12 ports with 1310nm 15km singlemode SFPs -Two (2) OC-3 ports with no SFP's -Two (2) GigE ports with one SFP -Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O -Two (2) CM-4 Module -Two (2) T1 cable, RJ-48c to DB-15 -Replacement front panel for existing IMUX chassis -Two (2) 38-150 Vdc 75W Power Supplies -IMUX 2000s Upgrade Kit Instructions with software <b>RFL Smart Number 2KS1AA00A000002222</b>	\$ 9,680	\$ 9,680
6-2	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
6-3	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63
6-4	1	2000 CCM	VF-5C 2 port 4-Wire E&M Module <b>RFL Part Number 9547-14985</b>	\$ 610	\$ 610
6-5	1	2000 CCM	MA-301 50 pin TELCO Connector I/O Module <b>RFL Part Number 9547-1635</b>	\$ 175	\$ 175
<b><u>Total Sub D =</u></b>					<b><u>\$ 10,968</u></b>

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QUOTATION

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
<b><u>SUB E</u></b>					
<b>Refer to Drawing H0034-07A</b>					
7-1	1	2000s CCM	IMUX 2000S SONET Upgrade Kit to convert existing terminal IMUX 2000 T1 Multiplexer to a SONET OC-12 MUX consisting of: -2000s SONET Module with I/O equipped with: -Two (2) OC-12 ports with 1310nm 15km singlemode SFPs -Two (2) OC-3 ports with no SFP's -Two (2) GigE ports with one SFP -Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O -Two (2) CM-4 Module -Two (2) T1 cable, RJ-48c to DB-15 -Replacement front panel for existing IMUX chassis -Two (2) 38-150 Vdc 75W Power Supplies -IMUX 2000s Upgrade Kit Instructions with software <b>RFL Smart Number 2KS1AA00A00000222</b>	\$ 9,680	\$ 9,680
7-2	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
7-3	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63
7-4	3	2000 CCM	DS-562NC Wideband Synchronous Data Module <b>RFL Part Number 107695</b>	\$ 575	\$ 1,725
7-5	3	2000 CCM	MA-620 Multimode C37.94 Module Adapter <b>RFL Part Number 107245</b>	\$ 565	\$ 1,695
7-6	1	2000 CCM	DA-291B 4 port RS-232 Asynchronous Data Module <b>RFL Part Number 108010</b>	\$ 700	\$ 700
7-7	1	2000 CCM	MA-420A 2 Port RS-232 I/O <b>RFL Part Number 9547-169221</b>	\$ 200	\$ 200
<b><u>Total Sub E =</u></b>					<b><u>\$ 14,503</u></b>

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**QUOTATION**

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
<b><u>SUB F</u></b>					
<b>Refer to Drawing H0034-08A</b>					
8-1	1	2000s CCM	IMUX 2000S SONET Upgrade Kit to convert existing terminal IMUX 2000 T1 Multiplexer to a SONET OC-12 MUX consisting of: -2000s SONET Module with I/O equipped with: -Two (2) OC-12 ports with 1310nm 15km singlemode SFPs -Two (2) OC-3 ports with no SFP's -Two (2) GigE ports with one SFP -Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O -Two (2) CM-4 Module -Two (2) T1 cable, RJ-48c to DB-15 -Replacement front panel for existing IMUX chassis -Two (2) 38-150 Vdc 75W Power Supplies -IMUX 2000s Upgrade Kit Instructions with software <b>RFL Smart Number 2KS1AA00A000002222</b>	\$ 9,680	\$ 9,680
8-2	1	2000 CCM	38-150 Vdc Power Supply I/O <b>RFL Part Number 9547-18804</b>	\$ 440	\$ 440
8-3	1	2000 CCM	Power Supply Upgrade Kit <b>RFL Part Number 107235</b>	\$ 63	\$ 63
8-4	2	2000 CCM	DS-562NC Wideband Synchronous Data Module <b>RFL Part Number 107695</b>	\$ 575	\$ 1,150
8-5	2	2000 CCM	MA-620 Multimode C37.94 Module Adapter <b>RFL Part Number 107245</b>	\$ 565	\$ 1,130
8-6	2	2000 CCM	DA-291B 4 port RS-232 Asynchronous Data Module <b>RFL Part Number 108010</b>	\$ 700	\$ 1,400
8-7	2	2000 CCM	MA-420A 2 Port RS-232 I/O <b>RFL Part Number 9547-169221</b>	\$ 200	\$ 400
<b><u>Total Sub F =</u></b>					<b><u>\$ 14,263</u></b>

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**QUOTATION**

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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Item	Quantity	Model	Description	Unit Price	Extension
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**SUB J**  
**Refer to Drawing H0034-09A**

9-1	1	2000 CCM	RFL IMUX 2000s SONET Multiplexer supplied in a 3U x 19" rack chassis with: - Two (2) OC-12 ports with 1310nm 15km singlemode SFPs - Two (2) OC-3 ports with no SFP's - Two (2) GigE ports with one SFP - Four (4) DS1 RJ-48C ports - One (1) MA-491 SONET Adapter I/O - Two (2) CM-4 Modules - Two (2) T1 cables, RJ-48c to DB-15 - Two (2) 38-150 Vdc 75W Power Supplies - Two (2) DS-562NC/MA-620 Synch Data Modules with C37.94 - Two (2) I-TMX/MA-700 Telemetry Transmitter Modules <b>AS PER EQUIPMENT LIST "A", PAGE 10</b>	\$ 17,140	\$ 17,140
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**DACS-R FOR SUBS E & F**

10	2	2000 CCM	RFL DACS-R supplied in a 3u x 19" rack chassis with two (2) electrical T1 ports with RJ-48 connectors, two (2) 1300nm 17 Mile LED fiber interfaces with ST connectors, redundant processors, redundant 38-150 Vdc power supplies and two (2) RJ-48 to DB-15 2 ft T1 cables <b>AS PER EQUIPMENT LIST "B", PAGE 10</b>	\$ 13,810	\$ 27,620
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**GRAND TOTAL =** **\$ 140,164**

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**QUOTATION**

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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IMUX 2000 T1 EQUIPMENT LIST			QUANTITY		
DESCRIPTION	PART #		A	B	C
			Sub J	DACS-R	
2000s Chassis	9597-158524-2		1		
2000s SONET Module	106270		1		
MA-491 SONET Adapter Module	106255		1		
CM-4 T1/E1 Common Logic	9547-15886		2		
OC-12 15km Singlemode SFP	106272-1		2		
Ethernet Electrical 1000MB RJ45 SFP	106276		1		
MA-210 DS1 Electrical Interface	9547-1629		2		
2000 PS 48/125 DC	9547-965		2	2	
2000 PS ALARM I/O 48/125 DC	9547-18804		1	1	
DS-562NC Wideband Sync Data	107695		2		
MA-620 Short Haul C37.94 SH Fiber I/O	107245		2		
I-TMX Telemetry Transmitter	106800		2		
MA-700 TMX/TMR I/O	106810		2		
DS1 Cable DB-15F/RJ-48M 2 Ft	304079-2		2	2	
DACS-R Chassis	107400			1	
Framer/Processor Module (2 for Redund)	107405			2	
Redundancy Module (2 Req'd)	107415			2	
MA-250 Communications I/O	107435			1	
Jackfield (2 Req'd)	107420			2	
DACS-R Display	107425			1	
Display & Jackfield Panel	107401-2			1	
MA-260 Electrical Line I/O RJ-48	107440			2	
1300 nm Singlemode LED Fiber I/O	107455-200			2	
<b>UNIT PRICE</b>			\$17,140	\$13,810	\$0

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## QUOTATION

<b>Quote No.:</b> H0034 "A"	<b>Date:</b> December 3, 2013
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### NOTES

#### **Amendment "A" – Update as per revised drawing H0034Rev4.**

1. An electronic copy of the manual on CD ROM will be provided with each chassis ordered. Hard copy manuals are available at \$125 each as required.
2. RFL's standard warranty for the GARD 8000 is ten [10] years from date of shipment for replacement of any part which fails during normal operation or service.  
RFL's standard warranty for the 9745 and eXmux 3500 is thirty six [36] months from date of shipment for replacement of any part which fails during normal operation or service.  
RFL's standard warranty for the IMUX 2000 is sixty [60] months from date of shipment for replacement of any part which fails during normal operation or service.  
RFL's standard warranty for all other products is twelve [12] months from date of shipment for replacement of any part which fails during normal operation or service. Should a part become defective, please call the Customer Service Department for a Return Material Authorization (RMA) number prior to return to the factory, shipping charges prepaid, for replacement F.O.B. Boonton Twp., New Jersey.

3. Please note drawing requests after receipt of an order can effect delivery as follows:

"Drawings for Reference" - Under these terms drawings will be submitted for general reference and minor corrections which only involve wiring changes. Modules may not be added or deleted. Delivery will not be delayed.

"Drawings for Approval" - Under these terms drawings will be submitted for system content and wiring approval. Manufacturing will not proceed until approval drawings with comments are reviewed by RFL. In some cases re-submittal may be necessary. Our quoted delivery will be based on the received final approval drawings signed by the approval engineer. For example, our quoted delivery may be specified as "60 Days ARO". However, when approval drawings are required, the delivery then becomes "60 Days After Receipt of Approved Drawings".

4. Our Sales Representative and/or Regional Sales Manager for your area is:

Arjay Automation, Inc.  
**Mr. Jerry Ward**  
7400 Cedar Avenue  
Minneapolis, MN 55423  
Tel: (612) 861-1749  
Fax: (612) 861-4292  
Email: [jward@arjaynet.com](mailto:jward@arjaynet.com)

Regional Sales Manager  
**Mr. Steve Taylor**  
13233 Earnshaw  
Overland Park, KS 66213  
Tel : (913) 967-5927  
Cell : (913) 945-0578  
Fax : (973) 334-3  
Email : [steve.taylor@rfflect.com](mailto:steve.taylor@rfflect.com)

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## QUOTATION

### Terms and Conditions

The following terms and conditions apply to any contract with RFL Electronics Inc. hereafter referred to as the Seller; such contract is expressly limited to these terms and conditions unless otherwise agreed to in writing by the Seller; verbal understanding expressed or implied between representatives of the Seller and Buyer shall not be binding on the Seller:

#### 1. Quotations

All quotations are subject to change without notice until the Buyer's order is acknowledged and accepted by the Seller. Typographical and clerical errors are subject to correction.

#### 2. Contract Modifications or Cancellations

a. Unless otherwise agreed to in writing, the contract will be on a fixed price basis and any audit of Seller's records by the Buyer will not be permitted. All prices are subject to change in respect of (i) duties, excise taxes or other charges hereafter imposed by any foreign governments, federal, state, or municipal authorities, and (ii) increases in cost of manufacture, processing, or sale resulting from operations of any federal, state or municipal law, foreign government regulation, or regulatory measure hereafter adopted.

b. Buyer may make changes in the work to be performed. If such changes cause an increase or decrease in the contract price or to the agreed delivery schedule, then an adjustment shall be made to the contract by the Seller and the Buyer's contract shall be amended.

c. Buyer may cancel the contract, however, Buyer will be subject to cancellation charges as determined by the Seller which shall include all expenses incurred both direct and indirect, plus Seller's customary profit on those expenses. In the event of cancellation, Seller's obligation will end with the termination and it will have no further obligation to the Buyer.

#### 3. Terms of Payment and Delivery

a. Payment is due in US Dollars for each shipment, net 30 days from actual date of invoice unless otherwise agreed to in writing. If the Buyer fails to fulfill the terms of payment or if the financial responsibility of the buyer shall become impaired or unsatisfactory to the Seller, then the Seller reserves the right to change terms and conditions of payment and/or defer or discontinue further shipments, without prejudice to any other lawful remedy, until past due payments are made and satisfactory assurances of the Buyer's credit are received.

b. Delivery dates are approximate and based upon the prompt receipt of all necessary information from the Buyer. The Seller shall not be charged with any liability for failure or delay in performance when such failure or delay is due in whole or in part to any cause beyond its reasonable control. Such causes shall include, but not be limited to, acts of war, riots, and other civil disturbances, strikes or other labor disturbances, actions of subcontractors, government restrictions and regulations, acts of God, flood, fire and earthquakes. In the event of such excusable delay, neither party shall have claims against the other in connection with such delay, other than the right to have any pre-existing schedule amended in light of circumstances resulting from the events causing the excusable delay.

c. Risk of loss and responsibility of all products sold hereunder shall pass to Buyer upon Seller's delivery to carrier.

#### 4. Warranties

**a. THERE ARE NO WARRANTIES OTHER THAN THOSE CONTAINED IN THIS WRITTEN CONTRACT, AND ALL WARRANTIES OTHER THAN THOSE EXPRESSED IN THIS WRITTEN CONTRACT, WHETHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED, UNLESS OTHERWISE AGREED TO IN WRITING.**

b. Seller warrants to the Buyer that in the event the products delivered pursuant to this contract prove to be defective in either material or workmanship within twelve months of the delivery (unless other duration is agreed in writing). Seller shall, at its option, repair or replace such product. During said period, deficient product or part which fails during the normal operation or service of the product shall be returned by the Buyer to the Seller for repair or replacement at the sole discretion of the Seller, after

Buyer first obtains a Return Material Authorization Number from the Seller. Buyer agrees to pay all costs incurred by the Seller in shipping repaired or replaced goods. c. Seller will have no liability of any character arising out of improper use of the product, including but not limited to, unauthorized repair by the user or third parties, if it is altered in any way, or if the user fails to follow instructions regarding the use of the product.

d. Seller's liability for the breach of any warranty shall be limited to the repair or replacement of the defective product. Seller shall not be liable for any incidental or consequential damages suffered by the Buyer as a result of any breach of this contract, whether or not sounding in warranty, and, in any event, Seller's liability for any such breach of the contract or warranty shall not exceed the purchase price of the product giving rise to the claim of breach. Seller and Buyer agree that if, for any reason, the limited remedy of repair or replacement is deemed by a court of competent jurisdiction to fail of its essential purpose, this limitation on the damages recoverable for breach shall nevertheless remain in full force and effect. In no event shall Seller be responsible for consequential or special damages.

e. Seller warrants that its products are delivered free of any rightful United States patent infringement claim of third parties; in no circumstances shall Seller's liability under this clause exceed the original sale price to the Buyer of the specific products infringing, or alleged to infringe, adverse patent rights.

#### 5. Patents

The Buyer shall defend, protect and indemnify Seller against all claims, damages, fees or profits arising from claims or infringement of patents, designs, copyrights or trademarks with respect to (i) all goods manufactured either in whole or part to the Buyer's specification; or (ii) the use of any product or process of Seller in combination with any other product, device, equipment or process not supplied by the Seller; or (iii) the furnishing to Seller by Buyer of any information, data, service or application assistance.

#### 6. Proprietary Rights

Charges for tooling, non-recurring engineering and software development do not convey ownership or the right to remove them from the Seller's possession.

#### 7. Disclosure of Information

Any information, suggestions or ideas transmitted by Buyer to Seller in connection with performance hereunder are not to be regarded as secret or submitted in confidence except as may be otherwise provided in writing by a duly authorized representative of the Seller.

#### 8. General

a. The parties acknowledge that the transaction that is the subject matter of this contract bears a reasonable relation to the laws of the State of New Jersey and agrees that the laws of the State of New Jersey will govern their rights and duties. The parties specifically intend that the provisions of the Uniform Commercial Code will control as to all aspects of this contract and its interpretation, and that the definitions contained therein will be applicable to this contract except where this contract may expressly provide otherwise. Any legal action or other proceeding based upon this contract shall be brought in or transferred to a court of competent jurisdiction in the State of New Jersey. The parties hereby consent and irrevocably submit it to the jurisdiction of such court.

b. Seller's failure to insist upon strict compliance with any of these terms and conditions shall not be deemed a waiver of any right, and waiver of any right under any article shall not constitute a waiver of any other right or waiver or default under such article or any other article.

c. If any clause of this contract is held to be unconscionable by any court of competent jurisdiction, the clause in question shall be modified to eliminate the unconscionable element and as so modified the clause shall be binding on the parties. The remaining provisions of this contract shall not be affected by the modification of any unconscionable clause.

"Unconscionable" shall be deemed to mean that the enforcement of the entire contract or a specific clause of the contract will work oppression or cause consequences to one of the parties. Unconscionability shall be determined as of the time when the contract is made, but shall not be deemed established either by the fact that the contract subsequently proved disadvantageous to one of the parties or by the fact that one of the parties has bargaining power superior to that of the other.

#### CONFIDENTIALITY NOTE

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