This is not an order.

INVITATION TO BID NUMBER (ITB)	*Return this bid to the issuing office below*
17056 **Control Enclosure for Robert Douglas Substation** **DOA# 2017-0800-3646**	Attention – Andrew Morton, Contracting Officer Alaska Energy Authority (AEA) or (Authority) 813 West Northern Lights Blvd. Anchorage, AK 99503-2495 amorton@aidea.org, Ph. 907-771-3990 Fax 907-771-3044

This Bid in accordance with AS 36.30 and 2 AAC 12 with Alaska Energy Authority (AEA).
This procurement is State Funded.

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Invitation to Bid Schedule

Bid Issued	**March 2, 2017**
Pre-bid Conference	**None**
Bid Opening	ITB shall be publically opened at, **2:00 p.m. March 23, 2017**, in the Willow Conference Room.

Important

Interested firms shall register online to receive addenda and other information at http://www.aideaaeaprocurement.org/
AEA may provide periodic e-mail notices regarding addenda or clarifications regarding this bid to those companies who reply. All addenda and other notices will be posted and available at http://www.aidea.org/ "Quick Links" Procurement Opportunities.

Important - Bid Submittals

- Appendix C – Bid Schedule
- Appendix D – Bid Bond
- The successful Bidder will be required to provide proof of insurance, naming AEA as additional insured, including a waiver of subrogation.

Instructions to Bidders

1. Invitation to Bid (ITB) Review

Bidders shall carefully review this ITB for defects and questionable or objectionable material. Bidders' comments concerning defects and questionable or objectionable material in the ITB must be made in writing and received by the purchasing authority at least five (5) days before the bid opening date. This will allow time for an addendum if one is required. It will also help prevent the opening of a defective bid that will be rejected, and risk exposure of Bidders' prices. All correspondence will be addressed to the purchasing authority listed on the front of this ITB.

2. Bid Forms/Submittals

Bidders shall use and return the forms supplied with this invitation in submitting their bid. A photocopied bid can be submitted. **Bidders must return a signed copy of the Bid Schedule, and any/all required support documentation requested in this ITB.** The apparent low bidder may be required to provide additional documentation after bid opening and prior to award to assure compliance with all terms and conditions of the solicitation.

3. **Minimum Qualifications** - The Authority requires the following:
   a) Bidders must have 3-years prior experience producing the commodity described herein.
   b) Bidders must have staff with extensive experience in fabricating control enclosures. If asked, Bidder must be able to provide examples of 3-projects similar to the one described herein.
   c) Bidders must have a fabrication facility with adequate space and appropriate equipment as required to perform the work. The Authority may inspect the bidders shop after the bid opening and prior to award in order to verify Bidder qualifications.

4. Submitting Bids

Envelopes containing bids must be sealed, marked, and addressed as shown below. **DO NOT FAX YOUR BID.** Envelopes with ITB numbers annotated on the outside will not be opened until the scheduled date and time. Hand carried bids should be delivered to the receptionist at the front desk or to the Contracting Officer for processing. Failure to correctly submit a bid may result in it being unopened or rejected and returned to the bidder.

Bidder's return Address

Alaska Energy Authority
813 West Northern Lights Blvd
Anchorage, Alaska 99503
ATTN: Andrew Morton, Contracting Officer
ITB 17056 Control Enclosure for Robert Douglas Substation
Opening Date: 2:00 March 23, 2017

5. Modification and Withdrawal of Bids

A bidder may, without prejudice, modify or withdraw its bid by written request provided that such request is received by the Authority prior to the bid opening date and time.

6. Late Bids

Late bids are bids received after the time and date set for receipt of the bids; and late bids will not be accepted.

7. Offer Period

Bids must remain valid for a period of 90-days unless otherwise specified in the Bid Schedule.

8. Firm, Unqualified and Unconditional Offer

Bidders must provide enough information with their offer to constitute a definite, firm, unqualified and unconditional offer. To be responsive an offer must constitute a definite, firm, unqualified and unconditional offer to meet all of the material terms of the ITB. Material terms are those, which could affect price, quantity, quality, or delivery. Also included as material terms are those which are clearly identified in the ITB and which, for reasons of policy, must be complied with at risk of bid rejection for non-responsiveness.

9. Prices

The bidder shall state prices in the units of issue on this ITB. Prices quoted for commodities must be in U.S. funds and include applicable federal duty, brokerage fees, packaging, and transportation cost to the F.O.B. point so that upon transfer of title the commodity can be utilized without further cost. Prices quoted for services will be quoted in U.S. funds and include applicable federal duty, brokerage fee, packaging, and transportation cost so that the services can be provided without further cost. Prices quoted in bids must be exclusive of federal, state, and local taxes. If the bidder believes that certain taxes are payable by the Authority, the bidder may list such taxes separately, directly below the bid price for the affected item.

The Authority is exempt from Federal Excise Tax except the following:

- Coal - Internal Revenue Code of 1986 (IRC), Section 4121 - on the purchase of coal;
- "Gas Guzzler" - IRC, Section 4064 - on the purchase of low m.p.g. automobiles, except that police and other emergency type vehicles are not subject to the tax,
- Air Cargo - IRC, Section 4271 - on the purchase of property transportation services by air;
- Air Passenger - IRC, Section 4261 - on the purchase of passenger transportation services by air carriers.

10. Extension of Prices

In case of error in the extension of prices in the bid, the unit prices will govern; in a lot bid, the lot prices will govern,

11. Federal Excise Tax

Federal Excise Tax should not be included in the bid price(s). The Alaska Energy Authority is exempt from Federal Excise Tax.

12. Suitable Materials, Etc.

Unless otherwise specified, all materials, supplies or equipment offered by a bidder must be new per the attached specifications.

13. Supporting Information

The Authority strongly desires that bidders submit all required technical, specification, and other supporting information with their bid, so that a detailed analysis and determination can be made, by the Contracting Officer, that the product offered meets the ITB specifications and that other requirements of the ITB have been met. However, provided a bid meets the requirements for a definite, firm, and unqualified or unconditional offer, the Authority reserves the right to request supplemental information from the bidder, after the bids have been opened, to ensure that the products offered completely meet the ITB requirements. The requirement for such supplemental information will be at the reasonable discretion of the Authority and may include the requirement that a bidder will provide a sample product(s) or certification of compatibility of accessories or component parts with the specifications so that the Authority can make a first-hand examination and determination.

A bidder's failure to provide this supplemental information or the product sample(s), within the time set by the Authority, will cause the Authority to consider the offer non-responsive and reject the bid.

14. Brand and Model Offered

Bidders must clearly indicate the brand names and model numbers they intend to provide where required on the bid schedule. The bidder's failure to identify the brand and model offered - if different than what may be required by the specifications - may cause the Authority to consider the offer non-responsive and reject the bid.

15. Annotated Literature

If product literature is requested bidders must annotate their product literature to identify for the Authority the location of the supporting information for each product specification set out in this ITB. A bidder's failure to comply with this clause, within the time set by the Authority, will cause the Authority to consider the offer non-responsive and reject the bid.

16. Subcontractor(S)

Within five (5) working days of notice, the apparent low bidder must submit a list of the subcontractors that will be used in the performance of the contract. The list must include the name of each subcontractor and the location of the place of business for each subcontractor.

17. Tax-Exempt Financing

No public offering or private placement of securities relating to the contracts issued as a result of this ITB may be made. If a bid contemplates the securitization of the Authority’s payments, the Authority will reject the offer as non-responsive.

18. Notice of Intent to Award

After the responses to this ITB have been opened, a tabulation of the bids will be prepared. This tabulation, called a Notice of Intent, serves two purposes. It lists the name of each company or person that offered a bid and the price bid. It also serves as notice of the Authority's intent to award a contract(s) to the bidder(s) indicated. A copy of the Notice of Intent will be sent to each company or person who responded to the ITB. Bidders, identified as the apparent low responsive bidders, are instructed not to proceed until a Purchase Order, Contract Award, Lease, or other form of notice is given by the Contracting Officer. A company or person who proceeds prior to receiving a Purchase Order, Contract Award, Lease, or other form of notice from the Contracting Officer does so without a contract and at his or her own risk.

19. Filing a Protest

A bidder may protest the award of a contract or the proposed award of a contract for supplies, services, or professional services. The protest must be filed in writing and include the following information: (1) the name, address, and telephone number of the protester; (2) the signature of the protester or the protester's representative; (3) identification of the contracting agency and the solicitation or contract at issue; (4) a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents; and (5) the form of relief requested. Protests will be treated in accordance with AEA Regulations 3 AAC 108.910. A Protest based on alleged improprieties or ambiguities in a solicitation must be filed at least 10 days before the bid date of the bid or proposal, unless a later bid protest due date is specifically allowed in the solicitation. A Protest based upon alleged improprieties in an award of a contract or a proposed award of a contract must be filed within 10days after a notice.

20. Order Documents

Except as specifically allowed under this ITB, an ordering agency will not sign any vendor contract. The Authority is not bound by a vendor contract signed by a person who is not specifically authorized to sign for the Authority under this ITB. The Authority's Contract Award is the only order document that may be used to place orders against the contract(s) resulting from this ITB.

21. Consolidation of Awards

Due to high administrative costs associated with processing of purchase orders, a single low bid of $50 or less may, at the discretion of the Authority be awarded to the next low bidder receiving other awards for consolidation purposes. This paragraph is not subject to the protest terms enumerated in *"INSTRUCTIONS TO BIDDERS",* "FILING A PROTEST" above.

22. Bid Preparation Costs

The Authority is not liable for any costs incurred by the bidder in bid preparation.

23. Bid Security

A bid guaranty is required with each bid in the amount of 5% of the amount bid (Appendix D). (Alternate bid items as well as supplemental bid items appearing on the bid schedule shall be included as part of the total amount bid when determining the amount of bid guaranty required for the project.)

24. Contact

The administration of this contract is the responsibility of Andrew Morton, Contracting Officer, at the Authority.

25 Payment and Performance Bond

The Contractor proposes to furnish Payment Bond in the amount of 100% (of the contract) and Performance Bond in the amount of 100% (of the contract), as surety conditioned for the full, complete and faithful performance of this contract (Appendix E & F).

26. Required for Award.

In order to be awarded the contract, the successful bidder must completely fill out and submit the following documents within the time specified in the intent to award letter:

1. **Payment Bond**
2. **Performance Bond**
3. **Certificate of Insurance (from carrier)**

27. Bidder Qualifications / Contractor Questionnaire

Before a bid is considered for award, the bidder may be requested by the Authority to submit a statement of facts, in detail, as to his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the contemplated work.

PREFERENCES:

28. ALASKA BIDDER PREFERENCE: Award will be made to the lowest responsive and responsible bidder after an Alaska bidder preference of five percent (5%) has been applied. The preference will be given to a person who: (1) holds a current Alaska business license at the time designated in the invitation to bid for bid opening; (2) submits a bid for goods or services under the name on the Alaska business license; (3) has maintained a place of business within the state staffed by the bidder, or an employee of the bidder, for a period of six months immediately preceding the date of the bid; (4) is incorporated or qualified to do business under the laws of the state, is a sole proprietorship and the proprietor is a resident of the state, is a limited liability company organized under AS 10.50 and all members are residents of the state, or is a partnership under AS 32.06 or AS 32.11 and all partners are residents of the state; and, (5) if a joint venture, is composed entirely of ventures that qualify under (1) - (4) of this subsection. AS 36.30.170, AS 36.30.321(a) and AS 36.30.990[25]

29. ALASKA VETERAN PREFERENCE: If a bidder qualifies for the Alaska bidder preference under AS 36.30.321(a) and AS 36.30.990[25] and is a qualifying entity as defined in AS 36.30.321(f), they will be awarded an Alaska veteran preference of five percent (5%). The preference will be given to a (1) sole proprietorship owned by an Alaska veteran; (2) partnership under AS 32.06 or AS 32.11 if a majority of the partners are Alaska veterans; (3) limited liability company organized under AS 10.50 if a majority of the members are Alaska veterans; or (4) corporation that is wholly owned by individuals and a majority of the individuals are Alaska veterans, and may not exceed $5,000. The bidder must also add value by actually performing, controlling, managing, and supervising the services provided, or for supplies, the bidder must have sold supplies of the general nature solicited to other state agencies, other governments, or the general public - AS 36.30.321(i).

30. USE OF LOCAL FOREST PRODUCTS: In a project financed by state money in which the use of timber, lumber and manufactured lumber is required, only timber, lumber and manufactured lumber products originating in this state from Alaska forests shall be used unless the use of those products has been determined to be impractical, in accordance with AS 36.15.010 and AS 36.30.322.

4. LOCAL AGRICULTURAL AND FISHERIES PRODUCTS PREFERENCE: When agricultural, dairy, timber, lumber, or fisheries products are purchased using state money, a seven percent (7%) preference shall be applied to the price of the products harvested in Alaska, or in the case of fisheries products, the products harvested or processed within the jurisdiction of Alaska, in accordance with AS 36.15.050.

5. ALASKA PRODUCT PREFERENCE: A bidder that designates the use of an Alaska Product which meets the requirements of the ITB specification and is designated as a Class I, Class II or Class III Alaska Product by the Department of Community & Economic Development shall receive a preference in the bid evaluation in accordance with AS 36.30.332 and 3 AAC 92.010.

31. EMPLOYMENT PROGRAM PREFERENCE: If a bidder qualifies for the Alaska bidder preference under AS 36.30.321(a) and AS 36.30.990[25], and is offering goods or services through an employment program as defined under 36.30.990(11), they will be awarded an Employment Program Preference of fifteen percent (15%) in accordance with AS 36.30.321(b).

32. ALASKANS WITH DISABILITIES PREFERENCE: If a bidder qualifies for the Alaska bidder preference under AS 36.30.321(a) and AS 36.30.990[25], and is a qualifying entity as defined in AS 36.30.321(d), they will be awarded an Alaskans with Disabilities Preference of ten percent (10%) in accordance with AS 36.30.321(d).
A bidder may not receive both an Employment Program Preference and an Alaskans with Disabilities Preference.

33. PREFERENCE QUALIFICATION LETTER: Regarding preferences 6 and 7 above, the Division of Vocational Rehabilitation in the Department of Labor and Workforce Development maintains lists of Alaskan; [1] employment programs that qualify for preference, and [2] individuals who qualify for preference as Alaskan's with disabilities. In accordance with AS 36.30.321(i), in order to qualify for one of these preferences, a bidder must add value by actually performing, controlling, managing, and supervising the services provided, or for supplies, a bidder must have sold supplies of the general nature solicited to other state agencies, governments, or the general public.

As evidence of an individual's or a business' right to a certain preference, the Division of Vocational Rehabilitation will issue a certification letter. To take advantage of the preferences 6 or 7 above, an individual or business must be on the appropriate Division of Vocational Rehabilitation list at the time the bid is opened, and must attach a copy of their certification letter to their bid. The bidder's failure to provide this certification letter with their bid will cause the State to disallow the preference.

34. ALASKA BUSINESS LICENSE AND OTHER REQUIRED LICENSES: Prior to the award of a contract, a bidder must hold a valid Alaska business license. However, in order to receive the Alaska Bidder Preference and other related preferences, such as the Alaska Veteran and Alaskans with Disabilities Preference, a bidder must hold a valid Alaska business license at the time designated for bid opening. Bidders should contact the Department of Commerce, Community and Economic Development, Division of Corporations, Business, and Professional Licensing for information on these licenses.

Website: https://www.commerce.alaska.gov/web/cbpl/ProfessionalLicensing.aspx
Phone: (907) 465-2550
Email: license@alaska.gov

Acceptable evidence that the bidder possesses a valid Alaska business license may consist of any one of the following:
(a) copy of an Alaska business license;
(b) certification on the bid that the bidder has a valid Alaska business license and has included the license number in the bid (see front page);
(c) a canceled check for the Alaska business license fee;
(d) a copy of the Alaska business license application with a receipt stamp from the state's occupational licensing office; or

(e) a sworn and notarized statement that the bidder has applied and paid for the Alaska business license.

You are not required to hold a valid Alaska business license at the time bids are opened if you possess one of the following licenses and are offering services or supplies under that specific line of business:

- fisheries business licenses issued by Alaska Department of Revenue or Alaska Department of Fish and Game,
- liquor licenses issued by Alaska Department of Revenue for alcohol sales only,
- insurance licenses issued by Alaska Department of Commerce, Community and
- Economic Development, Division of Insurance, or
- Mining licenses issued by Alaska Department of Revenue.

At the time designated for bid opening, all bidders must hold any other necessary applicable professional licenses required by Alaska Statute.

29. ALASKA BIDDER PREFERENCE: An Alaska Bidder Preference of five percent will be applied prior to evaluation. The preference will be given to a bidder who:

(1) holds a current Alaska business license at the time designated for bid opening;
(2) submits a proposal for goods or services under the name appearing on the bidder's current Alaska business license;
(3) has maintained a place of business within the state staffed by the bidder, or an employee of the bidder, for a period of six months immediately preceding the date of the bid;
(4) is incorporated or qualified to do business under the laws of the state, is a sole proprietorship and the proprietor is a resident of the state, is a limited liability company (LLC) organized under AS 10.50 and all members are residents of the state, or is a partnership under AS 32.06 or AS 32.11 and all partners are residents of the state; and
(5) if a joint venture, is composed entirely of ventures that qualify under (1)-(4) of this subsection.

Alaska Bidder Preference Affidavit

In order to receive the Alaska Bidder Preference, the bid must also include a statement certifying that the bidder is eligible to receive the Alaska Bidder Preference.

If the bidder is a LLC or partnership as identified in (4) of this subsection, the statement must also identify each member or partner and include a statement certifying that all members or partners are residents of the state.

If the bidder is a joint venture which includes a LLC or partnership as identified in (4) of this subsection, the statement must also identify each member or partner of each LLC or partnership that is included in the joint venture and include a statement certifying that all of those members or partners are residents of the state.

BIDDERS WITH DISABILITIES: The State of Alaska complies with Title II of the Americans with

Disabilities Act of 1990. Individuals with disabilities who may need auxiliary aids, services, and/or special modifications to participate in this procurement should contact the Contracting Officer one of the following numbers no later than 10 days prior to bid opening to make any necessary arrangements.

Telephone: (907) 465-4131

Fax: (907) 465-6181

TDD: (907) 465-3646

COMPLIANCE WITH ADA: By signature of their bid the bidder certifies that they comply with the Americans with Disabilities Act of 1990 and the regulations issued thereunder by the federal government. Services or activities furnished to the general public on behalf of the state must be fully accessible. This is intended to ensure that agencies are in accordance with 28 CFR Part 35 Section 35.130 and that services, programs or activities furnished to the public through a contract do not subject qualified individuals with a disability to discrimination based on the disability.

PREFERENCE QUALIFICATION: In order to qualify for an Alaska Veterans Preference, Employment Program Preference, or Alaskans with Disabilities Preference, a bidder must add value by actually performing; controlling, managing, and supervising the services provided, or a bidder must have sold supplies of the general nature solicited to other state agencies, governments, or the general public.

CONTRACT PERFORMANCE LOCATION: By signature on their bid, the bidder certifies that all services provided under this contract by the contractor and all subcontractors shall be performed in the United States.

If the bidder cannot certify that all work will be performed in the United States, the bidder must contact the procurement officer in writing to request a waiver at least 10 days prior to the deadline for receipt of bids.

The request must include a detailed description of the portion of work that will be performed outside the United

States, where, by whom, and the reason the waiver is necessary.

Failure to comply with these requirements may cause the state to reject the bid as non-responsive, or cancel the contract.

APPENDIX A

1. Compliance

In the performance of a contract, the Vendor must comply with all applicable federal, state, and borough regulations, codes, and laws; and be liable for all required insurance, licenses, permits and bonds; and pay all applicable federal, state, and borough taxes.

2. Suitable Materials, Etc.

Unless otherwise specified, all materials, supplies or equipment offered by a bidder shall be new, unused, and of the latest edition, version, model or crop and of recent manufacture.

3. No Assignment or Delegation

The Vendor may not assign or delegate this contract, or any part of it, or have any right to any money to be paid under it, except with the written consent of the Contracting Officer. Conditioned assignments will be rejected.

4. Force Majeure

(Impossibility to perform) The Vendor is not liable for the consequences of any failure to perform, or default in performing, any of its obligations under this Agreement, if that failure or default is caused by any unforeseeable Force Majeure, beyond the control of, and without the fault or negligence of, the Vendor. For the purposes of this Agreement, Force Majeure will mean war (whether declared or not); revolution; invasion; insurrection; riot; civil commotion; sabotage; military or usurped power; lightning; explosion; fire; storm; drought; flood; earthquake; epidemic; quarantine; strikes; acts or restraints of governmental authorities affecting the project or directly or indirectly prohibiting or restricting the furnishing or use of materials or labor required; inability to secure materials, machinery, equipment or labor because of priority, allocation or other regulations of any governmental authorities.

5. Contract Extension

The Authority and the successful Vendor agree: (1) that any holding over of the contract excluding any exercised renewal options will be considered as a month-to-month extension, and all other terms and conditions shall remain in full force and effect; and (2) to provide written notice to the other party of the intent to cancel such month-to-month extension at least thirty (30) days before the desired date of cancellation.

6. Default

In case of default by the Vendor, for any reason whatsoever, the Authority may procure the goods or services from another source and hold the Vendor responsible for any resulting excess cost and may seek other remedies under law or equity.

7. Disputes

Any dispute arising out of this agreement shall be resolved under the laws of Alaska. Any appeal of an administrative order or any original action to enforce any provision of this agreement or to obtain any relief from or remedy in connection with this agreement may be brought only in the superior court for the State of Alaska.

8. Severability

If any provision of the contract is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and provisions will not be affected; and, the rights and obligations of the parties will be construed and enforced as if the contract did not contain the particular provision held to be invalid.

9. Continuing Obligation of Vendor

Notwithstanding the expiration date of a contract resulting from this ITB, the Vendor is obligated to fulfill its responsibilities until warranty, guarantee, maintenance and parts availability requirements have completely expired.

10. Human Trafficking

By signature on their bid, the bidder certifies that the bidder is not established and headquartered or incorporated and headquartered in a country recognized as Tier 3 in the most recent United States Department of State's Trafficking in Persons Report. The most recent United States Department of State's Trafficking in Persons Report are located at the following website: http://www.state.gov/g/tip/; and failure to comply with this requirement will cause the state to reject the bid as non-responsive, or cancel the contract.

11. Payment for State Purchases

Payment for agreements under $500,000 for the undisputed purchase of goods or services provided to a state agency will be made within 30 days of the receipt of a proper billing or the delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid if there is a dispute or if there is an agreement that establishes a lower interest rate or precludes the charging of interest.

12. Shipping Damage

The Authority will not accept or pay for damaged goods. The Vendor must file all claims against the carrier(s) for damages incurred to items in transit from the point of origin to the ultimate destination. The Authority will provide the Vendor with written notice when damaged goods are received. The Authority will deduct the cost of the damaged goods from the invoice prior to payment. The Vendor must file all claims against the carrier(s) for reimbursement of the loss.

13. Indemnification

The Vendor shall indemnify, hold harmless, and defend the contracting agency from and against any claim of, or liability for error, omission or negligent act of the Vendor under this agreement. The Vendor shall not be required to indemnify the contracting agency for a claim of, or liability for, the independent negligence of the contracting agency. If there is a claim of, or liability for, the joint negligent error or omission of the Vendor and the independent negligence of the Contracting agency, the indemnification and hold harmless obligation shall be apportioned on a comparative fault basis. "Vendor" and "Contracting agency", as used within this and the following article, include the employees, agents and other Vendors who are directly responsible, respectively, to each. The term "independent

negligence" is negligence other than in the Contracting agency's selection, administration, monitoring, or controlling of the Vendor and in approving or accepting the Vendor's work.

14. Insurance

Without limiting Vendor's indemnification, it is agreed that Vendor shall purchase at its own expense and maintain in force at all times during the performance of services under this agreement the following policies of insurance. Where specific limits are shown, it is understood that they shall be the minimum acceptable limits. If the Vendor's policy contains higher limits, the Authority shall be entitled to coverage to the extent of such higher limits. Certificates of Insurance must be furnished to the contracting officer prior to beginning work and must provide for a notice of cancellation, non-renewal, or material change of conditions in accordance with policy provisions. Failure to furnish satisfactory evidence of insurance or lapse of the policy is a material breach of this contract and shall be grounds for termination of the Vendor's services. All insurance policies shall comply with, and be issued by insurers licensed to transact the business of insurance under AS 21.

Proof of insurance is required for the following:
Workers' Compensation Insurance: The Vendor shall provide and maintain, for all employees engaged in work under this contract, coverage as required by AS 23.30.045, and; where applicable, any other statutory obligations including but not limited to Federal U.S.L. & H. and Jones Act requirements. The policy must waive subrogation against the Authority.

Commercial General Liability Insurance: covering all business premises and operations used by the Vendor in the performance of services under this agreement with minimum coverage limits of $300,000 combined single limit per occurrence.

Commercial Automobile Liability Insurance: covering all vehicles used by the Vendor in the performance of services under this agreement with minimum coverage limits of $300,000 combined single limit per occurrence.

Failure to supply satisfactory proof of insurance within the time required will cause the Authority to declare the bidder non-responsible and to reject the bid.

15. Insurance Certificate

Shall name the Authority and the grantee as certificate holders and reference the contract number.

16. Delivery Confirmation

Bidders must obtain confirmation from manufacturers that the items offered are scheduled for production in sufficient time to meet the scheduled delivery dates.

17. Billing Instructions

Invoices will be addressed Alaska Energy Authority (AEA) 813 West Northern Lights Boulevard, Anchorage, AK 99503-2495; or emailed to aeapayables@aidea.org. Vendor will reference the contract number on all invoices and correspondence. It is customary for AEA to make payment within 30-days of receipt of the merchandise or service, and the Vendor's invoice. Direct all billing questions to the Contracting Officer.

18. Alterations

The Contracting Office must approve in writing any Vendor alterations to the specifications prior to the changes. The Authority will not pay for alterations that are not pre-approved in advance and in writing by the Contracting Officer.

19. Packaging

The cost of all packaging must be included in the price bid. All packaging must be new and suitable for shipment and short-term warehouse storage.

20. Warranty

Provide warranty in accordance with the Specifications.

21. Workmanship & Materials

All work shall be performed in a thorough and competent manner and in accordance with current industry practices. The Vendor is responsible for the quality of the finished item. The Authority will reject any item that does not meet the specifications and return them to the Vendor. Vendors shall accept all rejected items at the Vendor's risk and expense.

22. Contract Cancellation

The Authority reserves the right to cancel any contract awarded as a result of this solicitation if; 1) the Vendor fails to properly perform the duties set out herein, 2) due to budget/funding issues, or 3) at its convenience upon 60 calendar days written notice to the Vendor. In the event of cancellation at its convenience, the Authority will pay for any disassembly and shipping charges necessary to remove the machine and return it to the nearest in State dealer.

23. Brand and Model Offered

Unless otherwise specified, when brand names and model numbers identify the type and quality of the goods desired, bidders must clearly indicate the brand names and model numbers they intend to provide. The bidder's failure to identify the brand and model offered will cause the Authority to consider the offer non-responsive and reject the bid.

24. Order Documents

Except as specifically allowed under this ITB, an ordering agency will not sign any vendor contract. The Authority is not bound by a vendor contract signed by a person who is not specifically authorized to sign for the Authority under this ITB. The Authority Contract Award is the only order document that may be used to place orders against the contract(s) resulting from this ITB.

25. Compliance with ADA

Services or activities furnished to the general-public on behalf of the Authority must be fully accessible. This is intended to ensure that agencies are in accordance with 28 CFR Part 35 Section 35.130 and that services, programs or activities furnished to the public through a

contract do not subject qualified individuals with a disability to discrimination based on the disability.

The Authority complies with Title II of the Americans with Disabilities Act of 1990. Individuals with disabilities who may need auxiliary aids, services, and/or special modifications to participate in this procurement should contact Enterprise Technology Services at one of the following numbers no later than November 10, 2011 to make any necessary arrangements.

Telephone: 907-465-5758
Fax: 907-465-3450
TDD: 907465-5745

APPENDIX B. SPECIFICATIONS AND DRAWINGS

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(attached as an Appendix B-1)

1 GENERAL

1.1 Summary

A. The owner, Alaska Energy Authority shall be referred to as “AEA” for the remainder of this document.

B. This specification defines a Control Enclosure to be factory fabricated, delivered, and placed (only set) on a new foundation at AEA’s Robert Douglas Substation site.

C. Bidders shall specify in their response to the ITB in writing whether exceptions are taken to any of the Technical Specifications or Special Provisions.

D. At a minimum, Bidders shall include a drawing(s) of the proposed Control Enclosure with their Bid identifying overall dimensions, shipping split locations, and estimated weights.

E. The relay panels, specified in a separate technical specification “RELAY PANELS”, shall be considered integral to the Control Enclosure. The relay panels shall be fully installed by the Contractor and braced for seismic loads. A 48-inch minimum working space shall be provided around the entire perimeter of the relays panels when installed in the Control Enclosure.

1.2 Location

A. The Control Enclosure described in this specification shall be delivered to MEA’s Robert Douglas Substation, located at 24060 West Willow Fishhook Road, Willow, Alaska. Elevation above sea level is 3,000 f t or less.

1.3 Construction & Layout

A. The general arrangement and dimensions of the Control Enclosure are shown on drawings included as an attachment to this Invitation to Bid. Construction materials and methods including installed equipment specifications and electrical and mechanical system requirements shall be as specified herein.

B. AEA desires to achieve the lowest overall cost in the substation’s fabrication, which includes placing the Control Enclosure at the substation site. In completing the Control Enclosure layout and design, the Contractor shall ensure that no entrances or exits to or from the Control Enclosure are placed in locations subject to snow or ice unloading from the Control Enclosure roof. The entrance doors should be designed such that all Control Enclosure equipment can be easily removed if equipment requires repair or replacement.

1.4 Ambient Conditions

A. All equipment to be furnished shall operate satisfactorily at the specified location and be resistant to the weather conditions at that location, which includes heavy snow and ice. The

ambient temperature ranges in which the equipment must operate satisfactorily is −50o C to +40o C.

B. For purposes of sizing heating and cooling systems and calculating the average annual heating costs, the heating degree-days shown in Table I shall be used:

Table I: Heating Degree Days
"Degrees Fahrenheit base 65."

Month	Heating / Cooling Degree	Month	Heating / Cooling Degree
January	1575 / 0	July	159 / 9
February	1312 / 0	August	260 / 3
March	1243 / 0	September	525 / 0
April	875 / 0	October	986 / 0
May	535 / 0	November	1366 / 0
June	243 / 4	December	1519 / 0

1.5 Assembly

The Control Enclosure shall be completely assembled and wired at the factory. The Contractor shall be responsible for installing all equipment shown on the drawing. Contractor shall be responsible for providing all wiring for installed equipment. Contractors shall complete final installation, inter-shipping split (if any), and field wiring.

The Contractor shall be responsible for rigging and lifting the relay enclosure from the trailer or trailers and placing it in its final location on the prepared foundation. Re-assembly, securing to foundation and final installation will be completed under a separate agreement with the Matanuska Electric Association

1.6 Equipment

A. The entire Control Enclosure structure and installed equipment and systems shall be completely assembled, installed, and tested at the Contractor's factory prior to shipment.

1.7 Standards

A. In the event a conflict occurs between these codes and the technical specifications, the more stringent requirements shall govern. The equipment shall meet the performance requirements of and be designed, manufactured, and tested in accordance with the latest applicable standards of:

- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- American Welding Society (AWS)
- Institute of Electrical and Electronics Engineers (IEEE)

- International Building Code (IBC)
- National Electrical Code (NEC)
- National Electrical Manufacturers Association (NEMA)
- National Electrical Safety Code (NESC)
- Occupational Safety and Health Administration (OSHA)
- Underwriters Laboratories (UL)

B. It shall be the Contractor's responsibility to be knowledgeable of these standards.

C. All inside house wiring within the Control Enclosure shall conform to the latest version of the NEC.

1.8 Structural Design Requirements

A. Structural design shall conform to the most recent version of the IBC including the following:

- Wind Loading
    i. Basic wind speed: 100 m ph (3 second gust)
    ii. Exposure Category: C
    iii. Wind importance factor: 1.15
- Snow Loading
    i. Design roof snow loading: 80 psf
- Floor Loading
    i. Design floor loading: 250 ps f or IBC minimum, whichever is greater.
- Miscellaneous Wall Mounted Equipment Loads
    i. Wall equipment loading: 300 lbs/enclosure or IBC minimum, whichever is greater.
- Dead Loads
    i. Light and mechanical ceiling loads: 8 ps f or IBC minimum, whichever is greater.
    ii. Cable trays suspended from ceiling: 50 lbs/linear ft.
- Foundation
    i. Control Enclosure will be installed on new driven steel pile foundations approximately 6" above final grade. Exit steps shall be provided by others. See below for Control Enclosure base specifications, which include Control Enclosure attachment requirements.
- The seismic forces to which this equipment may be subjected are outlined in the International Building Code and IEEE 693 as shown in Table II.

Table II: Seismic Loading

Design Category	D
0.2 second MCE Spectral Response Acceleration, (SS)	1.5
1.0 second MCE Spectral Response Acceleration, (S1)	0.63
Site Class	D
Site Use Group	III
Seismic Importance Factor, Ie	1.50
IEEE 693-2005 Seismic Qualification Level	High

1.9 Quality Control

A. All materials furnished shall be standard products and shall be the manufacturer's latest standard design. Where two or more units of the same item or class of material are required, they shall be like products of the same manufacturer. All equipment shall be new material, remanufactured or reconditioned equipment is not acceptable.

B. All engineered designs provided as part of this project shall be reviewed and stamped by a registered engineer. Engineered designs for the cold roof shall be reviewed and stamped by an engineer registered in the State of Alaska.

2 CONTROL ENCLOSURE

2.1 General

A. The Control Enclosure shall be an outdoor, walk-in, metal-clad enclosure resistant to arctic weather conditions for protection of equipment. The Control Enclosure shall be factory assembled as a unit to form a rigid self- supporting structure on a structural steel base. The Control Enclosure shall be weatherproofed for the weather conditions at the installation location, be provided with a cold roof, and insulated, heated, and ventilated as specified herein.

B. Contractor shall provide an engineered design for construction of the Control Enclosure.

C. Control Enclosure approximate size and general layout shall be as shown on the drawings.

D. The design provided by the Contractor shall revise the project drawings as required to accurately describe the Control Enclosure to be provided.

E. Design shall provide calculations verifying that the Control Enclosure meets the specified seismic loading and current IBC structural requirements.

2.2 Control Enclosure Fabrication

A. Control Enclosure materials shall meet the following minimum material specifications. Contractor may submit detailed alternatives to the following construction features provided they meet or exceed those listed below.

- Exterior Wall and Roof panels shall utilize a minimum of 11-gauge steel.
- Interior Wall panels shall utilize a minimum of 14-gauge steel.

- Interior Roof panels shall utilize a minimum of 18-gauge steel.
- The Floor shall utilize a minimum of 3-gauge steel.
- Any exterior hardware that is visible and exposed to the environment shall be stainless steel.
- All bolts utilized in the construction of the Control Enclosure shall be minimum 3/8", grade 5.
- Any welded studs shall be minimum 3/8", grade 2, nickel-plated.

- Roof panel hardware shall include neoprene bonded stainless steel washers installed on each side to weatherproof the bolt threads and bolt hole.
- The design and construction of the Control Enclosure shall minimize the use of gaskets and prevent the entrance of moisture and dust.
- Gaskets shall be limited to doors, power and control cable entrance cover plates and between the base and walls.
- All roof and wall seams shall be caulked with an extended life silicone sealant.
- Roof seams shall be designed to be waterproof without sealant.
- OSHA approved anchors shall be provided at the roof peak, spaced every 36", for attachment of personal fall arrest protective equipment. The anchor and its mounting attachment shall have been tested hold a weight of 5, 000 lbs.
- The distance from the floor to the ceiling shall be 10 f t minimum to accommodate use of a wireway or cable tray above the installed equipment.
- Doors: The walk-in metal-clad Control Enclosure shall include weatherproof insulated hollow core constructed access doors located as shown on the drawings with inside panic bars, stainless steel outside handles with a thumb latch and provisions for locking. Provide ANSI/BHMA Grade 1 heavy-duty commercial- grade builder's hardware with features inaccessible to tampering. Personnel entry doors shall include a 24" by 24" laminated safety glass window.
- Locksets shall be Best Locks with 7-pin core housing with a figure 8 cylinder (e.g. 1E 72).
- Control Enclosure with doors below a sloped roof shall be provided with a means to divert or stop snow or ice unloading from the roof within 6" of each side of the entry doors. This may be accomplished by the installation of snow guards/stops on the roof to hold snow. An example of an acceptable snow guard would is a model RGW from Rocky Mountain Snow Guards.
- Provide structural wall bracing for equipment mounting where equipment is shown on the drawings.
- Exit steps shall be provided by others. Doorway elevation above slab shall be noted on design drawing submittals.

2.3 Control Enclosure Base

A. The base shall be constructed of welded structural members that provide a rigid, square and level foundation for the Control Enclosure.

B. The base shall be capable of withstanding stresses resulting from skidding, rolling, or lifting of a completed shipping section with all equipment installed.

C. Lifting provisions shall be permanently welded or bolted into the base of each shipping split.

D. The base shall be capable of being extended from either end in the future.

E. Main base support channels shall have a 12" minimum height. The maximum floor deflection shall not exceed 3/8" under specified loading. The bottom of the structural base shall be protected with an asphaltic compound that does not harden over the life of the equipment. The sides of the

structural base shall be coated with an epoxy compound that is resistant to corrosion and designed for coating of structural shapes.

F. The base shall be designed such that it can be installed on driven steel pile foundations. Contractor shall provide design and materials for securing the Control Enclosure to the foundation. The preferred attachment method is welding.

2.4 Cold Roof Design

A. This section describes requirements for a cold roof design for outdoor Control Enclosure that prevents ice damming and other problems due to melting of snow on the roof surface when the outside ambient temperature is below 32 degrees Fahrenheit. The objective is to prevent heat generated by energized equipment and heating systems from raising the temperature of the roof surface. This is accomplished by creating an air space between the ceiling insulation and roof that is maintained at a temperature close to the outside ambient temperature. The design must also inhibit the formation of condensation on interior roof surfaces during any season of the year. The cold roof design shall have the following construction features:

- An open air space shall be provided between the ceiling insulation and roof to maintain the interior surfaces of the roof at or near the temperature of exterior roof surfaces.
- Ceiling insulation shall consist of spray-on foam that fills dead air space and inhibits the passage of warm moist air into the space above the ceiling. The thermal rating of the insulation shall be R-38 minimum.
- Vents shall be located as shown on the attached drawings. Vents shall be provided at the roof eaves (on both sides) and at the roof peak every 36”, at a minimum. All vent openings shall utilize 1/4” - #18 stainless steel expanded metal mesh to cover all vent opening for the cold roof. Maximum diamond mesh size shall be 1/4” by 1”.
- Venting at the peak of the roof shall consist of chimneys attached to flanges that are continuously welded into the roof surface. Attachment of chimneys to the roof flanges shall be designed to prevent entry of water under all weather conditions. A cap shall be provided on top of each chimney that prevents ingress of blowing rain, snow or dust through the vent openings. Chimney vents shall be located at a height of 18” from the roof surface to prevent entry of moisture due to melting snow.
- In order to keep a positive airflow, the net free area of the vent openings in the eaves must be equal to or greater than the net free area of the venting in the chimney. Each set of eave and chimney vents shall provide 50 in2 minimum of net free venting area. There shall be a minimum of one square foot of net free vent area per 150 f t2 of ceiling area.
- No venting shall be provided in the roof gables. Vents in the gables can cause an uneven distribution of ventilation air, as well as conditions where blowing snow or rain would be sucked into the air space through the gable vents.
- The cold roof shall be designed with eaves that extend from the Control Enclosure structure a minimum of 24”.
- All vent openings, chimney and eave, shall have mesh covering to prevent animal intrusion.
- Roof slopes shall not exceed 3: 12 (inches) without specific approval of AEA.
- The cold roof design shall have been reviewed and approved by a licensed professional engineer in the State of Alaska with experience in cold climates that experience substantial snow accumulation.
- The Contractor must provide a written description of their intended cold roof design along with drawings showing the details of the system.
- Each Contractor must provide evidence of successful cold roof installations with references for contact purposes.

2.5 Control Enclosure Insulation

A. Control Enclosure floor, walls, and ceiling shall be insulated to the following values:

- Floor: R-38 minimum
- Walls: R-38 minimum
- Ceiling: R-38 minimum
- Doors: R-11 minimum

B. The following insulation types shall be utilized:

- Floors: Spray on polyurethane foam.
- Walls: Insulated metal wall panels, spray on polyurethane foam, rigid extruded polystyrene or polyisocyanurate.
- Ceilings: Insulated metal roof panels, spray on polyurethane form.

C. Insulation Types

- Insulation shall be provided in the thickness required to provide the R-values specified. Thickness will vary depending upon the products selected by the Control Enclosure fabricator. Structural cavities shall be designed to accept the minimum R-values based on the materials to be used.
- Spray Polyurethane shall be of the medium density closed cell type with minimum 97% closed cell applied at 2 pcf.
- Preferred Polyurethane products will utilize blowing agents with zero Ozone Depletion Potential (ODP), a low Global Warming Potential ((GWP< 1)), and low Volatile Organic Compounds (VOC) content.

2.6 Control Enclosure Finishes

A. General

- All interior and exterior metal surfaces shall be painted prior to equipment installation.
- Preparation
  i. All interior and exterior surfaces shall be thoroughly cleaned of mill scale and rust by grit blasting.
  ii. All steel surfaces shall be chemically cleaned and treated to remove oil and grease.
  iii. All surfaces shall be free from imperfections such as burrs, scratches and coating protrusions prior to painting.
- Paint

  i. Metal surfaces shall be provided with a powder coated finish.
  ii. Coatings shall be a TGIC polyester powder, applied electrostatically.
  iii. Following paint application, parts shall be baked to produce a hard durable finish.
  iv. Paint film shall be 3.0 mils minimum.
  v. Paint film shall be uniform in color and free from blisters, sags, flaking and peeling.
  vi. Provide high gloss smooth finish.
  vii. The interior floor shall be painted with a non-skid finish.

- Colors

i. Finish Coat Exterior: All exterior wall, roof, floor, supports: ANSI 70 light gray. ii. Finish Coat All Interior Surfaces: White.

B. Extra Paint

- Contractor shall provide one (1) gallon of each color of finish coat paint for touching-up after installation in a form that can be effectively applied in the field. Application instruction shall be provided for touch-up of powder coatings.

C. Alternate Coating System

- Contractor may submit alternate painting systems which are subject to approval by AEA.

3 HEATING AND VENTILATION

3.1 General

A. The Contractor shall employ a registered mechanical engineer in the state of Alaska to design a complete HVAC system for the Control Enclosure.

B. The engineer will utilize the materials and methods specified herein in the preparation of the design drawings.

C. The Contractor shall provide fans, electric heaters, thermostats, control panels, and other equipment specified by the HVAC system designer for a complete and operable HVAC system.

3.2 HVAC Requirements

A. Heating shall be provided by electric heaters.

B. Ventilation shall be provided via exhaust fan(s) with louvered intake and louvered relief air vents as required.

C. Intake and exhaust louvers shall be provided with arctic hoods. Arctic hoods shall include positive shut off dampers that are actuated when the vent fan starts.

D. Control Enclosure Temperature Control

- A dual temperature control system shall be supplied to maintain the Control Enclosure temperature.

    i. When not occupied the Control Enclosure temperature shall be maintained between 55 degrees Fahrenheit and 80 degrees Fahrenheit.
    ii. When occupied the Control Enclosure temperature shall be maintained between 65 degrees Fahrenheit and 72 degrees Fahrenheit.
    iii. Occupancy shall be determined by activation of an occupancy sensor. Contractor shall provide all components, relays, or control interfaces required to for proper operation of the temperature control systems specified.

iv. Temperature control system shall include a two-level digital thermostat or two separate digital thermostats. The thermostat settings shall be pre-set at the factory.

E. Mechanical controls shall be provided with inputs terminals from the fire detection equipment, as specified in Section 4 of this specification.

F. Upon input of a signal from the fire detection system, the HVAC system will close all intake and exhaust air louvers and shut down fans.

G. Mechanical controls shall be provided with alarm and status output contacts to indicate low Control Enclosure temperature and mechanical system fault.

H. Detectors and sensors shall be mounted on junction boxes or enclosures with a spare hub for future installation of control wiring by others.

I. Mechanical Control Wiring Methods

- Wiring methods shall be as specified in Section 5.3.
- All wiring shall be in raceway as specified in Section 5.5.
- All mechanical control components shall be housed in NEMA 12 enclosures on the interior the Control Enclosure and NEMA 3R enclosures on the exterior of the Control Enclosure.

4 HAZARD DETECTION

4.1 Fire Detection

A. Contractor shall provide a fire detection and notification system. The fire detection system shall provide the following functions:

B. Complete detection coverage shall be provided.

C. Heat and smoke detectors shall be provided.

D. Detectors shall be UL listed,

E. Detectors shall have a dry output contact for connection to MEA's SCADA and to deactivate the ventilation control system.

F. Notification function shall supply interior and exterior visible and audible notification when detectors are activated.

- Detectors shall be installed in accordance with manufactures instruction and wired as required by these specifications.
- Detectors shall be mounted on junction boxes or enclosures.

5 ELECTRICAL EQUIPMENT

5.1 General

A. Contractor shall employ a registered electrical engineer in the state of Alaska to design electrical, mechanical control, and hazard detection systems specified herein.

B. Contractor shall provide and install materials and equipment in conformance with the design drawings and installed in conformance with these specifications.

C. The alarm points shown in Table III will be wired to terminal blocks for MEA SCADA use.

Table III: SCADA Points

Point #	Description	Interface Location
1	Battery Charger High DC Voltage Alarm	Auxiliary Control Panel 1
2	Battery Charger Low DC Voltage Alarm	Auxiliary Control Panel 1
3	Battery Charger DC Output Failure Alarm	Auxiliary Control Panel 1
4	Battery Charger AC Failure Alarm	Auxiliary Control Panel 1
5	Battery Charger Ground Fault Detection Alarm	Auxiliary Control Panel 1
6	Battery Charger Summary Alarm	Auxiliary Control Panel 1
7	Hydrogen Gas 1% Alarm	Auxiliary Control Panel 1
8	Hydrogen Gas 2% Alarm	Auxiliary Control Panel 1
9	Smoke Detection Alarm	Auxiliary Control Panel 1
10	Heat Detection Alarm	Auxiliary Control Panel 1
11	HVAC Unit 1 Compressor Control Alarm	Auxiliary Control Panel 1
12	HVAC Unit 2 Compressor Control Alarm	Auxiliary Control Panel 1
13	East Door Intrusion Alarm	Auxiliary Control Panel 1
14	West Door Intrusion Alarm	Auxiliary Control Panel 1
15	Temperature Switch 40^0F Alarm	Auxiliary Control Panel 1
16	Technician Cutoff - $H2$ Alarm	Auxiliary Control Panel 1
17	Technician Cutoff - Fire Alarm	Auxiliary Control Panel 1
18	Station Service Transfer Switch Normal Source	Auxiliary Control Panel 1
19	Station Service Transfer Switch Emergency Source	Auxiliary Control Panel 1
20	Station Service Transfer Switch Alarm	Auxiliary Control Panel 1

5.2 Grounding

A. Interior Ground Bus

- A ground bus no smaller than 1/4” by 2” continuous copper shall be furnished.
- The interior ground bus shall be continuous on four sides of the Control Enclosure.

B. Provide exterior terminals for connection of the substation ground grid to the interior ground bus at each end of the Control Enclosure.

- Provide terminals sized to accept 4/0 copper conductor via NEMA 2-hole terminal.

C. Provide one NEMA 2-hole terminals at each end base for connection to the substation ground grid.

D. Each electrically conductive panel or enclosure installed by the Contractor shall be separately bonded to the ground bus. Bonding conductors shall be #2 copper with green insulation or sized per NEC Table 250-122 whichever is larger. The preferred lug is a Burndy model KA25.

5.3 Wire & Cable

A. All wiring methods shall conform to the latest edition of the NEC. No inter-section penetration hole, cable tray, raceway, or opening shall be filled to more than 40%. The Contractor shall install throughout the length of the Control Enclosure a cable tray as described in Section 5.6 to be used for cable or wire runs. The cable tray will include access to each cubicle, enclosure, AC/DC power compartment and any other compartment or area within the Control Enclosure.

B. Wiring

- General Purpose Wiring
    i. General purpose wiring circuits shall be 600V UL type RHH or RHW/LS 90oC, with low-smoke zero halogen (LS-ZH) insulation, flexible strand, with tinned copper conductor. An example of acceptable wire would be Houston Wire and Cable type HW 010. The Contractor shall submit wire types to be used for AEA approval.

- Switchboard Wiring

    i. All switchboard wire shall be 600V UL type SIS 90oC, with gray XLP VW-1 insulation, flexible strand, with tinned copper conductor. An example of acceptable SIS would be Houston Wire and Cable type HW 052. The Contractor shall submit wire types to be used for AEA approval.

- Control Cable

    i. Control cable/wiring installed in trays or raceways shall be indoor/outdoor low-smoke zero halogen (LS-ZH) jacketed non-PVC flame retardant 600V UL type TC (tray cable) color coded by ICEA method 1 Table E-1 or AEA approved equivalent. An example of an acceptable control cable would be Houston Wire and Cable type HW 173. The Contractor shall submit cable types to be used for AEA approval.

- Instrumentation Cable

    i. Instrumentation cable/wiring installed in trays or raceways shall be indoor/outdoor low-smoke zero halogen (LS-ZH) jacketed non-PVC flame retardant 600V UL type TC (tray cable) color coded by ICEA method 9 or AEA approved equivalent. An example of an acceptable control cable would be Houston Wire and Cable type HW 120. The Contractor shall submit cable types to be used for AEA approval.

- Power Cable

    i. Power cable/wiring installed in trays or raceways shall be indoor/outdoor low-smoke zero halogen (LS-ZH) jacketed non-PVC flame retardant 600V UL type TC (tray cable) color coded by ICEA method 4 or AEA approved equivalent. An example of an acceptable power cable would be Houston Wire and Cable type HW 172. The Contractor shall submit cable types to be used for AEA approval.

- Installation

    i. All cables and conductors shall be installed in a raceway system, except where the cable tray is used.
    ii. All wiring methods shall conform to the latest edition of the NEC.

5.4 Conductor Terminals & Terminal Blocks

A. Terminals

- All terminals for #10 wire and smaller shall be made with the terminals shown in Table IV. Burndy terminations shall be double crimped with a Burndy MR8-9Q tool. No substitutions will be permitted.

Table IV: Wire Terminals

Wire Range (AWG)	Stud Range	Terminal Mfgr./Model
10 – 12	8 – 10	Burndy / YAV10-H
14 – 20	8 – 10	Burndy / YAV14-H
18 – 22	8 – 10	Burndy / YAV18-H

- Contractor shall provide the correct Burndy YAV type terminals with the proper stud size for the specified screw size. Drilled out terminals are not acceptable.

B. Terminal Blocks

- The Control Enclosure shall be provided with terminal blocks for outgoing control connections. All out- going cable connections shall be made on twelve-point terminal blocks or as specified in the drawings. All outgoing cable or interconnect wires shall be connected on the outside portion of the terminal block. Four point current shorting blocks shall be used for all CT terminal blocks. An example of acceptable twelve-point terminal block would be a Marathon type 1512 ST D with a marking strip. An example of accept- able four-point shorting terminal block would be a Marathon type 1504 SC with CC 1504 cover plate. The Contractor shall submit terminal block types to be used for AEA approval.

- Intra-panel terminal blocks shall be DIN rail mounted Entrelec terminal blocks as specified on the draw- ings. Mounting rail, terminal markers, fuses, end sections, and end stops shall be provided as required to provide a complete and functional terminal block system in the Control Enclosure. The following are acceptable models of Entrelec terminal blocks:

    i. Fuse Block: Entrelec type MB10/12.SF ii. Switch Block: Entrelec type M6/8.SNB iii. Feed-Thru Block: Entrelec type M6/8

- All wiring terminated on Entrelec type terminal blocks shall be made with the pin terminals shown in Table V. Burndy pin terminals shall be crimped with a Burndy MRE10-22NV tool. No substitutions will be permitted.

Table V: Pin Terminals

Wire Range (AWG)	Manufacturer / Model
10 – 12	Burndy / PTV10
14 – 16	Burndy / PTV14
18 – 22	Burndy / PTV18

C. Labels

- All terminal blocks shall be labeled as indicated on the drawings. All terminals within each terminal block shall be labeled as indicated on the drawings.
- All wires shall be labeled as indicated on the drawings. All wires shall be labeled using a Brady type B-342 thermal transfer irradiated polyolefin heat shrink tubing label with a white background and black printed lettering. Labels are not to be heat shrunk, and installed such that they are clearly visible in the as-left position. Substitutions for this label type will be permitted at AEA's discretion. Contractor will need to provide a written request for wire label substitution; AEA may request physical samples be submitted to approve a wire label substitution.
- All cables shall be tagged as indicated on the drawings. All cables shall be labeled using a Brady type B-145 polyethylene tag material with a grey background and black printed lettering. Substitutions for this tag type will be permitted at AEA's discretion. Contractor will need to provide a written request for cable tag substitution; AEA may request physical samples be submitted to approve a cable tag substitution.

5.5 Raceways

A. Contractor shall provide a complete surface mounted raceway system to provide electrical distribution to all Contractor installed equipment.

B. Raceway system shall be installed and supported in conformance with the latest version of the NEC.

5.6 Cable Tray

A. Cable tray shall be provided as shown in the drawings.

5.7 DC Plant

A. Contractor shall provide an area in the Control Enclosure structure to accommodate the 125V DC batteries, spill containment, and battery charger.

B. Batteries, battery racks, charger, DC disconnects, DC panelboards, DC plant wiring/cabling, spill containment, and covers for battery terminals shall be supplied and installed by the Contractor as specified on the drawings. Batteries shall be installed such that they are easily accessible for maintenance. The inter-cell bus bar connections shall be supplied by the Contractor, but will be installed by AEA.

5.8 AC Plant

A. The station service shall be single-phase, grounded wye, rated 240/120V and sized as shown in the drawings.

The station service shall include a transfer switch located inside the Control Enclosure. The Contractor shall supply and install the transfer switch and all appurtenances required for the operation of the transfer switch.

B. AC disconnects, AC transfer switch, AC panelboards, and AC plant wiring/cabling shall be supplied and in- stalled by the Contractor as specified on the drawings.

5.9 Control Enclosure Service & Maintenance Devices

A. The following additional service and maintenance devices are to be provided:

- One (1) set (2) each spare fuses for the fused DC disconnects.
- Ten (10) spares fuses of each rating use in low-voltage circuits.
- Two (2) of each type of key.
- Two (2) fuse pullers for each type of fuse if required.

6 SUBSTITUTIONS AND PRODUCT OPTIONS

A. At time of bidding, unless otherwise specified in the specifications, Bidder may, on an "approved equal" or substitution-basis, propose other equipment which he considers comparable with or superior to the specified items. In the absence of a listing of such equipment, it will be assumed that the Bidder intends to furnish the items as specified.

B. Bidder shall provide sufficient information and data necessary for a full evaluation of any equipment proposed on an "approved equal" or substitution-basis. At a minimum, information shall include complete description, physical dimensions, manufacturer's name and model number, price, time for delivery, and a specific listing of any characteristics which differ from those specified and could require engineering changes to equipment, enclosures, structures, and services. Failure to supply adequate or accurate information may result in rejection of Bidder's proposal.

C. The determination of the suitability of "approved equals" or substitutions for the service intended, and final acceptance thereof, shall be by AEA. The successful Bidder shall be liable for the cost of any subsequent engineering changes which are clearly attributable to negligence on the part of the Bidder to furnish proper information with his proposal.

D. If any revisions to drawings or specifications are required to conform equipment, materials, or work to national, state, and local laws, codes, ordinances, and regulations, Bidder shall give notice when submitting its bid and include a statement listing the additions to or deductions from the bid price required by the revisions.

E. If Bidder fails to give notice, it shall provide the equipment, materials, and work as intended by the above without additional cost to AEA.

7 WORKMANSHIP

7.1 General

A. Workmanship in the fabrication and wiring of the Control Enclosure is of utmost importance. All work shall be performed in a clean professional, like manner.

8 FACTORY TESTING

A. Location

- Control Enclosure shall be tested at the factory for satisfactory alignment, operation and structural integrity including weather resistance as specified herein.

B. Performance Data & Test Results

- Contractor shall prepare and provide guaranteed performance data and test reports which define the tests and document the certified test results after completion of tests and prior to shipment.

C. Mechanical Check

- Contractor shall perform a mechanical operation check to ensure proper operation of doors, door operators, and mechanical apparatus.

D. Equipment Check

- All equipment shall be installed and tested including:

    i. Mechanical heating and ventilation systems.
    ii. Receptacles shall be tested for proper wiring.
    iii. Lighting and associated switching shall be tested for proper operation.

E. Notification of Damage

- AEA shall be immediately notified of any unusual damage occurring during construction of the Control Enclosure and all tests which do not meet specified or standard values. Prior to shipment AEA shall be permitted, at its option, to personally inspect such damages and/or test failures and subsequent repairs at no additional cost.

9 SUBMITTALS

9.1 General

A. Transmit four copies of each submittal with AEA provided, or AEA accepted, form.

B. Sequentially number the transmittal forms. Resubmittals are to have the original submittal number with an alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or Supplier; pertinent drawing sheet and detail number(s), and Specification section number, as appropriate.

D. Schedule submittals to expedite the project, and deliver to AEA.

E. Revise and resubmit submittals as required; identify all changes made since previous submittal. Transmit 3 copies of all resubmittals.

F. No material and/or procedure requiring AEA's approval shall be used or implemented until such approval has been given.

9.2 Documents

A. General

- The documents depicted in Sections 9.2.B through 9.2.M shall be submitted.

B. Drawings

- Drawings, including those attached to this Invitation to Bid, red-lined by the Contractor to reflect the as-built condition of all electrical connections within the Control Enclosure.

C. Equipment Label List

- Equipment Label List that includes labels for all equipment installed within the Control Enclosure.

D. Plan & Elevation Drawings

- Control Enclosure plan and elevation drawings.

E. Section Drawings

- Section views of each Control Enclosure section. Section weight and center of gravity shall be shown on drawing.

F. Anchor Bolt or Welding Plan Drawing

- Control Enclosure anchor bolt or welding plan.

A. Erection Drawings

- Control Enclosure Erection Drawing(s).

H. Name Plate Drawing

- Control Enclosure Name Plate Drawing.

I. Material List

- Material lists for the Control Enclosure clearly keyed to the drawing material callouts.

J. Certified Test Results

- Certified test reports, including any NEMA test reports.

K. Instruction & Maintenance Manual

- Instruction & Maintenance Manual shall be provided in both hard copy and electronic format.

L. Testing Drawings

- One copy of all wiring diagrams, issued for fabrication and including any as-built modification, highlighted with yellow Hi-Liter to indicate end-to-end testing of all wiring circuits shall be submitted for approval. The drawing shall indicate the date of the functional test, the tester's initials and the signature of the supervisor responsible for the panel construction and commissioning.

M. Pick Plan

- Control Enclosure pick plan shall be provided. If any special rigging is then Control Enclosure manufacture shall provide it with the Control Enclosure at the time it ships from the factory.

9.3 Submittal Schedule

A. Furnished for Approval

- The following documents and drawings shall be submitted for approval within thirty days of receipt of the executed Contract. Submit four hard copies and one electronic copy of approval documents in accordance with Special Provisions Section 8, Submittal Procedure and Requirements.
    i. Equipment Label List that includes labels for all equipment installed within the Control Enclosure.
    ii. Control Enclosure plan and elevation drawings.
    iii. Section views of each Control Enclosure section. Section weight and center of gravity shall be shown on drawing.
    iv. Control Enclosure anchor bolt or welding plan.
    v. Control Enclosure erection drawing(s).
    vi. Material Lists for the Control Enclosure.
    vii. HVAC calculations.
    viii. Structural calculations.

B. Final Documents and As-Built Drawings and Additional Information

- The following final documents, as-built drawings, and additional information shall be submitted two weeks prior to scheduled equipment delivery. Submit four hard copies and one electronic copy of final documents, as-built drawings, and additional information in accordance with Special Provisions Section 8, Submittal Procedure and Requirements.

    i. All documents specified in Section 9.2.
    ii. As-built drawings of all drawings listed in Appendix A.
    iii. Control Enclosure Nameplate Drawing.
    iv. Certified Test Reports
    v. Hi-Lited Wiring Diagrams.

10 CLOSEOUT PROCEDURES

A. Project will be considered complete when the following items are complete:

- Control Enclosure has been placed on site.
- A final acceptance inspection report has been completed and signed by AEA's representative.
- Any deficiencies identified on the final inspection report have been corrected, re-inspected and accepted.
- Final submittal documents and instruction and maintenance manuals have been reviewed and approved.
- Manufacturer's letter assigning warranty to MEA and detailing terms and duration of warranty.

11 TECHNICAL EVALUATION SHEET

A. All Bidders submitting a bid under this specification shall complete the fields in Table VI and submit it with their bid. This form is for informational purposes only.

Table VI: Technical Evaluation Sheet

Description	Units	Spec Data	Vendor Data
Control Enclosure Contractor	-	By Contractor	
Mechanical Data			
Overall Height	*ft*	By Contractor	
Base Width	*ft*	By Contractor	
Base Length	*ft*	By Contractor	
Estimated Shipping Weight	*lbs*	By Contractor	
Estimated Heating Usage	*BTU/year*	By Contractor	
Field Assembly Data			
Will Control Enclosure Ship Completely Assembled	-	By Contractor	
Is Mfgr's Rep. Required for Installation	-	By Contractor	
Mfgr's Rep. Cost per Day	-	By Contractor	
Total Number of Days Required for Mfgr's Rep.	-	By Contractor	
Quantity of Control Enclosure Shipping Splits	-	By Contractor	
Quantity of External Ground Pads	-	By Contractor	
Are any Special Tools Required for Reassembly	-	By Contractor	
Quantity of Man Hours for Complete Reassembly	-	By Contractor	
Electrical Connections for Reassembly			
Quantity of Low-Voltage Pre-Terminated Connections	-	By Contractor	
Quantity of Low-Voltage Bare Wire Connections	-	By Contractor	
Quantity of Low-Voltage Quick Connect Connections	-	By Contractor	
Manufacturing Data			
Manufacturing Plant Location	-	By Contractor	
Warranty Duration	*months*	24	
Delivery			
Method of Shipment (truck, rail, etc.)	-	By Contractor	
Quantity of Days Exceeding Specified Delivery Date	*days*	By Contractor	
Total No. of Weeks from NTP	*weeks*	By Contractor	
Freight Terms	-	FOB Destination, Freight Prepaid and Allowed	
Delivery Destination	-	MEA's Control Enclosure Foundation, 24060 West Willow Fishhook Road, Willow, AK	
Schedule of Submissions			
Submittal of Review Drawings	*weeks*	By Contractor	
Manufacturing Time	*weeks*	By Contractor	
Drawings and Additional Information	*weeks*	By Contractor	
Final Documents and As-Builts	*weeks*	By Contractor	

A DRAWINGS

Title	Drawing No.	Sheet No.
CONTROL (CTRL.) ENCLOSURE (ENCL.) DRAWINGS		
CTRL. ENCL. PLAN	DGSS-SS-	1
CTRL. ENCL. NORTH AND SOUTH EXTERIOR ELEVATIONS	DGSS-SS-	2
CTRL. ENCL. EAST AND WEST EXTERIOR ELEVATIONS	DGSS-SS-	3
CTRL. ENCL. NORTH AND SOUTH INTERIOR ELEVATIONS	DGSS-SS-	4
CTRL. ENCL. EAST AND WEST INTERIOR ELEVATIONS	DGSS-SS-	5
CTRL. ENCL. CABLE TRAY PLAN	DGSS-SS-	6
CTRL. ENCL. LIGHTING PLAN	DGSS-SS-	7
CTRL. ENCL. NAMEPLATES	DGSS-SS-	8
CTRL. ENCL. BILL OF MATERIAL	DGSS-SS-	9
GENERAL INFORMATION		
ELECTRICAL GENERAL INFORMATION	DGSS-EL-	1
ELECTRICAL CABLE & WIRE STANDARD	DGSS-EL-	2
ONE-LINE DIAGRAMS AND NETWORK TOPOLOGIES		
138 kV ONE-LINE DIAGRAM	DGSS-EL-	1
24.9 kV ONE-LINE DIAGRAM	DGSS-EL-	1
STATION SERVICE ONE-LINE DIAGRAM	DGSS-EL-	1
125 VDC ONE LINE DIAGRAM	DGSS-EL-	1
SCADA NETWORK TOPOLOGY	DGSS-EL-	1
SCADA NETWORK TOPOLOGY	DGSS-EL-	2
SCADA NETWORK TOPOLOGY	DGSS-EL-	3
SCADA NETWORK TOPOLOGY	DGSS-EL-	4
SCADA NETWORK TOPOLOGY	DGSS-EL-	5
SCADA NETWORK TOPOLOGY	DGSS-EL-	6
SCADA NETWORK TOPOLOGY	DGSS-EL-	7
TIME SYNCHRONIZATION NETWORK TOPOLOGY	DGSS-EL-	6
THREE-LINE DIAGRAMS		
*138 kV BREAKER B1 THREE-LINE DIAGRAM	DGSS-EL-	1
*138 kV SYNC CVT THREE-LINE DIAGRAM	DGSS-EL-	1
*138 kV BUS PT THREE-LINE DIAGRAM	DGSS-EL-	1
*138/24.9 kV TRANSFORMER T1 THREE-LINE DIAGRAM	DGSS-EL-	1
*24.9 kV MAIN PT THREE-LINE DIAGRAM	DGSS-EL-	1
*STATION SERVICE THREE-LINE DIAGRAM	DGSS-EL-	1
*24.9 kV RECLOSER TD415 THREE-LINE DIAGRAM	DGSS-EL-	1
*24.9 kV RECLOSER TD425 THREE-LINE DIAGRAM	DGSS-EL-	1
*24.9 kV RECLOSER TD435 THREE-LINE DIAGRAM	DGSS-EL-	1

* This drawing to be provided after bid award.

Title	Drawing No.	Sheet No.
INSIDE SCHEMATICS		
*125 VDC DC PANEL #1 SCHEMATIC & SCHEDULE	DGSS-EL-	1
*125 VDC DC PANEL #2 SCHEMATIC & SCHEDULE	DGSS-EL-	2
*240 VAC AC PANEL #1 SCHEMATIC & SCHEDULE	DGSS-EL-	1
*240 VAC AC PANEL #2 SCHEMATIC & SCHEDULE	DGSS-EL-	2
*2488A, 2620A, 2730MA & 2730MB DC SCHEMATIC	DGSS-EL-	1
*735-HLY1 DC SCHEMATIC	DGSS-EL-	1
*735-HLY2 DC SCHEMATIC	DGSS-EL-	1
*3530A DC SCHEMATIC	DGSS-EL-	1
*2240A DC SCHEMATIC	DGSS-EL-	1
*2411A DC SCHEMATIC	DGSS-EL-	1
*421-HLY DC SCHEMATIC	DGSS-EL-	1
*311L-HLY DC SCHEMATIC	DGSS-EL-	1
*DFR1 DC SCHEMATIC	DGSS-EL-	1
*421-TLND DC SCHEMATIC	DGSS-EL-	1
*311L-TLND DC SCHEMATIC	DGSS-EL-	1
*487E-T1 DC SCHEMATIC	DGSS-EL-	1
*86T1 DC SCHEMATIC	DGSS-EL-	1
*735-T1-1 DC SCHEMATIC	DGSS-EL-	1
*735-T1-2 DC SCHEMATIC	DGSS-EL-	1
*451-TD325 DC SCHEMATIC	DGSS-EL-	1
*451-TD415 DC SCHEMATIC	DGSS-EL-	1
*451-TD425 DC SCHEMATIC	DGSS-EL-	1
*451-TD435 DC SCHEMATIC	DGSS-EL-	1
*2730MC & 2725A DC SCHEMATIC	DGSS-EL-	1
*3530B DC SCHEMATIC	DGSS-EL-	1
*2240B DC SCHEMATIC	DGSS-EL-	1
*2523A DC SCHEMATIC	DGSS-EL-	1
*125 VDC BATTERY CHARGER AC & DC SCHEMATIC	DGSS-EL-	1
*MS2000A AC & DC SCHEMATIC	DGSS-EL-	1
*HYDROGEN DETECTION AC SYSTEM SCHEMATIC	DGSS-EL-	1
*FIRE DETECTION SYSTEM AC SCHEMATIC	DGSS-EL-	1
*HVAC SYSTEM SCHEMATIC	DGSS-EL-	1
*HVAC SYSTEM SCHEMATIC	DGSS-EL-	2
*INTERIOR LIGHT & RECEPTACLE AC SCHEMATIC	DGSS-EL-	1
*EXTERIOR LIGHT & RECEPTACLE AC SCHEMATIC	DGSS-EL-	1
*RELAY PANELS LIGHT & RECEPTACLE AC SCHEMATIC	DGSS-EL-	1

* This drawing to be provided after bid award.

Title	Drawing No.	Sheet No.
OUTSIDE SCHEMATICS		
*MAINTENANCE LIGHTING AC SCHEMATIC	DGSS-EL-	1
*138 kV BREAKER B1 AC & DC SCHEMATIC	DGSS-EL-	1
*138 kV MOTOR OPERATED SWITCH DG-138-2S3 AC & DC	DGSS-EL-	1
*138 kV CIRCUIT SWITCHER TD200 AC & DC SCHEMATIC	DGSS-EL-	1
*138 kV TRANSFORMER T1 AC & DC SCHEMATIC	DGSS-EL-	1
INSIDE WIRING DIAGRAMS		
*PANEL 1 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 2 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 3 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 4 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 5 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 6 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 7 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 8 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 9 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 10 WIRING DIAGRAM	DGSS-EL-	1
*PANEL 11 WIRING DIAGRAM	DGSS-EL-	1
*MARSHALLING CABINET 1 WIRING DIAGRAM	DGSS-EL-	1
*MARSHALLING CABINET 2 WIRING DIAGRAM	DGSS-EL-	1
*MARSHALLING CABINET 3 WIRING DIAGRAM	DGSS-EL-	1
*AUXILIARY CONTROL PANEL 1 WIRING DIAGRAM	DGSS-EL-	1
*AC PLANT WIRING DIAGRAM	DGSS-EL-	1
*DC PLANT WIRING DIAGRAM	DGSS-EL-	1
STATION AUXILIARY		
AC CABLE & WIRE SCHEDULE	DGSS-EL-	1
AC CABLE & WIRE SCHEDULE	DGSS-EL-	2
DC CABLE & WIRE SCHEDULE	DGSS-EL-	1
COMMUNICATION CABLE & WIRE SCHEDULE	DGSS-EL-	1
INSIDE PANEL ELEVATIONS		
PANEL ELEVATIONS PANELS 1-11	DGSS-EL-	1
PANEL 1 ELEVATION	DGSS-EL-	1
PANEL 1 NAMEPLATES	DGSS-EL-	2
PANEL 1 BILL OF MATERIAL	DGSS-EL-	3
PANEL 2 ELEVATION	DGSS-EL-	1
PANEL 2 NAMEPLATES	DGSS-EL-	2
PANEL 2 BILL OF MATERIAL	DGSS-EL-	3
PANEL 3 ELEVATION	DGSS-EL-	1
PANEL 3 NAMEPLATES	DGSS-EL-	2
PANEL 3 BILL OF MATERIAL	DGSS-EL-	3

* This drawing to be provided after bid award.

Title	Drawing No.	Sheet No.
INSIDE PANEL ELEVATIONS		
PANEL 4 ELEVATION	DGSS-EL-	1
PANEL 4 NAMEPLATES	DGSS-EL-	2
PANEL 4 BILL OF MATERIAL	DGSS-EL-	3
PANEL 5 ELEVATION	DGSS-EL-	1
PANEL 5 NAMEPLATES	DGSS-EL-	2
PANEL 5 BILL OF MATERIAL	DGSS-EL-	3
PANEL 6 ELEVATION	DGSS-EL-	1
PANEL 6 NAMEPLATES	DGSS-EL-	2
PANEL 6 BILL OF MATERIAL	DGSS-EL-	3
PANEL 7 ELEVATION	DGSS-EL-	1
PANEL 7 NAMEPLATES	DGSS-EL-	2
PANEL 7 BILL OF MATERIAL	DGSS-EL-	3
PANEL 8 ELEVATION	DGSS-EL-	1
PANEL 8 NAMEPLATES	DGSS-EL-	2
PANEL 8 BILL OF MATERIAL	DGSS-EL-	3
PANEL 9 ELEVATION	DGSS-EL-	1
PANEL 9 NAMEPLATES	DGSS-EL-	2
PANEL 9 BILL OF MATERIAL	DGSS-EL-	3
PANEL 10 ELEVATION	DGSS-EL-	1
PANEL 10 NAMEPLATES	DGSS-EL-	2
PANEL 10 BILL OF MATERIAL	DGSS-EL-	3
PANEL 11 ELEVATION	DGSS-EL-	1
PANEL 11 NAMEPLATES	DGSS-EL-	2
PANEL 11 BILL OF MATERIAL	DGSS-EL-	3
MARSHALLING CABINET 1 ELEVATION	DGSS-EL-	1
MARSHALLING CABINET 1 NAMEPLATES	DGSS-EL-	2
MARSHALLING CABINET 2 ELEVATION	DGSS-EL-	1
MARSHALLING CABINET 2 NAMEPLATES	DGSS-EL-	2
MARSHALLING CABINET 3 ELEVATION	DGSS-EL-	1
MARSHALLING CABINET 3 NAMEPLATES	DGSS-EL-	2
AUXILIARY CONTROL PANEL 1 ELEVATION	DGSS-EL-	1
AUXILIARY CONTROL PANEL 1 NAMEPLATES	DGSS-EL-	2

* This drawing to be provided after bid award.

TECHNICAL SPECIFICATIONS FOR RELAY PANELS

1 GENERAL

1.1 Summary

A. The owner, Alaska Energy Authority shall be referred to as “AEA” for the remainder of this document.

B. This specification defines Relay Panels to be factory fabricated and delivered to the location specified in 1.2. Final installation on site will occur under a separate agreement with the Matanuska Electric Association.

C. Bidders shall specify in their response to the RFB in writing whether exceptions are taken to any of the Technical Specifications or Special Provisions.

D. At a minimum, Bidders shall include a drawing(s) of the proposed Relay Panels with their Bid identifying overall dimensions, shipping split locations, and estimated weights.

E. The Control Enclosure, specified in a separate technical specification “CONTROL ENCLOSURE”, shall be considered integral to the Relay Panels. Relay Panels shall be fully installed by the Contractor and braced for seismic loads. A 48-inch minimum working space shall be provided around the entire perimeter of the relays panels when installed in the Control Enclosure.

1.2 Location

A. Relay Panels will be installed inside an outdoor walk-in metal-clad Control Enclosure by the Control Enclosure Contractor. Elevation above sea level is 3,000 ft or less. Final installation at location will be completed under a separate agreement with the Matanuska Electric Association.

1.3 Construction & Layout

A. The general arrangement and dimensions of the Relay Panels are shown on drawings included in Appendix A. Construction materials and methods including installed equipment specifications and electrical and mechanical system requirements shall be as specified herein.

1.4 Assembly

A. Relay Panels shall be completely assembled, wired, and tested at the factory. This shall include all wiring to the Control Enclosure. Contractor shall not disconnect any intra-panel wiring or connections for shipping. Contractor shall be responsible for installing all equipment shown on the drawings. Contractor shall be responsible for providing all wiring for installed equipment. Others will complete final installation, inter-shipping split (if any), and field wiring.

1.5 Equipment

A. Relay Panels and installed equipment and systems shall be completely assembled, installed and tested at the Contractor's factory prior to shipment.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 Standards

A. In the event a conflict occurs between these codes and the technical specifications, the more stringent requirements shall govern. The equipment shall meet the performance requirements of and be designed, manufactured, and tested in accordance with the latest applicable standards of:

- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- American Welding Society (AWS)
- Telecommunications Industry Association/Electronic Industries Alliance (TIA/EIA)
- Institute of Electrical and Electronics Engineers (IEEE)
- International Building Code (IBC)
- National Electrical Code (NEC)
- National Electrical Manufacturers Association (NEMA)
- National Electrical Safety Code (NESC)
- Occupational Safety and Health Administration (OSHA)
- Underwriters Laboratories (UL)

B. It shall be the Contractor's responsibility to be knowledgeable of these standards.

C. All inside house wiring within the Relay Panels shall conform to the latest version of the NEC.

1.7 Seismic Design Requirements

A. Relay Panels when installed in the Control Enclosure shall be certified to conform to a High seismic qualification level per IEEE Standard 693-2005.

1.8 Quality Control

A. All materials furnished shall be standard products and shall be the manufacturer's latest standard design. Where two or more units of the same item or class of material are required, they shall be like products of the same manufacturer. All equipment shall be new material, remanufactured or reconditioned equipment is not acceptable.

B. All engineered designs provided as part of this project shall be reviewed and stamped by a registered engineer.

2 RELAY PANELS

2.1 General

A. Relay Panels Design

- All Relay Panels shall be designed, built and fabricated as indicated on the drawings provided by AEA and identified in Appendix A. No exceptions to wiring methods, drawings or fabrication shall be allowed. If an error is discovered in the drawings provided, the Contractor shall contact AEA for resolution of error.

B. Relay Panels Seismic Bracing

- All Relay Panels shall be provided with seismic zone panel bracing if required. C. Relay Panels Construction
- Relay Panels shall be a rear accessible 5-sided cabinet (2 sides, front, top, and bottom) with a door on the rear. Relay Panels shall be a minimum of indoor NEMA 1 rated enclosures. Relay Panels enclosure shall measure 30" wide by 30" deep by 90" high (excludes rear door projection).
- Base of cabinet shall be constructed from standard structural steel material such as C4x5.4 C-channel or similar.
- All sheet steel construction shall utilize a minimum of 11-gauge material.
- Any hardware that is visible and exposed shall be stainless steel.
- Door shall be provided with a double return on the vertical edge and 1/4" plate steel at the top and bottom edges. Each door shall be provided with a dual position holder that has a positive stop for maintenance or installation/removal of equipment. Rubber inserts shall be provided on door flanges to reduce vibration and protect mating surfaces from abrasion.
- Contractor shall supply two (2) penetrations in the top of the top of each cabinet that measures 6" wide by
- 18" deep to accept cables from an overhead cable tray. Contractor shall supply an edged relief gasket to ensure cables will not be damaged on metal edges of penetrations. Penetrations shall be located to provide direct access to the terminal strips located on the left and right side walls of each cabinet. Removable covers shall be provided for each cable entry penetration.

- Copper ground bus shall be included in Relay Panels, 1/4” by 2” minimum.
- A minimum of three (3) intra-panel penetrations shall be included measuring 3.5” in diameter. Two penetrations shall be near the top of cabinet; one in the front and one in the rear. One penetration shall be near the bottom front to allow for a continuous ground bus connection between adjacent cabinets. Removable covers shall be provided for any exposed entry penetration. Contractor shall supply an edged relief gasket or other means to ensure cables will not be damaged on metal edges of penetrations
- Four (4) vertical 18-gauge minimum mini-channel equipment mounting strips shall be provided on each of the left and right side walls. Mini-channel spacing shall be 4.5” on center and shall extend the full height of the cabinet.
- Front of cabinet shall include 45RU (78.84”) consistent with EIA-310 standard 19” standard rack equipment mounting with threaded #12 − 24 equipment mounting holes included.
- All unused rack mounting positions shall be filled with 1RU, 2RU, or 3RU blank filler panels with preference given to the 3RU blank filler panel.

2.2 Labels

A. All terminal blocks shall be labeled as indicated on the drawings. All terminals within each terminal block shall be labeled as indicated on the drawings.

B. All wires shall be labeled as indicated on the drawings. All wires shall be labeled using a Brady type B-342 thermal transfer irradiated polyolefin heat shrink tubing label with a white background and black printed lettering. Labels are not to be heat shrunk, and installed such that they are clearly visible in the as-left position. Substitutions for this label type will be permitted at AEA’s discretion. Contractor will need to provide a written request for wire label substitution; AEA may request physical samples be submitted to approve a wire label substitution.

C. All cables shall be tagged as indicated on the drawings. All cables shall be labeled using a Brady type B-145 polyethylene tag material with a grey background and black printed lettering. Substitutions for this tag type will be permitted at AEA’s discretion. Contractor will need to provide a written request for cable tag substitution; AEA may request physical samples be submitted to approve a cable tag substitution.

2.3 Materials

A. Construction

- Relay Panels shall be constructed with the equipment listed on the drawings.

B. Materials & Quantities

- The materials and quantities listed in the drawings are intended to provide quantities of major components to complete fabrication of the Relay Panels. The Contractor shall confirm quantities of materials shown and provide sufficient quantities of all materials necessary for fabrication of Relay Panels.

C. Substitutions

- There shall be no substitutions for materials specified in the drawings except where specifically noted.

2.4 Wiring and Wiring Devices

A. Methods

- All wiring methods shall conform to the latest edition of the NEC. B. Capacity
- No cable tray, raceway, or opening shall be filled to more than 70%.

2.5 Wire & Cable

A. All wiring methods shall conform to the latest edition of the NEC. No inter-section penetration hole, cable tray, raceway, or opening shall be filled to more than 40%.

- Intra-panel and inter-panel current transformer circuits shall be #10 SIS wire.
- Intra-panel and inter-panel voltage transformer circuits shall be #12 SIS wire.
- All other intra-panel and inter-panel switchboard wire shall be #14 SIS, except where specified otherwise.

B. Wiring

- General Purpose Wiring

    i. General purpose wiring circuits shall be 600V UL type RHH or RHW/LS 90oC, with low-smoke zero halogen (LS-ZH) insulation, flexible strand, with tinned copper conductor. An example of acceptable wire would be Houston Wire and Cable type HW 010. Contractor shall submit wire types to be used for AEA approval.

- Switchboard Wiring

    i. All switchboard wire shall be 600V UL type SIS 90oC, with gray XLP VW-1 insulation, flexible strand, with tinned copper conductor. An example of acceptable SIS would be Houston Wire and Cable type HW 052. Contractor shall submit wire types to be used for AEA approval.

- Control Cable

    i. Control cable/wiring installed in trays or raceways shall be indoor/outdoor low-smoke zero halogen (LS-ZH) jacketed non-PVC flame retardant 600V UL type TC (tray cable) color coded by ICEA method 1 Table E-1 or AEA approved equivalent. An example of an acceptable control cable would be Houston Wire and Cable type HW 173. Contractor shall submit cable types to be used for AEA approval.

- Instrumentation Cable

i. Instrumentation cable/wiring installed in trays or raceways shall be indoor/outdoor low-smoke zero halogen (LS-ZH) jacketed non-PVC flame retardant 600V UL type TC (tray cable) color coded by ICEA method 9 or AEA approved equivalent. An example of an acceptable control cable would be Houston Wire and Cable type HW 120. Contractor shall submit cable types to be used for AEA approval.

- Power Cable

    i. Power cable/wiring installed in trays or raceways shall be indoor/outdoor low-smoke zero halogen (LS-ZH) jacketed non-PVC flame retardant 600V UL type TC (tray cable) color coded by ICEA method 4 or AEA approved equivalent. An example of an acceptable power cable would be Houston Wire and Cable type HW 172. Contractor shall submit cable types to be used for AEA approval.

- 6. Installation

    i. All cables and conductors shall be installed in a raceway system.
    ii. All wiring methods shall conform to the latest edition of the NEC.

2.6 Conductor Terminals & Terminal Blocks

A. Terminals

- All terminals for #10 wire and smaller shall be made with the terminals shown in Table I. Burndy terminations shall be double crimped with a Burndy MR8-9Q tool. No substitutions will be permitted.

Table I: Wire Terminals

Wire Range (AWG)	Stud Range	Terminal Mfgr./Model
10 – 12	8 – 10	Burndy / YAV10-H
14 – 20	8 – 10	Burndy / YAV14-H
18 – 22	8 – 10	Burndy / YAV18-H

- Contractor shall provide the correct Burndy YAV type terminals with the proper stud size for the specified screw size. Drilled out terminals are not acceptable.

B. Terminal Blocks

- Relay Panels shall be provided with terminal blocks for outgoing control connections. All outgoing cable connections shall be made on twelve point terminal blocks or as specified in the drawings. All outgoing cable or interconnect wires shall be connected on the outside portion of the terminal block. Four point current shorting blocks shall be used for all CT terminal blocks. An example of acceptable twelve point terminal block would be a Marathon type 1512 ST D with a marking strip. An example of acceptable four point shorting terminal block would be a Marathon type 1504 SC with CC 1504 cover plate. Contractor shall submit terminal block types to be used for AEA approval.

- Intra-panel terminal blocks shall be DIN rail mounted Entrelec terminal blocks as specified on the drawings. Mounting rail, terminal markers, fuses, end sections, and end stops shall be provided as required to provided a complete and functional terminal block system in the Relay Panels. The following are accept- able models of Entrelec terminal blocks:
    i. Fuse Block: Entrelec type MB10/12.SF
    ii. Switch Block: Entrelec type M6/8.SNB
    iii. Feed-Thru Block: Entrelec type M6/8

- All wiring terminated on Entrelec type terminal blocks shall be made with the pin terminals shown in Table II. Burndy pin terminals shall be crimped with a Burndy MRE10-22NV tool. No substitutions will be permitted.

Table II: Pin Terminals

Wire Range (AWG)	Manufacturer / Model
10 – 12	Burndy / PTV10
14 – 16	Burndy / PTV14
18 – 22	Burndy / PTV18

2.7 Relay Panels Finishes

A. General

- All interior and exterior metal surfaces shall be painted prior to equipment installation.

- Preparation

    i. All interior and exterior surfaces shall be thoroughly cleaned of mill scale and rust by grit blasting.
    ii. All steel surfaces shall be chemically cleaned and treated to remove oil and grease.
    iii. All surfaces shall be free from imperfections such as burrs, scratches and coating protrusions prior to painting.

- Paint

    i. Metal surfaces shall be provided with a powder coated finish.
    ii. Coatings shall be a TGIC polyester powder, applied electrostatically.
    iii. Following paint application, parts shall be baked to produce a hard durable finish.
    iv. Paint film shall be 3.0 mils minimum.
    v. Paint film shall be uniform in color and free from blisters, sags, flaking and peeling.
    vi. Provide high gloss smooth finish.

- Colors

    i. Finish Coat Exterior: All exterior wall, roof, floor, supports: ANSI 70 light gray. ii. Finish Coat All Interior Surfaces: White.

- Extra Paint

i. Contractor shall provide one (1) gallon of each color of finish coat paint for touching-up after installation in a form that can be effectively applied in the field. Application instructions shall be provided for touch-up of powder coatings.

- Alternate Coating System

    i. Contractor may submit alternate painting systems which are subject to approval by AEA.

2.8 Grounding

A. Interior Ground Bus

- A ground bus no smaller than 1/4” by 2” continuous copper shall be furnished.
- The interior ground bus shall be continuous through the lineup of Relay Panels.

B. Provide exterior terminals for connection of the Control Enclosure ground bus to the interior ground bus at each end of the lineup of Relay Panels.

- Provide terminals sized to accept 4/0 copper conductor via NEMA 2-hole terminal.
- Relay Panels ground bus and Control Enclosure ground bus connections shall be made at the factory.

3 WORKMANSHIP

3.1 General

A. Workmanship in the fabrication and wiring of the Relay Panels is of utmost importance. All work shall be performed in a clean professional manner.

B. All surfaces shall be free from imperfections such as burrs, scratches and coating protrusions.

C. Relay Panels blank filler panels shall be ANSI 70 light gray in color.

3.2 Wire Securing

A. All wiring shall be harnessed or strapped at not more than 6-inch intervals.

B. Wire and cable strain relief shall be provided for connections to equipment mounted inside the Relay Panels.

3.3 Qualifications

A. All Relay Panels terminations shall be performed by qualified personnel using approved methods and materials.

3.4 Example Acceptable Workmanship

A. Examples of acceptable workmanship are shown in Figure 1 through Figure 6.

Figure 1: Typical Front View of a Relay Panel Line-up

Figure 2: Typical Acceptable Workmanship

Figure 3: Typical Entrelec Terminal Blocks

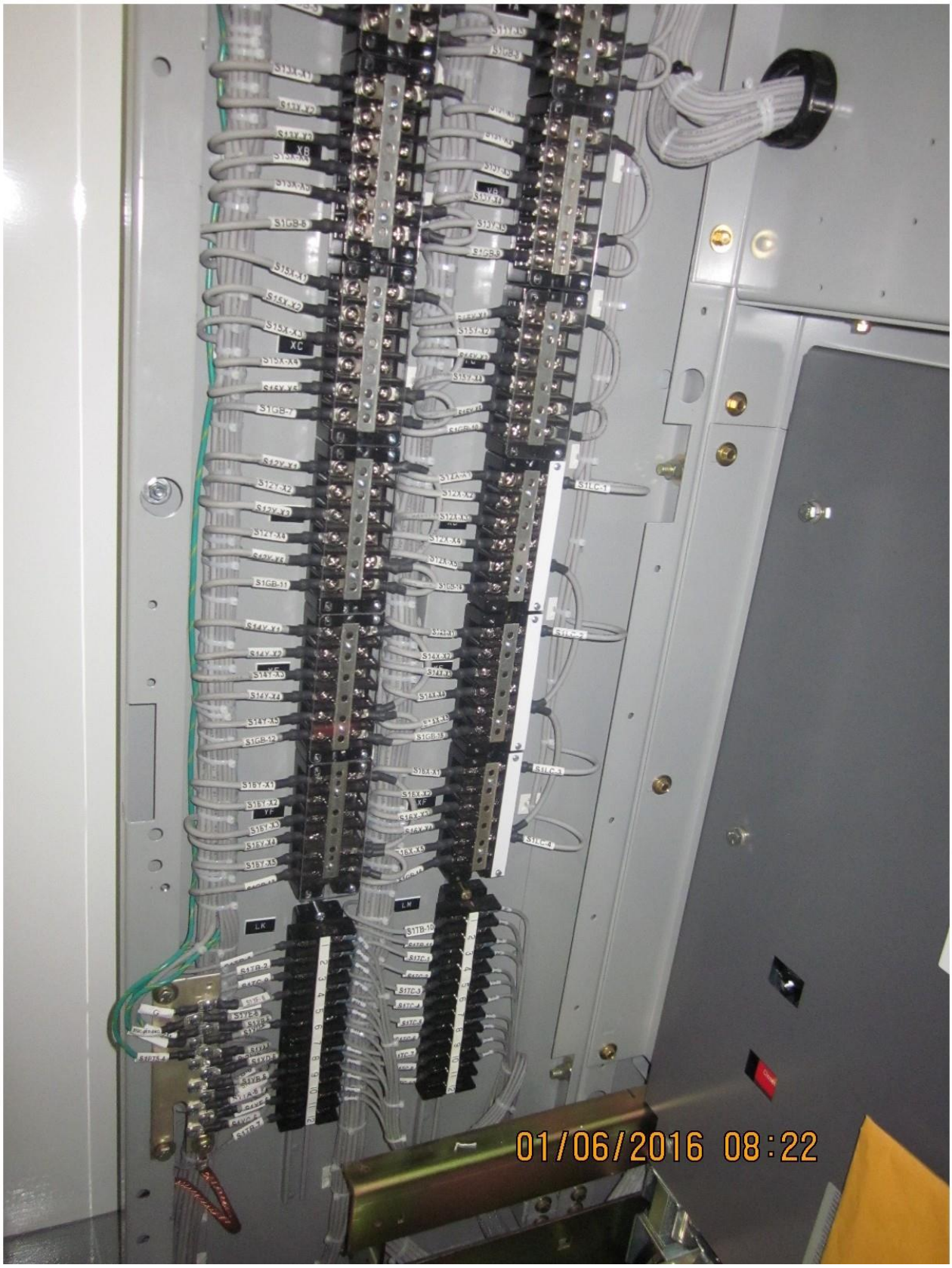

Figure 4: Typical Worlananship of a Terminal Block

Figure 5: Typical Front View of a DC Mini-Breaker

Figure 6: Typical Floor Mounting and Ground Bar

3.5 Service & Maintenance Devices

A. The following additional service and maintenance devices are to be provided:

- Ten (10) spares fuses of each rating used in low-voltage circuits.
- Two (2) fuse pullers for each type of fuse if required.
- Two (2) sets of air filters for each type used in intake ports, exhaust ports, and HVAC units.

4 SUBSTITUTIONS AND PRODUCT OPTIONS

A. At time of bidding, unless otherwise specified in the specifications, Bidder may, on an “approved equal” or substitution-basis, propose other equipment which he considers comparable with or superior to the specified items. In the absence of a listing of such equipment, it will be assumed that the Bidder intends to furnish the items as specified.

B. Bidder shall provide sufficient information and data necessary for a full evaluation of any equipment proposed on an “approved equal” or substitution-basis. At a minimum, information

shall include complete description, physical dimensions, manufacturer's name and model number, price, time for delivery, and a specific listing of any characteristics which differ from those specified and could require engineering changes to equipment, enclosures, structures, and services. Failure to supply adequate or accurate information may result in rejection of Bidder's proposal.

C. The determination of the suitability of "approved equals" or substitutions for the service intended, and final acceptance thereof, shall be by AEA. The successful Bidder shall be liable for the cost of any subsequent engineering changes, which are clearly attributable to negligence on the part of the Bidder to furnish proper information with his proposal.

D. If any revisions to drawings or specifications are required to conform equipment, materials, or work to national, state, and local laws, codes, ordinances, and regulations, Bidder shall give notice when submitting its bid and include a statement listing the additions to or deductions from the bid price required by the revisions.

E. If Bidder fails to give notice; it shall provide the equipment, materials, and work as intended by the above without additional cost to AEA.

5 FACTORY TESTING

5.1 General

A. Location

- Relay Panels shall be tested at the factory for satisfactory alignment, operation, electrical integrity, and structural integrity.

B. Performance Data & Test Results

- Contractor shall prepare and provide guaranteed performance data and test reports, which define the tests and document the certified test results after completion of tests and prior to shipment.

C. Mechanical Check

- Contractor shall perform a mechanical operation check to ensure proper operation of doors, door operators, and mechanical apparatus.

D. Equipment Check

- All equipment shall be installed and tested including:

    i. Receptacles shall be tested for proper wiring.
    ii. Lighting and associated switching shall be tested for proper operation.

E. Installation & Operation

- When the Relay Panels furnished by the Contractor are completely installed, AEA may proceed with initial operation of the Relay Panels and may place the Relay Panels in condition for running field acceptance tests.

F. Initial Operation, Demonstration & Acceptance

- AEA may operate the Relay Panels for a period of ten (10) consecutive days to assure and demonstrate the Relay Panels are capable of continuous operation under specified operating conditions. Upon completion of the ten (10) day demonstration period of operation, the Relay Panels shall be deemed accepted for commercial operation, except if AEA notifies the Contractor during this time or within five (5) days thereafter, enumerating the reasons for non-acceptance. If the Relay Panels are not accepted, it shall be returned to a state of initial operation and the fault (or faults) shall be remedied by the Contractor, after which the Relay Panels shall again be tendered for commercial operation.

G. Notification of Damage

- AEA shall be immediately notified of any unusual damage occurring during construction of the Relay Panels and all tests, which do not meet specified or standard values. Prior to shipment AEA shall be permitted, at its option, to personally inspect such damages and/or test failures and subsequent repairs at no additional cost.

5.2 Relay Panels

A. Prior to Shipment

- Relay Panels shall be completely assembled and tested with intra-panel and inter-panel end-to-end tests prior to shipment. This shall include end-to-end testing between the Relay Panels and the Control Enclosure.

B. Electrical Verification

- All electrical devices installed in the Relay Panels shall be energized and tested per manufacturer's specification to insure that equipment is in working order.

6 SUBMITTALS

6.1 General

A. Transmit four (4) copies of each submittal with AEA provided, or AEA accepted, form.

B. Sequentially number the transmittal forms. Resubmittals are to have the original submittal number with an alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or Supplier; pertinent drawing sheet and detail number(s), and Specification section number, as appropriate.

D. Schedule submittals to expedite the project, and deliver to AEA.

E. Revise and resubmit submittals as required; identify all changes made since previous submittal. Transmit four (4) copies of all resubmittals.

F. No material and/or procedure requiring AEA's approval shall be used or implemented until such approval has been given.

6.2 Documents

A. General

- The documents depicted in Sections 6.2.B through 6.2.I shall be submitted.

B. Appendix A Drawings.

- Drawings, including those in Appendix A, red-lined by the Contractor to reflect the as-built condition of all electrical connections within the Relay Panels.

C. Equipment Label List

- Equipment Label List that includes labels for all equipment installed within the Relay Panels.

D. Plan & Elevation Drawings

- Relay Panels plan and elevation drawings.

E. Protective Relay Instruction Manual

- Protective Relay Instruction Manual consisting of documentation, software, CDs and any other vendor information for items supplied by the Contractor or used by the Contractor in fabricating the Relay Panels.

F. Material List

- Material lists for the Relay Panels clearly keyed to the drawing material callouts.

G. Certified Test Results

- Certified test reports, including any NEMA test reports.

H. Instruction & Maintenance Manual

- Instruction & Maintenance Manual shall be provided in both hard copy and electronic format.

I. Testing Drawings

- One copy of all wiring diagrams, issued for fabrication and including any as-built modification, highlighted with yellow Hi-Liter to indicate end-to-end testing of all wiring circuits shall be submitted for approval. The drawing shall indicate the date of the functional test, the tester's initials and the signature of the supervisor responsible for the panel construction and commissioning.

6.3 Submittal Schedule

A. Furnished for Approval

- The following documents and drawings shall be submitted for approval within thirty days (30) of receipt of the executed Contract. Submit four (4) hard copies and one (1) electronic copy of approval documents in accordance with Special Provisions Section 8, Submittal Procedure and Requirements.

    i. Equipment Label List that includes labels for all equipment installed within the Relay Panels.
    ii. Plan and elevation drawings.
    iii. Material Lists for the Relay Panels.
    iv. Structural calculations with seismic certification.

B. Final Documents and As Built Drawings and Additional Information

- The following final documents, as-built drawings, and additional information shall be submitted two weeks prior to scheduled equipment delivery. Submit four (4) hard copies and one (1) electronic copy of final documents, as-built drawings, and additional information in accordance with Special Provisions Section 8, Submittal Procedure and Requirements.

    i. All documents specified in Section 6.2.
    ii. As-built drawings of all drawings listed in Appendix B-1.

7 CLOSEOUT PROCEDURES

A. Project will be considered complete when the following items are complete:

- Relay Panels have been placed on site.
- A final acceptance inspection report has been completed and signed by AEA's representative.
- Any deficiencies identified on the final inspection report have been corrected, re-inspected and accepted.
- Final submittal documents and instruction and maintenance manuals have been reviewed and approved.
- Manufacturer's letter assigning warranty to MEA and detailing terms and duration of warranty.

DRAWINGS

See Page 35 for drawing list. Drawings attached as an Appendix B-1.

APPENDIX D. BID SCHEDULE

1. **Scope –** Furnish one fabricated Control Enclosure Structure.

2. **Submittals -** Submittals shall be provided to the Authority for review and approval prior to beginning fabrication. Submittals shall include complete shop drawings indicating all details of fabrication and assembly plus manufacturer's literature for paint.

3. **Progress Reports** – Upon commencement of assembly work, progress reports shall be provided to the Authority every two working days. Reports shall include a brief verbal description and digital photographs of work completed. Adequate photographs shall be provided to document each step in the fabrication procedure. Each report shall be submitted via e-mail within one working day of completion of the work included.

4. **Inspection -** The work may be inspected by the Authority's representative at the Bidder's fabrication facility during the fabrication process. A final inspection will be performed and approval will be issued prior to items being released for shipment. The Contractor shall provide a minimum of two weeks' notice prior to completion to allow the Authority adequate time to schedule the final inspection.

5. **Fabrication Work -** The finished control enclosure shall include all equipment as shown on the drawings in appendix.

6. **Exclusions -** The following items are **not** part of the work associated with this bid: site work; foundation; fencing; electrical systems not otherwise shown on the drawings in appendix B-1;

    a. <u>NOTES;</u>

7. **Preparation for Shipping –** After final inspection and acceptance the module will be prepared for delivery to Matanuska Electric Association's Robert Douglas Substation, located at 24060 West Willow Fishhook Road, Willow, Alaska. Elevation above sea level is 3,000 ft or less. Preparation means all wall and roof penetrations will be covered with non-permanent 18-gauge sheet metal caps and sealed watertight. The contractor shall be solely responsible for the adequacy of packaging of equipment and for furnishing and delivery of undamaged equipment to the delivery site.

8. **Delivery –** The control enclosure shall be delivered to Matanuska Electric Association's Robert Douglas Substation, located at 24060 West Willow Fishhook Road, Willow, Alaska. The bidder shall provide the Authority with a minimum of 48-hour notice prior to delivery excluding weekends and holidays. The Control Enclosure shall be removed from the trucks and placed on the ground. Final placement on the foundation and installation of the Control Enclosure will occur under a separate negotiated agreement with the Matanuska Electric Association.

9. **F.O.B. Point –** is Matanuska Electric Association's Robert Douglas Substation, located at 24060 West Willow Fishhook Road, Willow, Alaska

10. **Pricing -** The bid schedule requires a lump sum bid price. The price includes all costs and profit associated with furnishing the equipment as specified to the F.O.B. point by the delivery date.

11. **Required Delivery Date –** Delivered to the F.O.B. point on or before September 22, 2017. If Bidder cannot meet the firm delivery date, Bidder shall seek guidance from the Authority prior to the bid opening date.

12. **Method of Award** - An award will be made in accordance with the bid schedule to the responsive and responsible bidder based on the lowest total price.

13. **Progress Payments** - There will be no progress payments. Payments are NET30 on receipt of an invoice and acceptance of the materials at the F.O.B. point.

14. Bid Schedule

Line	Description	Lump Sum Price	
14.1	**Robert Douglas Substation Control Enclosure**	1-each	**$**

15. Acknowledge all addenda

Addendum No	Date Issued	Addendum No	Date Issued	Addendum No	Date Issued

16. Bidder Certification

BIDDER'S NOTICE: By signature on this form, the bidder certifies that:

(1) The bidder has a valid Alaska business license, or will obtain one prior to award of any contract resulting from this ITB. If the bidder possesses a valid

Alaska business license, the license number must be written below or one of the following forms of evidence must be submitted with the bid:

• a canceled check for the business license fee;

• a copy of the business license application with a receipt date stamp from the State's business license office;

• a receipt from the State's business license office for the license fee;

• a copy of the bidder's valid business license;

• a sworn notarized affidavit that the bidder has applied and paid for a business license;

(2) the price(s) submitted was arrived at independently and without collusion and that the bidder is complying with:

• the laws of the State of Alaska;

• the applicable portion of the Federal Civil Rights Act of 1964;

• the Equal Employment Opportunity Act and the regulations issued thereunder by the State and Federal Government; and

• all terms and conditions set out in this Invitation to Bid (ITB).

If a bidder fails to comply with (1) at the time designated in the ITB for opening the state will disallow the Alaska Bidder Preference. If a bidder fails to comply with (2) of this paragraph, the state may reject the bid, terminate the contract, or consider the contractor in default. Bids must be also submitted under the name as appearing on the bidder's current Alaska business license in order to receive the Alaska Bidder Preference.

*DOES YOUR BUSINESS QUALIFY FOR THE

ALASKA BIDDER PREFERENCE?

[ ] YES [ ] NO

*DOES YOUR BUSINESS QUALIFY FOR THE

ALASKA VETERAN PREFERENCE?

[ ] YES [ ] NO

*SEE ITB FOR EXPLANATION OF CRITERIA TO QUALIFY

Company Submitting Bid	**Telephone Number**
Address	**Fax Number**
Authorized Signature	**E-mail Address**
Print Name	**Alaska Business License number** **DATE:**_____

End of Bid Schedule

ALASKA ENERGY AUTHORITY

BID BOND

For

Control Enclosure for Robert Douglas Substation
ITB #17056

DATE BOND EXECUTED: _____

PRINCIPAL (Legal name and business address):	TYPE OF ORGANIZATION:
	[ ] Individual [ ] Partnership [ ] Joint Venture [ ] Corporation
	STATE OF INCORPORATION:

SURETY(IES) (Name and business address):

A.	B.	C.

PENAL SUM OF BOND:	DATE OF BID:

We, the PRINCIPAL and SURETY above named, are held and firmly bound to the State (State of Alaska), in the penal sum of the amount stated above, for the payment of which sum will be made, we bind ourselves and our legal representatives and successors, jointly and severally, by this instrument.

THE CONDITION OF THE FOREGOING OBLIGATION is that the Principal has submitted the accompanying bid in writing, date as shown above, on the above-referenced Project in accordance with contract documents filed in the office of the Contracting Officer, and under the Invitation To Bid therefore, and is required to furnish a bond in the amount stated above.

If the Principal's bid is accepted and he is offered the proposed contract for award, and if the Principal fails to enter into the contract, then the obligation to the State created by this bond shall be in full force and effect.

If the Principal enters into the contract, then the foregoing obligation is null and void.

PRINCIPAL

Signature(s)	**1.**	**2.**	**3.**
Name(s) & Title(s) (Typed)	**1.**	**2.**	**3.**

Corporate Seal

See Instructions on Reverse

CORPORATE SURETY(IES)

Surety A	Name of Corporation		State of Incorporation	Liability Limit **$**
Signature(s)	**1.**	**2.**		Corporate Seal
Name(s) & Titles (Typed)	**1.**	**2.**		

Surety B	Name of Corporation		State of Incorporation	Liability Limit **$**
Signature(s)	**1.**	**2.**		Corporate Seal
Name(s) & Titles (Typed)	**1.**	**2.**		

Surety C	Name of Corporation		State of Incorporation	Liability Limit **$**
Signature(s)	**1.**	**2.**		Corporate Seal
Name(s) & Titles (Typed)	**1.**	**2.**		

INSTRUCTIONS

1. This form shall be used whenever a bid bond is submitted.
2. Insert the full legal name and business address of the Principal in the space designated. If the Principal is a partnership or joint venture, the names of all principal parties must be included (e.g., "Smith Construction, Inc. and Jones Contracting, Inc. DBA Smith/Jones Builders, a joint venture"). If the Principal is a corporation, the name of the state in which incorporated shall be inserted in the space provided.
3. Insert the full legal name and business address of the Surety in the space designated. The Surety on the bond may be any corporation or partnership authorized to do business in Alaska as an insurer under AS 21.09. Individual sureties will not be accepted.
4. The penal amount of the bond may be shown either as an amount (in words and figures) or as a percent of the contract bid price (a not-to-exceed amount may be included).
5. The scheduled bid opening date shall be entered in the space marked Date of Bid.
6. The bond shall be executed by authorized representatives of the Principal and Surety. Corporations executing the bond shall also affix their corporate seal.
7. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.
8. The states of incorporation and the limits of liability of each surety shall be indicated in the spaces provided.
9. The date that bond is executed must not be later than the bid opening date.

ALASKA ENERGY AUTHORITY

PAYMENT BOND

Bond No. _____

For

Control Enclosure for Robert Douglas Substation
ITB #17056

NOW ALL WHO SHALL SEE THESE PRESENTS:
That _____
of _____ as Principal,
and _____
of _____ as Surety,
firmly bound and held unto the State of Alaska in the penal sum of
_____ Dollars
($_____) good and lawful money of the United States of America for the payment whereof,
well and truly to be paid to the State of Alaska, we bind ourselves, our heirs, successors, executors, administrators, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said State of Alaska, on the _____ of _____ A.D., 20_____, for construction of the above-referenced project, said work to be done according to the terms of said contract.

Now, THEREFORE, the conditions of the foregoing obligation are such that if the said Principal shall comply with all requirements of law and pay, as they become due, all just claims for labor performed and materials and supplies furnished upon or for the work under said contract, whether said labor be performed and said materials and supplies be furnished under the original contract, any subcontract, or any and all duly authorized modifications thereto, then these presents shall become null and void; otherwise they shall remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals at _____, _____ this _____ day of _____ A.D., 20_____.

Principal: _____

Address: _____

By: _____

Contact Name: _____

Phone: ( ) _____

Surety: _____

Address: _____

By: _____

Contact Name: _____

Phone: ( ) _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

_____ _____
Alaska Energy Authority Authorized Representative **Date**

See Instructions on Reverse

INSTRUCTIONS

1. This form, for the protection of persons supplying labor and material, shall be used whenever a payment bond is required. There shall be no deviation from this form without approval from the Contracting Officer.

2. The full legal name, business address, phone number, and point of contact of the Principal and Surety shall be typed on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.

3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be typed in words and in figures.

4. Where individual sureties are involved, a completed Affidavit of Individual Surety shall accompany the bond. Such forms are available upon request from the Contracting Officer.

5. The bond shall be signed by authorized persons. Where such persons are signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.

ALASKA ENERGY AUTHORITY

PERFORMANCE BOND

Bond No. _____

For

Control Enclosure for Robert Douglas Substation
ITB #17056

KNOW ALL WHO SHALL SEE THESE PRESENTS:

That _____

of _____ as Principal,

and _____

of _____ as Surety,

firmly bound and held unto the State of Alaska in the penal sum of

_____ Dollars

($_____) good and lawful money of the United States of America for the payment whereof, well and truly to be paid to the State of Alaska, we bind ourselves, our heirs, successors, executors, administrators, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said State of Alaska, on the _____ of _____ A.D., 20_____, for construction of the above-named project, said work to be done according to the terms of said contract.

Now, THEREFORE, the conditions of the foregoing obligation are such that if the said Principal shall well and truly perform and complete all obligations and work under said contract and if the Principal shall reimburse upon demand of the Alaska Energy Authority any sums paid him which exceed the final payment determined to be due upon completion of the project, then these presents shall become null and void; otherwise they shall remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals at _____, _____ this _____ day of _____ A.D., 20_____.

Principal: _____

Address: _____

By: _____

Contact Name: _____

Phone: ( ) _____

Surety: _____

Address: _____

By: _____

Contact Name: _____

Phone: ( ) _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

_____ _____

Alaska Energy Authority Authorized Representative **Date**

See Instructions on Reverse

INSTRUCTIONS

1. This form shall be used whenever a performance bond is required. There shall be no deviation from this form without approval from the Contracting Officer.

2. The full legal name, business address, phone number, and point of contact of the Principal and Surety shall be typed on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.

3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be typed in words and in figures.

4. Where individual sureties are involved, a completed Affidavit of Individual Surety shall accompany the bond. Such forms are available upon request from the Contracting Officer.

5. The bond shall be signed by authorized persons. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.

ALASKA ENERGY AUTHORITY

CONTRACTOR'S QUESTIONNAIRE

17056
Control Enclosure for Robert Douglas Substation

A. BACKGROUND

1. Contractor Name: _____

2. Manufacturing Data:
   a. Manufacturing Plant Location _____
   b. Warranty Duration (in months)_____

B. FINANCIAL

1. Have you ever failed to complete a contract due to insufficient resources?
   [ ] No [ ] Yes If YES, explain:

   _____
   _____
   _____
   _____

2. Describe any arrangements you have made to finance this work: _____

   _____
   _____

C. EXPERIENCE

1. Have you had previous construction contracts or subcontracts with the Authority?
   [ ] Yes [ ] No

   Describe the most recent or current contract, its completion date, and scope of work:

   _____
   _____
   _____
   _____

2. Alaska / Overseas Experience: List all experience (attach separately) with delivering switchgear and relating panels within the State of Alaska or the Pacific. Include project name, contact name and telephone numbers.

3. References (attach separately): (Minimum of five (5) with photographs of all referenced work.) If bidder has completed projects for Matanuska Electric Association, include MEA as a reference. References shall be from projects no older than 3 years and submitted in the following format

   Company Address Contact Person Telephone #

4. Adverse References (attach separately): (Minimum of one (1) with photographs of all referenced work.) Provide at least one adverse reference for switchgear and relay panels. An adverse reference is one in which the design or delivery of the contracted material was in dispute or contested by either the Owner or the Manufacturer. Provide a description of the dispute or contested item and the final resolution of the dispute. Provide contact name and phone number of Owner's representative in the dispute/contested action. Submit in the following format:

   Company Address Contact Person Telephone #

I hereby certify that the above statements are true and complete.

Name of Contractor	Name and Title of Person Signing
Signature	**Date**