Request for Bid
For
Electrical Upgrade to Newton Maintenance Garage
Issued by:

IOWA DEPARTMENT OF TRANSPORTATION
Purchasing Section
Proposal No. 14842

Letting Date: August 19, 2015

Must be submitted no later than 1:00 PM Central Time
Bid Responses received after this date will be rejected

For information about this notice, and during this procurement, interested persons shall contact only:

Rhonda Ruark, Purchasing Agent
800 Lincoln Way
Ames, Iowa 50010
Phone: 515-239-1285
Fax: 515-239-1538
E-Mail: rhonda.ruark@dot.iowa.gov

Issued addenda and all other correspondence will be posted to Iowa DOT's website:
http://**www.iowadot.gov/purchasing**

Procurement Timetable

The following dates are set forth for informational and planning purposes. The Iowa DOT reserves the right to revise the dates as needed. All times listed are Central Time.

Event/Dates	Section Reference	Date/Time
Issue RFB	cover	
Number of Copies of Bid Responses Required: One (1)	4.1.3	
Bidders Conference (Pre-Bid) ☐ *Box will be checked when attendance is mandatory*	2.28	Thursday August 6, 2015 at 1:00 PM
DOT Response from Bidder's Conference Questions	2.32	
Bidder Questions, Requests for Clarification, & Changes *(no later than)*	2.2/2.5	Wednesday, August 12, 2015, 1:00 PM
DOT Response to Questions Issued *(no later than)*	2.2/2.5	Monday, August 17, 2015 1:00 PM
Bid Opening/Proposal Due	2.8/2.9	Wednesday, August 19, 2015 1:00 PM
Presentations & Demonstrations "Short list" (*by invitation only*)	2.24/ 5.3	N/A
Announce Successful Bidder Intent to Award* *see note below*	2.24	Thursday, August 20, 2015
Completion of Contract Negotiations & Execution of the Contract	2.25	
Contract Begin Date	6.2	Tuesday, September 1, 2015
Contract End Date	6.2	Wednesday, December 30, 2015

*Intent to Award - See Section 2.22

It is intended that Bid Responses will be evaluated and a notice of "intent to award" will be issued within thirty (30) days of the bid opening date. Bid Responses prices, terms and conditions must be held firm for a 180-day period from the date of the notice of "intent to award" the contract.

Bid Response

	Date Bids Due: August 19, 2015	Time of Bid Opening: 1:00 P.M.	Bid Opening Location: 800 Lincoln Way, Ames, IA

Proposal Number: **14842**	Description: Newton Electrical Upgrade			
Contract to Begin: 9/1/2015	Date of Completion: 12/30/2015	Proposal Guaranty Amount: $7,600.00	Performance Bond (Y/N) Yes	Liquidated Damages: $125.00/day

Purchasing Agent: Rhonda Ruark	E-mail Address: rhonda.ruark@dot.iowa.gov	Phone: 515-239-1285	Fax: 515-239-1538

Company Name:	Federal Tax ID:

Street Address:	City: State:	Zip Code:

Supplier Contact (type or print)	E-mail Address:	Phone:	Fax:

Supplier agrees to sell items/services at the same prices, terms and conditions to any other Iowa state agency. Regent or Political Subdivision upon request. Please check Yes or No.	Are you an Iowa Targeted Small Business?
☐ Yes ☐ No	☐ Yes ☐ No

GENERAL INFORMATION

This bid proposal includes the Bid Response cover page, Schedule of Prices, Standard Terms and Conditions, Supplemental terms (if any), specifications, mailing label and all other information needed to prepare a bid response. Information in the "Bid Response" above must be typed or completed in ink, signed, and returned in a flat style envelope along with any other information required in the bid proposal prior to the bid opening date and time. Please use the furnished mailing label, or label the bid response as "Iowa Department of Transportation, proposal number & letting date" on the outside of the return envelope. Bidders may personally deliver, mail, or select a carrier that ensures timely delivery. **Faxed or e-mail bids will not be accepted.**

If required, each bid response must be accompanied by a proposal guaranty in an accepted form, in the sum indicated above. Refer to the Standard Terms and Conditions for the accepted forms in which the proposal guaranty requirement may be fulfilled. **Bids lacking a required proposal guaranty will not be considered for award.** If the intended awarded bidder fails to enter into a formal contract within fifteen (15) days after award is made for any reason on their part, the proposal guaranty may be retained by the State.

PROPOSAL STATEMENT

The entire contents of this Proposal, Addendums to the Proposal, Specifications, Supplemental Terms and Conditions, Standard Terms and Conditions, and Schedule of Prices shall become part of the contract.

We promise to furnish all materials, equipment and/or services specified, in the manner and the time prescribed, at prices hereinafter set out.

We certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a bid; that this bid has been independently arrived at without collusion with any other bidder, competitor, or potential competitor; and that this bid has not been knowingly disclosed prior to the opening of bids to any other bidder or competitor.

We certify that all materials, equipment and/or services proposed meet or exceed the specifications and will be supplied in accordance with the entire contents of this proposal.

We promise to complete the contract within the contract period, or pay any liquidated damages, if stipulated, for each calendar day as set forth in the bid documents.

Signed _____ Date _____

Schedule of Prices

Project Description:

Item No.	Description	Quantity	Unit/Price	Total Bid Amount
1	Contractor to provide all materials, equipment and labor to complete the electrical upgrade at the Newton DOT maintenance garage as per attached specifications and drawings.	I Job	Lump/Sum	$_____

I hereby certify that this Bid Response meets or exceeds the minimum requirements including specifications and addendums.

Authorized Signature: _____

Contact Person:

Company: _____

_____
(Print Name)

Address: _____

Federal Tax I.D. No.:_____

_____
(City) (State) (Zip Code)

Contractor's Registration No:_____

Phone No: _____

Email:_____

Fax No.: _____

I acknowledge receipt of addendums.:_____

Iowa Department of Transportation
Standard Terms and Conditions For
Bid Proposals/Contracts
-FORMAL-

Formal is the procurement process required by Iowa law when the estimated, aggregate amount of the purchase equals or exceeds $50,000.

The entire contents of this bid proposal shall become a part of a contract or purchase order. In case of a discrepancy between the contents of the bid documents, the following items listed by descending order shall prevail:

- Addendums to the bid proposal
- Bid Proposal-
  - Schedule of Prices
  - Specifications
  - Plans and Drawings
- Supplemental Terms and Conditions
- Standard Terms and Conditions

(Example - if a statement in the specifications contradicts a statement in the Standard Terms and Conditions, the statement in the specifications shall apply)

Preparation of Bid Response: All bid responses must address all aspects of the proposal including clearly answering all questions within the proposal. Bid responses must be typed or completed in ink and submitted on the forms supplied by the Iowa DOT.

Bid responses must be signed and received prior to the bid opening date and time as indicated on the Bid Response cover page or bid opportunity. The signed, submitted quotation or bidder's proposal shall become the official bid response to be considered for award.

No email, fax or web link bid responses will be accepted. Bid Responses must be signed, sealed and delivered in person or by a mail courier that ensures timely delivery.

A. Bid Proposal

1. **Bid Opening:** Bid openings are made public and conducted at the Iowa DOT, Ames complex unless otherwise specified. Bid responses received after the time of the bid opening will be returned unopened and considered non-compliant.
2. **Communications:** Questions concerning this proposal should be directed to the purchasing agent listed on the bid proposal. Inquiries can be written, phoned, or faxed. In all cases, written communication will take precedence over verbal communication
3. **Proposal Guarantee:** If required, the bid response page will indicate the amount required to be included in the bid response. A Proposal Guarantee can be supplied in one of the following ways: **(1)** Certified check or credit union certified share draft, cashier's check, or bank draft, drawn on a solvent bank or credit union. Certified checks and certified share drafts shall be drawn and endorsed in the amount indicated. Checks or drafts shall be made payable either to the Iowa Department of Transportation (Iowa DOT) or to the bidder. If payable to the bidder, the check or draft shall be endorsed without qualifications to the Iowa DOT by the bidder or an authorized agent. **(2)** An insurance or surety company may be retained to provide a bond in fulfillment of the proposal guarantee requirement. A properly completed and signed copy of the Proposal Guarantee (*Form 131084*) must accompany the bid. **The Iowa DOT's Proposal Guarantee form must be used; no other forms or formats will be accepted.**
4. **Pricing and Discount:** Unit prices shown on the bid/response shall be quoted as the price per unit (e.g., gal., case, each, etc.) as stated in the bid proposal. If there is a discrepancy between the unit bid prices, extension, or total amount of bid, the unit prices shall prevail. Unless otherwise indicated, prices shall be firm for the duration of the contract or purchase. Discounts for early payment are allowed, but not considered in award of the contract.

5. **Acceptance/Rejection:** The Iowa DOT reserves the right to accept or reject any or all bids and to waive irregularities or technicalities, provided such waiver does not substantially change the offer or provide a competitive advantage to any supplier(s). The Iowa DOT also reserves the right to accept that bid which is deemed to be in the best interests of the state. Any unauthorized changes, additions, or conditional bids including any ties to another bid or proposal or any reservations about accepting an award or entering into a contract, may result in rejection of the bid. Bids must remain available for award for thirty (30) days from date of bid opening.
6. **Bid Results & Disclosure:** Bid tabulations will be posted on the DOT website at www.iowadot.gov/purchasing under the *Bid Award* link referencing the proposal number with an award recommendation indicated. At the conclusion of the selection process, the contents of all received bid responses will be placed in the public domain and be open to inspection by interested parties, according to state law. Trade secrets or proprietary information that are recognized as such and are protected by law may be withheld if clearly identified as such in the proposal.
7. **Quality:** All material shall be new and of first quality. Items which are used, demonstrators, refurbished, obsolete, seconds, or which have been discontinued are unacceptable without prior written approval by the Iowa DOT.
8. **Recycled Content:** The Iowa Code encourages purchase of products and materials with recycled content, including but not limited to paper products, oils, plastic products, compost materials, aggregate, solvents, and rubber products. Recycled items or alternatives must be noted in the bid response, if known.
9. **Shipping Terms:** Deliveries shall be F.O.B. Destination unless otherwise specified. All deliveries shall be accompanied by a packing slip indicating the Supplier, quantities shipped, and the purchase order number(s). All delivery charges shall be included in the bid price and paid by the Supplier. No collect C.O.D. deliveries shall be accepted. When entering into a contract, the Supplier shall notify the freight company that all freight and delivery charges are to be prepaid by the Supplier. Goods delivered to the Iowa DOT Distribution Center at 800 Lincoln Way, Ames, IA shall be received between the hours of 7:30 a.m. and 3:30 p.m. on any day except Saturday, Sunday, or a holiday. For deliveries to other Iowa DOT locations, the Supplier may contact the destination location for available times to deliver as not all Iowa DOT locations have the same business hours. The Iowa DOT will not be liable for any freight claims or unpaid freight bills arising from contract or purchase order issues.

B. Award

The binding agreement (award) may be issued in the form a purchase order or contract or both depending on the requirements and complexity of the agreement.

1. **Method of Award:** Award shall be made to the lowest responsible, responsive bidder whose bid meets the requirements of the solicitation and is the most advantageous to the Iowa DOT unless otherwise specified. An Iowa bidder will be given preference over an out-of-state bidder when bid responses are equal in all aspects and are tied in price. By virtue of statutory authority preference will be given to products and provisions grown and coal produced within the State of Iowa.
2. **Award Protests:** Protests of award recommendations are to be addressed to the Director of Purchasing, and shall be made in accordance with paragraph 761--20.4(6)"e" of the Iowa Administrative Code.
3. **Contracts:** Successful contractor(s) may be sent either a formal Contract, Notification of Award or purchase order as confirmation of acceptance and award. Any of these binding agreements shall be for the term stated in the bid proposal or on a purchase order and may be renewed for additional period(s) under the same terms and conditions upon mutual agreement as defined. The successful bidder may not assign a contract to another party without written authorization from the Iowa DOT Purchasing Section. A service contract, including all optional renewals, shall not exceed a term of six years unless a state agency obtains a waiver of this provision pursuant to rule 11-11B.16 (8A).
4. **Payment Terms:** The Iowa DOT typically pays properly submitted vendor invoices within thirty (30) days of receipt, providing goods and/or services have been successfully delivered, installed or inspected (if required), and accepted. Invoices presented for payment must be only for quantities received by the Iowa DOT and must reference the purchase order number to be submitted for processing.

5. **Default:** Failure of the Supplier to adhere to specified delivery schedules or to promptly replace rejected materials shall render the Supplier liable for all costs in excess of the bid price when alternate procurement is necessary. This shall not be the exclusive remedy and the Iowa DOT reserves the right to pursue other remedies available to it by law or under the terms of the binding agreement.
6. **Default:** Failure of a Contractor other than a Supplier to meet any specified project completion deadline shall render the Contractor liable for all costs incurred by DOT that were: a) necessary to meet said deadline; or b) necessary to complete said project after said deadline. This shall not be the exclusive remedy and the Iowa DOT reserves the right to pursue other remedies available to it by law or under the terms of the agreement.

C. General

1. **Administrative Rules:** For Additional details on the rules governing the actions of the Iowa DOT Purchasing Section, refer to 761 IAC, Chapter 20, Iowa Administrative Code, entitled "Procurement of Equipment, Materials, Supplies and Services".
2. **Affirmative Action:** The Contractor (and also subcontractor, vendor or supplier) is prohibited from engaging in discriminatory employment practices forbidden by federal and state law, executive orders and rules of the Iowa Department of Management, pertaining to equal employment opportunity and affirmative action. Contractor may be required to have on file a copy of their affirmative action program, containing goal and time specifications. Contractors doing business with Iowa in excess of $5,000 annually and employing 50 or more full time employees may be required to file with the Iowa Department of Management a copy of their affirmative action plan. Failure to fulfill these non-discrimination requirements may cause the contract to be canceled and the contractor declared ineligible for future state contracts or subject to other sanctions as provided by law or rule.
3. **Applicable Law:** The contract shall be governed under the laws of the State of Iowa. The contractor shall at all times comply with and observe all federal and state laws, local laws, ordinances, and regulations which are in effect during the period of a contract and which in any manner affect the work or its conduct. Any legal action relating to a contract shall only be commenced in the Story County, Iowa, District Court or the United States District Court for the Southern District of Iowa.
4. **Conflict of Interest:** No state or county official or employee, elective or appointive shall be directly or indirectly interested in any contract issued by the Iowa DOT, see Code of Iowa 314.2.
5. **Debarment and Vendor Suspension:** By submitting a proposal, the contractor is certifying that it and its principals and/or subcontractors are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by the State of Iowa or any Federal department or agency.
6. **Equal Opportunity:** Firms submitting bids must be an "Equal Opportunity Employer" as defined in the Civil Rights Act of 1964 and in Iowa Executive Order Number Thirty-four.
7. **Infringement:** Goods shall be delivered free of the rightful claim of any third party by way of infringement. Contractor shall indemnify and save harmless the State of Iowa and the Iowa DOT against all claims for infringement of, and/or royalties claimed under, patents or copyrights on materials and equipment furnished under this bid.
8. **Records Audit:** The contractor agrees that the Auditor of the State of Iowa or any authorized representative of the state, and where federal funds are involved, the Comptroller General of the U.S. Government, shall have access to and the right to examine, audit, excerpt, and transcribe any directly pertinent books, documents, papers, and records of the contractor relating to orders, invoices, or payments of a contract or purchase order.
9. **Targeted Small Businesses:** The Iowa DOT seeks to provide opportunities for women and/or minority small business enterprises. To apply for certification as an Iowa Targeted Small Business, contact the Iowa Department of Inspection and Appeals (515-281-5796). Contractors shall take documented steps to encourage participation from Targeted Small Businesses for the purpose of subcontracting and supplying of good or services or both.
10. **Taxes:** Prices quoted shall not include state or federal taxes from which the state is exempt. Exemption certificates will be furnished upon request.
11. **Termination:**
    - **Termination Due to Lack of Funds or Change in Law**
      The Iowa DOT shall have the right to terminate this Contract without penalty by giving thirty (30) days written notice to the vendor as a result of any of the following:
      • Adequate funds are not appropriated or granted to allow the Iowa DOT to operate as required and to fulfill its obligations under contract.
      • Funds are de-appropriated or not allocated or if funds needed by the Iowa DOT, at the

Iowa DOT's sole discretion, are insufficient for any reason.

- The Iowa DOT's authorization to operate is withdrawn or there is a material alteration in the programs administered by the Iowa DOT.
- The Iowa DOT's duties are substantially modified.

Following a 30 day written notice, the Iowa DOT may terminate a binding agreement in whole or in part without the payment of any penalty or incurring any further obligation to the Supplier. Following termination upon notice, the Supplier shall be entitled to compensation upon submission of invoices and proper proof of claim for goods and services under contract up to and including the date of termination.

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Section 1 Introduction

1.1 Purpose & Overview of the RFB Process

The purpose of this Request for Bid (RFB) is to solicit Bid Responses from responsible, responsive Bidders to provide the goods and/or services identified on the RFB cover page and described further in Section 3 of this RFB. The Iowa DOT intends to award a contract(s) beginning and ending on the dates listed on the Procurement Timetable. The Iowa DOT may renew the contract(s) for up to the number of annual extensions identified on the Procurement Timetable at the sole discretion of the Iowa DOT. Any contract(s) resulting from the RFB shall not be an exclusive contract.

Bidders will be required to submit Bid Responses according to the Procurement Timetable. The Iowa DOT will evaluate all responsible Bidders that submit timely responsive Bid Responses to be considered for award.

1.2 Definitions

The terms used in individual sections of this document are intended to be consistent with those commonly used in the application field in question. When responding, use the terms and acronyms used in this document, and define any terms or conditions that require further clarification.

1.2.1 "Bid Response" means the bid document submitted by the bidder in response to the RFB.

1.2.2 "Contract" or "Resulting Contract" means the contract(s) entered into with the successful Bidder(s) as described in section 4.

1.2.3 "Bidder" means individual, company or entity submitting a response in response to the RFB.

1.2.4 "Iowa DOT" means the Iowa Department of Transportation.

1.2.5 "Participating Agency" or "Participating Agencies" means the agency or agencies identified on the RFB cover sheet as Participating Agencies and any other agency that decides to utilize the executed contract.

1.2.6 "Procurement Timetable" *(on the page immediately following the RFB cover)* provide timeline, event and date information.

1.2.7 "Purchase Order" means the documentation issued by the State to the Contractor for a purchase of goods and/or services in accordance with the terms and conditions of the Contract. It may include an identification of the items to be purchased, the delivery date and location, the address where the supplier should submit the invoices, and any other requirements deemed necessary by the State. Any preprinted contract terms and conditions included on Bidder's forms or invoices shall be null and void.

1.2.8 "Responsible Bidder" means a bidder that has the capability in all respects to perform the requirements of the Bid Proposal specifications. In determining whether a Bidder is a responsible, responsive Bidder, the Iowa DOT may consider various factors including, but not limited to, the Bidder's competence and qualifications to provide the goods or services requested, the Bidder's integrity and reliability, the past performance of the Bidder relative to the quality of the goods or services offered by the Bidder, the proposed terms of delivery, and the best interest of the Iowa DOT and Participating Agencies.

1.2.9 "RFB" means Request for Bid and any attachments, exhibits, schedules or addenda hereto. A written response by a Bidder shall be considered a bid and referred to as a Bid Response.

1.2.10 "State" means the Iowa DOT, State of Iowa, and Participating Agencies identified on the title page and all state agencies, boards, and commissions, and any political subdivisions making purchases off of the resulting Contract as permitted by this RFB.

1.2.11 "Subcontractor" Includes every person furnishing material, equipment or performing labor as a sublet of any part of contract.

1.3 General

1.3.1 Owner:

The Owner of these projects is the Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa 50010.

Project Location:

Newton Maintenance Garage located at 2300 W. 19th St. S., Newton IA 50208.

1.4 Bidding Documents

1.4.1 Addenda

- Addenda, if issued, will be posted to the Iowa DOT"s website. All addendums must be acknowledged by bidders and included in the Bid Response.
- All addenda so issued shall become part of the contract documents.

1.4.2 Withdrawal Period

Prime Contractors, subcontractors and material suppliers on these projects agree to guarantee their proposal costs and work to be performed for a period of thirty (30) days after the date of receipt of bids.

Section 2 Administrative Information

2.1 Issuing Agent

The Issuing Agent, identified on the cover page is the sole point of contact regarding the RFB from the date of issuance until the notice of intent to award is issued (selection of the successful contractor).

2.2 Restriction on Communication

From the issue date of this RFB until the notice of intent to award is issued (announcement of the successful bidder), bidders may contact only the Issuing Agent.

The Issuing Agent will respond only to questions regarding the procurement process. Questions related to the interpretation of this RFB must be submitted in writing to the Issuing Officer by the deadline found in the Procurement Timetable listed immediately after the cover sheet**.** Verbal questions related to the interpretation of this RFB will not be accepted. Questions related to the interpretation of this RFB must be submitted as provided in section 2.5. Contractors may be disqualified if they contact any state employee other than the Issuing Agent. *Exception: Contractors may contact the State Targeted Small Business Office on issues related to the preference for Targeted Small Businesses. See Section 2.32.*

In NO CASE shall verbal communication override written communications. Only written communications are binding on the State.

The Iowa DOT assumes no responsibility for representations concerning conditions made by its officers or employees prior to the execution of a contract, unless such representations are specifically incorporated into this RFB. Verbal discussions pertaining to modifications or clarifications of this RFB shall not be considered part of the RFB unless confirmed in writing. All such requests for clarification shall be submitted in writing. Any information provided by the Contractor verbally shall not be considered part of that Contractor's proposal. Only written communications from the Contractor and received by the Department shall be accepted.

With the exception of the written Bid Response which must be submitted by Contractors in accordance with Section 2 herein, communications between the Issuing Agent and Contractors may be conducted by regular prepaid US mail, courier service, e-mail or facsimile transmission.

2.3 Downloading the RFB from the Internet

All correspondence for this Bid Proposal will be posted on the Iowa DOT's website at **www.iowadot.gov/purchasing/lettingschedule.** **Bidders are required** to visit the Iowa DOT's home page periodically for any and all addendums or other pertinent information regarding this bid opportunity.

2.4 Procurement Timetable

The dates listed in the Procurement Timetable (on the page immediately following the RFB cover) are set forth for informational and planning purposes; however, the Iowa DOT reserves the right to change the dates. If a change is made to any of the deadlines for Contractor submission, the Iowa DOT will issue an addendum to the RFB. All times listed are Central Times.

2.5 Questions, Requests for Clarification, and Suggested Changes

Contractors are invited to submit written questions and requests for clarifications regarding the RFB during the time indicated in the Procurement Timetable. Contractors may also submit suggestions for changes to the requirements of this RFB. The questions, requests for clarifications or suggestions must be in writing and received by the Issuing Agent on or before the deadline stated in the Procurement Timetable. Oral questions will not be permitted. If the questions, requests for clarifications, or suggestions pertain to a specific section of the RFB must be referenced.

Written responses to questions, requests for clarifications or suggestions will be posted on or before the deadline stated in the Procurement Timetable and posted on the Iowa DOT's website (see Section 2.3) If the Iowa DOT decides to adopt a suggestion, the Iowa DOT will issue an addendum to the RFB.

The Iowa DOT assumes no responsibility for verbal representations made by its officers or employees unless such representations are confirmed in writing and incorporated into the RFB.

Each bidder must inform themselves fully of the conditions relating to the proposal. Failure to do so will not relieve a successful bidder of their obligation to furnish all services required to carry out the provisions of his contract. Insofar, as possible, the Contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of, or interference with the work of any other contractor.

If a bidder discovers any significant ambiguity, error, conflict, discrepancy, omission, or other deficiency in this RFB, the bidder should immediately notify the Issuing Agent in writing of such error and request modification or clarification of the RFB document.

2.6 Revisions to Contractor Bid Response

Contractors who submit Bid Proposals in advance of the bid opening date may withdraw, modify, and resubmit Bid Proposals at any time until the bid opening date and time. Contractors must notify the Issuing Agent in writing if they wish to withdraw their Bid Response. A Contractor shall not withdraw its Bid Response or its prices prior to the end of the one hundred and eighty (180) day period immediately following the notice of intent to award a contract.

2.7 Submission of Bid Responses

The Iowa DOT must receive Bid Responses addressed to the Department of Transportation, Purchasing Section, 800 Lincoln Way, Ames, Iowa 50010 before the deadline stated in the Procurement Timetable. **This is a mandatory requirement and will not be waived by the Iowa DOT**. Any Bid Response received after this deadline will be rejected and returned unopened to the contractor.

Contractors mailing Bid Responses must allow ample mail delivery time to ensure receipt by the Iowa DOT on or before the due date. Postmarking by the due date will not substitute for actual receipt of the Bid Response.

Electronic mail and faxed Bid Responses will not be accepted.

Contractors must furnish all information necessary to evaluate the Bid Response. Bid Responses that fail to meet the mandatory requirements of the RFB will be disqualified. Verbal information provided by the Contractor shall not be considered part of the Contractor's Bid Response.

2.8 Bid Response Opening

The Iowa DOT will open Bid Responses on the date and time stated in the Procurement Timetable. Bid Responses will remain confidential until a bid tabulation has been posted on the Iowa DOT's website for all bidders to view the results in the form of "Intent to Award" See Iowa Code Section 72.3.

The names of the Contractors who submit compliant Bid Responses within the time frame permitted will be available for public review after the contract has been awarded.

2.9 Costs of Preparing the Bid Response

The costs of preparation and delivery of a Bid Response are solely the responsibility of the Contractor.

No payments shall be made by the State to cover costs incurred by any Contractor in the preparation of or the submission of this RFB or any other associated costs.

2.10 Reasonable Accommodations

Upon request, the Iowa DOT will provide reasonable accommodations, including the provision of informational material in an alternative format, for individuals with disabilities. If accommodations are required at time of a bid opening, contact the Issuing Agent designated on the cover page.

2.11 Rejection of Bid Responses

The Iowa DOT reserves the right to reject any or all Bid Responses, in whole or in part, received in response to this RFB at any time prior to the execution of a written contract. Issuance of this RFB in no way constitutes a commitment by the Iowa DOT to award a contract. This RFB is designed to provide Contractors with the information necessary to prepare a competitive Bid Response. This RFB process is for the Iowa DOT benefit and is intended to provide the Iowa DOT with competitive information to assist in the selection of a Contractor to provide services.

It is not intended to be comprehensive and each Contractor is responsible for determining all factors necessary for submission of a comprehensive Bid Response.

The Iowa DOT reserves the right to negotiate the terms of the contract, including the award amount, with the awarded Contractor prior to entering into a contract. If contract negotiations cannot be concluded successfully, the Iowa DOT reserves the right to negotiate a contract with the next lowest Bidder.

2.12 Disqualification

The Iowa DOT may reject outright and shall not evaluate proposals for any one of the following reasons:

2.12.1 The Contractor states that a requirement of the RFB cannot be met.

2.12.2 The Contractor's Bid Response materially changes a requirement of the RFB or the Bid Response is not compliant with the requirements of the RFB.

2.12.3 The Contractor's response limits the rights of the Iowa DOT.

2.12.4 The Contractor fails to include a *proposal guarantee*, also known as bid bond or bid security, *if required*. See Bid Response cover page and **Section 2.33.**

2.12.5 The Contractor fails to include any signature, certification, authorization, stipulation, disclosure or guarantee (if required).

2.12.6 The Contractor presents the information requested by this RFB in a format inconsistent with the instructions of the RFB or otherwise fails to comply with the requirements of this RFB.

2.12.7 The Contractor initiates unauthorized contact regarding the RFB with state employees.

2.12.8 The Contractor provides misleading or inaccurate responses.

2.12.9 The Contractor fails to attend the mandatory Contractors Conference or Pre-Bid meeting.

2.12.10 The Contractor's Bid Response is materially unbalanced.

2.12.11 There is insufficient evidence (including evidence submitted by the Contractor and evidence obtained by the Iowa DOT from other sources) to satisfy the Iowa DOT that the Contractor is a "Responsible Contractor".

2.12.12 The Contractor alters the Bid Proposal language in any way.

2.13 Nonmaterial and Material Variances

The Iowa DOT reserves the right to waive or permit cure of nonmaterial variances in the Bidder's Bid Response if, in the judgment of the Iowa DOT, it is in the Iowa DOT best interest to do so. Nonmaterial variances include minor informalities that do not affect responsiveness; that are merely a matter of form or format; that do not change the relative standing or otherwise prejudice other Contractors; that do not change the meaning or scope of the RFB; or that do not reflect a material change in the services. In the event the Iowa DOT waives or permits cure of nonmaterial variances, such waiver or cure will not modify the RFB requirements or excuse the Contractor from full compliance with RFB specifications or other contract requirements if the Contractor is awarded the contract. The determination of materiality is in the sole discretion of the Iowa DOT.

2.14 Reference Checks

The Iowa DOT reserves the right to contact any reference to assist in the evaluation of the Bid Response, to verify information contained in the Bid Response and to discuss the Contractor's qualifications and the qualifications of any subcontractor identified in the bidders Bid Response.

2.15 Information From Other Sources

The Iowa DOT reserves the right to obtain and consider information from other sources concerning a Contractor, such as the Contractor's capability and performance under other contracts, the qualifications of any subcontractor identified in the Contractor's Bid Response, specifically, the Contractor's financial stability, past or pending litigation, and publicly available information.

2.16 Verification of Bid Response Contents

The content of a Bid Response submitted by a Contractor is subject to verification. Misleading or inaccurate responses shall result in disqualification and rejection of the Bid Response.

2.17 Criminal History and Background Investigation

The Contractor hereby explicitly authorizes the Iowa DOT to conduct criminal history and/or other background investigation(s) of the Contractor, its officers, directors, shareholders, partners and managerial and supervisory personnel retained by the Contractor for the performance of the contract.

2.18 Bid Response Clarification Process

The Iowa DOT reserves the right to contact a Contractor after the submission of Bid Response for the purpose of clarification to ensure mutual understanding.

This contact may include written questions, interviews, site visits, a review of past performance if the Contractor has provided goods or services to the Iowa DOT or any other political subdivision wherever located, or requests for corrective pages in the Contractor's Bid Response. The Iowa DOT will not consider information received if the information materially alters the content of this Bid Proposal or alters the type of goods and services the Contractor is offering to the Iowa DOT. An individual authorized to legally bind the Contractor shall sign responses to any request for clarification. Responses shall be submitted to the Iowa DOT within the time specified in the Iowa DOT request. Failure to comply with requests for additional information may result in rejection of the Bid Response as non-compliant.

2.19 Disposition of Bid Responses

At the conclusion of the selection process, the contents of all Bid Responses will be in the public domain and be open to inspection by interested parties except for information for which Contractor properly requests confidential treatment or is subject to exceptions provided in Iowa Code Chapter 22 or other applicable law.

2.20 Public Records and Requests for Confidential Treatment

The Iowa DOT may treat all information submitted by a Contractor as public information following the conclusion of the Intent to Award. Iowa DOT release of information is governed by Iowa Code chapter 22. Contractors are encouraged to familiarize themselves with chapter 22 before submitting a Bid Response. The Iowa DOT will copy and produce public records as required to comply with the public records laws.

2.21 Release of Claims

By submitting a Bid Response, the Contractor agrees that it will not bring any claim or cause of action against the Iowa DOT based on any misunderstanding concerning the information provided herein or concerning the Iowa DOT failure, negligent or otherwise, to provide the Contractor with pertinent information as intended by this RFB.

2.22 Award Notice and Acceptance Period

Notice of intent to award will be posted on the Iowa DOT's website at www.iowadot.gov/purchasing/bidaward Final negotiation and execution of the contract(s) shall be completed no later than thirty (30) days from the date of the Notice of Intent to Award or such other time as designated by the Iowa DOT.

If the successful Contractor fails to negotiate and deliver an executed contract by that date, the Iowa DOT in its sole discretion may cancel the award and award the contract to the next lowest bidder meeting the specifications.

2.23 No Contract Rights until Execution

The full execution of a written contract shall constitute the making of a contract for services and no Contractor shall acquire any legal or equitable rights relative to the contract services until the contract has been fully executed by the successful Contractor and the Iowa DOT.

2.24 Restrictions on Gifts and Activities

Iowa Code Chapter 68B restricts gifts which may be given or received by state employees and requires certain individuals to disclose information concerning their activities with state government. Contractors are responsible to determine the applicability of this Chapter to their activities and to comply with the requirements. In addition, pursuant to Iowa Code section 722.1, it is a felony offense to bribe or attempt to bribe a public official.

The laws of Iowa provide that it is a felony to offer, promise, or give anything of value or benefit to a state employee with the intent to influence that employee's acts, opinion, judgment or exercise of discretion with respect to that employee's duties. Evidence of violations of this statute will be submitted to the proper prosecuting attorney.

2.25 No Minimum Guaranteed

The Iowa DOT anticipates that the selected Contractor will provide services as requested by the Iowa DOT. The Iowa DOT will not guarantee any minimum compensation will be paid to the Contractor or any minimum usage of the Contractor's services.

2.26 Conflicts Between Terms

The Iowa DOT reserves the right to accept or reject any exception taken by the Contractor to the terms and conditions contained in this RFB. Should the Contractor take exception to the terms and conditions required by the Iowa DOT, the Contractor's exceptions may be rejected and the entire proposal declared nonresponsive. The Iowa DOT may elect to negotiate with the Contractor regarding contract terms that do not materially alter the substantive requirements of the request for proposals or the contents of the Contractor's Bid Response.

2.27 News Releases

No news releases or other materials pertaining to this procurement, or any part of this proposal, will be made available to the media or the public, the Contractor's clients or potential clients without the prior written approval of the Iowa DOT.

2.28 Pre-Bid Conference

If the Procurement Timetable indicates a Contractor's Pre-Bid Conference will be held in conjunction with this RFB, it will be held at the date, time, and location listed on the Procurement Timetable immediately following the cover page. If Attendance at the Contractor's Pre-Bid Conference is a mandatory requirement to submit a Bid Response, it will be indicated on the Procurement Timetable. The purpose of the Pre-Bid conference is to discuss with prospective Contractors the work to be performed and allow prospective Contractors an opportunity to ask questions regarding the RFB. Verbal discussions at the Pre-Bid conference shall not be considered part of the RFB unless confirmed in writing by the Iowa DOT and incorporated into this RFB. The conference may be recorded. Questions asked at the conference that cannot be adequately answered during the conference may be deferred.

A copy of the questions and answers will be posted on the DOT website for viewing.

2.29 Contractors Responsibilities

2.29.1 Codes, Laws and Regulations

The laws of the State of Iowa in relation to and pertaining to public improvements shall apply to these projects. All construction, materials and methods shall comply with the State and Local Building Codes and with Local Ordinances, except where plans and specifications establish a higher standard.

2.29.2 Licenses, Permits and Inspections

The Bidders shall comply with all codes, laws, ordinances, rules and regulations of any public authority having jurisdiction that bears on the performance of its work. Bidders shall pay for all licenses, permits and inspection fees required for its work. Bidders must furnish copies of all

approved inspection certificates and approvals from authorities having jurisdiction in a timely fashion upon completion of the work.

2.30 Consideration of Bids

2.30.1 Rejection of Bids

The Iowa DOT reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Iowa DOT that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.
Conditional bids will not be accepted.

2.30.2 Qualification of Bidder

The Iowa DOT may make such investigations as they deem necessary to determine the ability of the Bidder to perform the required work, and the bidder shall furnish to the Iowa DOT all such information and data for this purpose as the Iowa DOT may request.

2.31 Performance and Payment Bonds

2.31.1 Bonds

If the contracted estimated value is $25,000 or more, the Bidder shall furnish bonds covering the faithful performance of 100% of the Contract and the payment of all obligations arising thereunder. One copy of the bond shall be submitted on Iowa Department of Transportation Form 131070. All items must be properly filled in, including Bidder's signature. Resident commission agent or attorney-in-fact must file a copy of the power of attorney.

2.31.2 Power of Attorney

Attorney-in-fact who signs the Proposal Guarantee, Performance Bond, and Labor and Material Payment Bond must file with each bond a certified and effectively dated copy of the Power of Attorney.

2.32 Labor Regulations

All Bidders, before entering into a contract with the Department, must be registered with the Division of Labor in the Iowa Department of Workforce Development (515-281-3606) according to chapter 91C, Code of Iowa 2003.

2.33 Proposal Guarantee

Each bid must be supported by a Proposal Guarantee in the sum indicated on the Bid Response cover page (if required). See Standard Terms and Conditions included in the Bid Proposal section A-3.

Certified checks and credit union share drafts shall be certified, or the cashier's check shall be drawn and endorsed, in an amount not less than indicated in the Bid Proposal. If a proposal guarantee is submitted, it must be submitted on **Iowa DOT Form No. 131084 or bid will be rejected.**

The proposal guarantee from the qualified responsive low bidder will be retained until a contract is entered into and the required Bonds and Insurance Certificates are filed. All other bid securities will be returned after the award has been made.

Section 3 General Requirements

3.1 Scope of Work

This project is for Contractor to provide all materials, labor, and equipment necessary to complete an electrical upgrade for the Newton Maintenance Garage located at 2300 W. 19th St. S., Newton IA 50208 according to plans and specifications. The project will include:
• Service Equipment, including metering and secondary conduits
• Electrical Distribution Equipment, including panels and feeder circuits
• Emergency Generator and automatic transfer switch
Installation includes site lighting, receptacles and foundation pad.

The project building will be occupied by the Owner and in normal use through standard business days and times (Monday-Friday, 7:00 AM - 4:00 PM). Work, including any significant power outage, must be performed without major disruption to the Owner's normal activities. As a result, work that requires or results in a power disruption must be performed during weekends, extended holiday weekends, and/or after 5:00 PM and before 6:00 AM. Coordinate any proposed power outage(s) with the facility administrator.

3.2 Adoption of General Conditions

3.2.1 The General Requirements of this Contract shall include the "General Conditions", "Plans and Specifications" and any and all requirements of this RFB, as herein stated.

3.2.2 "THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION", A.I.A. FORM #A-201, LATEST EDITION AND A.I.A. DOCUMENT, "INSTRUCTIONS TO BIDDERS", FORM #A-701, LATEST EDITION, SHALL BE INCLUDED, AS MODIFIED IN THE "SUPPLEMENTARY INSTRUCTIONS TO BIDDERS" AND "SUPPLEMENTARY GENERAL CONDITIONS", AND BOUND WITH THE STANDARD FORM OF AGREEMENT BETWEEN THE CONTRACTOR AND OWNER", A.I.A. FORM #101, LATEST EDITION, AS A PART OF THIS CONTRACT SPECIFICATION.

3.2.3 All bidder information and conditions, bid check lists and similar documents included in the specifications issued by the Iowa DOT, Ames, Iowa are hereby made a part of the General Conditions.

3.3 Contractor Response

3.3.1 Guidelines

- Contractors shall comply with Iowa Occupational Safety and Health Standards as found in 29 CFR Parts 1910 and 1926. Of particular importance are those standards referring to the use of personal protective equipment (PPE), fall protection and ventilation.
- Contractor may be required to make available to the Iowa DOT all Material Safety Data Sheets (MSDS) for all products provided at time the apparent low bidder has been determined. MSDS shall be sent to the Issuing Agent (when applicable) prior to issuance of the contract.

3.3.2 Guarantee

The Contractor shall guarantee all work executed under this contract, both as the workmanship and materials, for a period of twelve (12) months after the substantial completion date. Neither the final payment nor any provision of the contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship. The Contractor shall remedy any defect thereto and pay for any damage to other work resulting therefrom, which shall appear within a period of one (1) year from the date of the final acceptance. With one month remaining in the guarantee period, the Contractor shall notify the Iowa DOT and set up a complete walk-through inspection.

- All materials, items of equipment, and workmanship furnished under this division of the specifications shall carry the standard warranty against all defects in material and workmanship. Any fault due to defective or improper material, equipment, or workmanship which may develop, shall be made good, forthwith.
- The Guarantee shall include, but not be limited to the following elements and services:
    a. Repair or replace defective materials, equipment, workmanship and installation that develops within the guarantee period, promptly and to Iowa DOT's satisfaction and correct damage caused in making necessary repairs and replacements, including all other damage done to areas, materials, and other systems resulting from the failure or defect, under guarantee by and at the expense of the Contractor.
    b. Replace material or equipment that requires excessive service during guarantee period, as defined and as directed by the Iowa DOT.
    c. Make all service calls, replacements, repairs and adjustments during the guarantee period without cost to the Iowa DOT.

3.3.3 Workmanship

Work shall be performed in best, most workmanlike manner by mechanics, Contractor personnel. Installation shall be made by the manufacturer or their authorized installer where specified. Unsatisfactory work shall be replaced at Contractor's expense.

3.3.4 Shop Drawings and Samples

- Shop drawings, specification data, and samples shall be submitted to the Iowa DOT for approval and/or selection prior to the placing of orders for any equipment and materials.
- Shop Drawings: Submit details of materials, systems and equipment to the Iowa DOT for review. The Contractor shall provide eight copies of each shop drawing for all systems and equipment as indicated in each Division of the specifications: (Note: Submission of Shop Drawings not in binders, but in loose sheet form, may be considered cause for rejection with resubmission in proper form required).

- Product Data: Submit manufacturer's product data to the Iowa DOT for approval, consisting of complete specifications, test report data, installation instructions, and other pertinent technical data required to complete product.
    a. Intent of Shop Drawings and Product Data review is to check for capacity, rating and certain construction features. Ensure that work meets requirements of Contract Documents regarding information that pertains to fabrication processes or means, methods, techniques, sequences and procedures of construction, and for coordination of work of this and other Sections.
    b. Perform work in accordance with submittals marked "No Exception Taken" to extent that they agree with Contract Documents. Submittal review shall not diminish responsibility under this Contract for dimensional coordination, quantities, installation, wiring, supports, access, service and errors, nor for deviations from requirements of Contract Documents. Requirements of Contract Documents are not limited, waived, nor superseded by Shop Drawing Review.
    c Submittals of various systems shall indicate equipment supplier used and that all equipment of particular system is being furnished by same supplier. Supplier shall be qualified to supervise installation, connection and testing of system and have competent maintenance service for respective systems.
    d. Shop Drawings and samples will be reviewed with reasonable promptness and will be stamped indicating appropriate action as follows:
        1) **"No Exception Taken"** means that fabrication, manufacture, or construction may proceed providing submittal complies with Contract Documents.
        2) **"Make Corrections Noted"** means that fabrication, manufacture, or construction may proceed providing submittal complies with Engineer's notation and Contract Documents. If, for any reason, notations cannot be complied with, resubmit as described for submittals stamped **"Reject".**
        3) **"Revise and Resubmit"** means submittal information is incomplete or ambiguous and therefore clarification or additional information is required to ascertain compliance with the contract documents, and that fabrication, manufacture or construction shall not proceed. Provide additional data required by the contract documents and resubmit.
        4) **"Reject"** means that submittal does not comply with Contract Documents and that fabrication, manufacture, or construction shall not proceed. Resubmit in accordance with requirements of Contract Documents.

3.3.5 Use of Premises

- All Contractors shall confine all apparatus, storage of materials and construction to areas as directed by the Iowa DOT and shall not encumber the premises with materials.
- Notwithstanding any approvals or instructions which must be obtained by the Contractors from the Iowa DOT in connection with use of premises, the responsibility for the safe working conditions at the site shall remain that of the Contractors.

3.3.6 Cutting and Patching

Similarly, each Contractor shall perform all necessary patching that result from cutting of holes. The Prime Contractor shall resolve any conflict between trades, and it will be the Contractor's responsibility to see all patches are made. Any and all through-wall penetration requiring structural modifications and or structural members shall be provided by the Prime Contractor.

3.3.7 Clean-Up

Throughout the period of construction, the Contractor shall clean up all work and yard areas and keep the area reasonably free of debris, etc., as required for proper protection of the work. Prior to final acceptance, the Contractor shall remove all debris, tools and equipment from the project site.

3.3.8 Inspection and Supervision

- All work shall be according to the approved design and shall be under the direct supervision of the Iowa DOT.
- Periodic site inspections will be carried on by the Iowa DOT with the Contractor to ensure coordination of the project.
- The Iowa DOT will provide a list of items requiring inspection prior to or during installation. The Contractor is to give the Iowa DOT notice no less than 24 hours in advance of installation.
- The Iowa DOT contact shall be: Daniel .

3.3.9 Contractors Construction Schedule

The Successful Bidder will, at the pre-construction meeting, submit a detailed construction schedule including dates of commencement and completion on each phase of the proposed construction. Upon acceptance of the schedule, the Contractor will be expected to adhere to these dates as proposed.

3.3.10 Verifying Work of Other Contractors

- When a Contractor's work depends on proper execution of work by other contractors, such Contractor shall promptly report to the Iowa DOT project lead any defects in such work and/or discrepancies between executed work plans, drawings or specifications.
- Contractors shall employ such methods and means in carrying out work as will not cause interruption or interference with any other Contractor. General Contractors shall give other Contractors sufficient notice to permit installation of sleeves, piping, conduit, and other items, prior to placing concrete or laying masonry. Any Contractor failing to comply with above shall be responsible for expense caused by such failure.

3.4 Sub-Contractors

- Specific attention shall be given by the Contractor to Article 5 of the A.I.A. Document A-201, "The General Conditions of the Contract for Construction".
- The Successful Bidder for the project shall furnish the Iowa DOT with a complete list of subcontractors, schedule of values, and major material suppliers at the pre-construction meeting.
- The Iowa DOT shall approve and maintain the list of subcontractors and major suppliers and issue a general approval of same after official award of the contract, subject to the specific requirements of the Plans, Specifications and the "General Conditions of the Contract, and of these supplementary Conditions," " Special Provisions," and elsewhere with contract documents, as applicable. Deviations from the list of subcontractors and material suppliers shall be made only with the specific approval of, or at the request of the Iowa DOT.

3.5 Protection of Persons and Property

3.5.1 Safety and Health Regulations

The Contractor, serving in the role of the employer for the project, shall exercise at all times the protection of all persons and property. Contractor shall comply with all requirements of the Occupational Safety and Health Act of 1970, Iowa Bureau of Labor and all applicable state and municipal laws, as well as building and construction codes. It is the Contractor's responsibility to enforce all regulations that apply to these projects.

3.5.2 Protection of Site

The Contractor shall furnish all permanent and temporary guards, signs, fencing, shoring, and underpinning and other protection necessary in the performance of the contract and for the necessary protection of all public and private property and shall be responsible for any damage caused by failure to comply with this requirement.

- After building operations are completed, the Contractor shall replace or satisfactorily repair all damaged walks or pavements which shall have become damaged due to operations of these projects.
- The Contractor shall take care of all underground pipes, conduits, etc., encountered in the excavations, and protect same from damage until such time as they can be permanently disposed of.
- The Contractor shall continuously maintain adequate protection of all work from damage and shall protect the Owner's property and adjacent property from damage arising in connection with this contract.

3.6 Miscellaneous Provisions

3.6.1 Iowa State Building Code

- All construction under this section shall conform to the requirements of the Iowa State Building Code. The provisions of the Iowa State Building Code will be strictly adhered to, and will take precedence over any local Governmental Body Regulations. Work not regulated by the Iowa State Building Code shall be performed in accordance with local Governmental Body Regulations.

- All construction shall conform to the Standard Specifications for Highway and Bridge Construction, Series 2012 where applicable.

3.6.2 Discriminatory Practices

- All Contractors or subcontractors working under the terms of these projects are prohibited from engaging in discriminatory employment practices as forbidden by the Iowa Civil Rights Act of 1965. These provisions shall be fully enforced, as directed through Executive Order Number 34 dated July 22, 1988. Any breach of the provisions contained in the Iowa Civil Rights Acts of 1965 shall be regarded as a material breach of contract.

- Bidder agrees that if awarded a contract to construct and/or remodel any portion of the project described in these Specifications, neither the Contractor nor any subcontractors will engage in any discriminatory employment practices based on race, color, creed, religion of natural origin and that they will in all contracts comply with all statutes of the State of Iowa against discrimination. Failure to do so could be deemed a material breach of contract.

3.7 Contractors Responsibilities

3.7.1 Site Visit

- It is recommended, but not required, that prospective bidders on these projects shall visit the job site prior to submitting a quotation. It is also recommended that prospective bidders visit a similar completed project.
- No considerations or revision in the contract price or scope of the project will be considered by the Iowa DOT for any item which could have been revealed by a thorough on-site inspection and examination.

3.7.2 Conditions of Work

Bidders must inform themselves fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve successful bidders of their obligation to furnish all material and labor necessary to carry out the provisions of this contract. Insofar as possible, the Contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of, or interference with the work of any other Contractor.

3.7.3 Obligation

At the time of the bid opening, each bidder will be presumed to have read and become thoroughly familiar with the drawings, specifications, and other contract documents, including all addenda.

Bidders are responsible for the proper submission of bids. Omissions by a bidder to examine a form, instrument, or document shall in no way relieve that bidder from any obligations in respect to their bid.

3.8 Bid Proposal Documents

3.8.1 Plans and Specifications

Electronic Plans and specifications are available on the Iowa DOT's website, www.iowadot.gov/purchasing. The Bidder is responsible for all copies of plans and specifications necessary for the execution of the work.

In the event of a conflict between the specifications and the drawings, the specifications shall take precedence.

3.8.2 Materials and Equipment

Manufacturers and products, in addition to those specifically listed, may be acceptable when it is proven to the satisfaction of the Iowa DOT that:
The level of quality proposed is equal to or better than that of the referenced manufacturer/Bidder's quality.

The technical characteristics of the proposed product meet or exceed the requirements of the drawings and specifications.
The use of the materials or equipment does not require major revisions of the drawings and specifications to permit their use.

Any additional cost in other work incurred as a result of these approvals shall be borne by the Contractor, including all costs for modifying other related materials/systems and the cost of any additional engineering or design fees required to accommodate the substitution/approval.

Contractors must be confident that a proposed product or material meets or exceeds the requirements shown on the drawings and specifications. It will be the responsibility of the Contractor to verify and demonstrate that a proposed product meets or exceed the drawings and specifications at time of shop drawing reviews. If a proposed product or material is determined to be technically unacceptable as judged by the Iowa DOT, the Contractor shall be required to supply products or materials that meet the requirements required to supply products or materials that meet the requirements stated in the drawings and specifications at no cost increase to the Iowa DOT. Under no circumstances will the Iowa DOT be required to prove that proposed substitutions is not equal to the project requirements. The decision of the Iowa DOT on all requested proposals/substitutions is final.

3.8.3 Alternates or Exceptions- alternates or exceptions must be evaluated prior to the letting date listed in this proposal.

Section 4 Contract Terms & Conditions

4.1 Contract Award

Award will be based on the total lump sum amount of bid price shown on the Schedule of Prices. The DOT will award to the lowest, most responsive, responsible bidder. The Iowa DOT reserves the right to accept the bid(s) which best serves the interest of the State.

Bid price will include all requirements listed in Section 3 to complete this proposed project. The Prime Contractor shall be responsible for taking all sub-bids and for all coordination between trades.

A "Prime" contract shall be awarded for each project for all work shown on the Drawings and described in the Specifications including Site work, General construction, Demolition, Plumbing, Mechanical, Energy management and control and Electrical work. The Prime Contractor shall be responsible for taking all sub-bids and for all coordination between trades.

Protests of award recommendations shall be made in accordance with Paragraph 761--20.4(6)"e", Iowa Administrative Code.

4.2 Contract Period

See Bid Proposal timeline for dates. The date of completion shall be stated in calendar days on the Bidder's Bid Response, and if necessary, adjusted by mutual agreement between the Iowa DOT and successful bidder prior to executing the contract documents.

The Iowa DOT realizes that deliveries and site conditions have a definite bearing on the completion date. The Iowa DOT will demand diligence in the prosecution of the work, but with good cause and satisfactory past performance by the Contractor, the Iowa DOT may revise the completion date to another mutually-acceptable date, when requested in writing and in good faith by the Contractor.

4.3 Liquidated Damages

Time is an essential component of the contract, and it is important that the work be to complete on the or before the dates listed on the Procurement Timetable.
For each calendar day that any work shall remain uncompleted beyond the <u>substantial completion date</u> and beyond the <u>final completion date</u> or any extension granted under Extension of Contract Period, the amount per calendar day specified in the Bid Response cover page will be assessed, not as a penalty but as predetermined and agreed upon liquidated damages. If work remains uncompleted on more than one portion for which calendar days and liquidated damages have been specified, the liquidated damages assessed will be the total of the damages per day listed for each uncompleted portion. The Iowa DOT shall prepare and forward to the Contractor an invoice or credit change order for such liquidated damages. The final payment shall be withheld until payment of the invoice has been made or the credit change order has been agreed upon.

Assessment of liquidated damages will be based only on the number of calendar days required to complete the contract beyond the contract completion date, plus authorized extensions.

The provision for the assessment of liquidated damages for failure to complete work within the contract period does not constitute a waiver of the Iowa DOT's right to collect any additional damages other than time delays, which the Iowa DOT may sustain by the failure of the Contractor to carry out the terms of the contract.

4.4 Immunity of Iowa Department of Transportation

The Contractor shall defend, indemnify and hold harmless the Iowa DOT and its officials and employees from liability arising out of or resulting from the Contractor's activities at the designated work site, its performance or attempted performance of the contract, as well as the Contractor's activities with Sub-Contractors and all other third parties.

4.5 Payments and Completion of Contract

4.5.1 Payments on contract will be made monthly by means of state warrants to the extent of ninety-seven percent (97%) of the value of work performed, including acceptable material stored at the building site, as determined by the Contractor as governed by the Iowa DOT Standard Specifications for Highway and Bridges Construction, Series 2012 and General Supplemental Specifications.

4.5.2 At the Pre-Bid Conference, the contractor shall submit a schedule of values of the various parts of the work, aggregating the total sum of the contract, made out in such form as the Iowa DOT may direct and, if required, supported by evidence as to its correctness. This schedule, when approved by the Iowa DOT, shall be used as a basis for requests for payment.

4.5.3 Final payment shall be authorized not later than thirty (60) days following the completion and final acceptance of the contract, provided that the provisions herein and all other contract requirements have been fulfilled, accepted and approved, where no claims have been filed or following adjudication or release of claims as provided in Chapter 573 of the Code of Iowa.

4.5.4 No notification of payment being processed, no payment made to the Contractor, no partial payment, nor the entire use or occupancy of the work by the Iowa DOT shall be held to constitute an acceptance, in whole or in part, by the Iowa DOT prior to making the final payment and acceptance in full completion of the contract.

4.6 Insurance Requirements

Contractor's Insurance

- It shall be the Contractor's responsibility to have liability insurance covering all of the project operations incident to contract completion and the Contractor(s) must have on file with the Contracting Authority a current "Certificate of Insurance" prior to award of contract. The certificate shall identify the insurance company firm name and address, contractor firm name, policy period, type of policy, limits of coverage, and scope of work covered (single contract or statewide). This requirement shall apply with equal force, whether the work is performed by persons employed directly by the Contractor(s) including a subcontractor, persons employed by a subcontractor(s), or by an independent contractor(s).

- In addition to the above, the Iowa DOT shall be included as an insured party, or a separate owner's protective policy shall be filed showing the Iowa DOT as an insured party.

- The liability insurance shall be written by an insurance company (or companies) qualified to do business in Iowa. For independent contractors engaged solely in the transportation of materials, the minimum coverage provided by such insurance shall be not less than that required by Chapter 325A, Code of Iowa, for such truck operators or contract carriers as defined therein. For all other contractors, subcontractors, independent contractors, and the Contracting Authority, the minimum coverage by such insurance shall be as follows:

    - *Comprehensive General Liability* including Contractual Liability;
    - Contingent Liability; Explosion, Collapse and Underground Drainage
    - Damage; Occurrence Basis Bodily Injury: Broad Form Personal Injury; Broad Form Property Damage.

Bodily Injury

The contractor will purchase and maintain throughout the term of this contract the follow minimum limits and coverage:

- Each person $750,000
- Each accident/occurrence $750,000
- Workers Compensation $750,000
- Statutory Limits $750,000
- Employer's liability $750,000
- Occupation Disease $750,000

Operations

- Property Damage $250,000 each occurrence

Builders Risk Insurance

- Each Contractor holding a valid contract with the Iowa DOT shall furnish and pay for builder's risk insurance, providing coverage for at least the following losses: fire, extended coverage, vandalism and malicious damage to materials incorporated in the project, and materials purchased to be incorporated in the project, either stored on or off the permanent job site. If this insurance coverage is not provided, the Contractor shall assume all responsibility for the perils outlined above which may occur prior to project completion and acceptance.
- Failure on the part of the Contractor(s) to comply with the requirements of this Article will be considered sufficient cause to suspend the work, withhold estimates, and to deny the Contractor(s) any further contract awards, as provided in Article 1103.01.
- The Contractor(s) shall require all subcontractor(s) meet the above insurance requirements.

The Certificate of Insurance must include the following

- Iowa Department of Transportation must be listed as an additional insured
- Proposal Number
- Proposal Description
- Letting Date
- Contract Period

4.7 Public Contract Termination

The provisions of Iowa law as contained in Chapter 573A of the Code of Iowa, an Act to provide for termination of contracts for the construction of public improvements when construction or work thereon is stopped because of national emergency, shall apply to and be a part of this Contract, and shall be binding upon all parties hereto, including sub-contractors and sureties upon any bond given or filed in connection herewith.

SECTION 16010

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

SECTION INCLUDES
Basic Electrical Requirements specifically applicable to Division 16 Sections, in addition to Division 1 - General Conditions.

SUMMARY OF WORK
Modify the existing electrical distribution system as specified herein, as shown on the Drawings, and in compliance with applicable codes and requirements of governmental authorities having jurisdiction.

Provide all materials, labor, equipment, and miscellaneous materials for a fully functional emergency power system including:

New emergency power system including generator set and automatic transfer switch.
New service entrance from utility transformer.
New grounding system.
New branch panel and circuit breakers.
Convenience receptacle.
Power and control circuits.
Demolition of existing electrical service.
Removal of existing generator set and transfer switch for owner's salvage.
LPG fuel system for the generator set.

UTILITY COMPANY FEES
The Owner will directly pay any fees from the local electric utility company, if there are any.

Do not include fees from the local electric utility in the bid cost.

SPECIAL CONDITIONS
The project building will be occupied by the Owner and in normal use through standard business days and times (Monday-Friday, 7:00 AM -4:00 PM).

Work, including any significant power outage, must be performed without major disruption to the Owner's normal activities. As a result, work that requires or results in a power disruption must be performed during weekends, extended holiday weekends, and/or after 5:00 PM and before 6:00 AM.

Coordinate any proposed power outage(s) with the facility administrator.

Protect all Owner's equipment and fixtures from dust, dirt and debris using clean drop clothes, tarps, or other acceptable means.

DEMOLITION
Demolish existing electric service equipment and circuits, after the new service has been established.

Coordinate with the local electric utility company to assure transition to new service occurs smoothly and over a short time period.

Remove existing generator set and automatic transfer switch for Owner's salvage. Demolish existing emergency power and control circuits, natural gas piping to genset, and ventilation equipment. Patch wall openings.

CODES AND PERMITS
Apply and pay for state and/or local permits, in the name of the Owner.

Comply with all applicable provisions of codes and local requirements that pertain to this project. Know code and local requirements prior to bidding.

In the event of a conflict between the contract documents and a code requirement, the more stringent requirement applies.

Codes that apply to this project include, but are not limited to, the following:

National Electrical Code (2014)

Arrange for inspections by governmental authorities having jurisdiction.

NO SMOKING POLICY
The Owner requires that no smoking be permitted in any part of the building at any time.

PRIOR APPROVAL
When an item of equipment is given as a quality and performance standard, or when the phrase "or approved equal" appears, a manufacturer's representative of an unlisted item may submit for approval to bid as an equal to the listed item.

Include product specifications and other literature as required to demonstrate that the submitted product is at least equal to the listed item.

Submit Request for Prior Approval at least 10 days before the bid date to allow inclusion in an addendum.

SUBMITTALS
Submit shop drawings in conformance with requirements in Division 1.

Submit shop drawings for all items of equipment, devices, and fixtures. Indicate the specific product proposed with all pertinent information shown to match that specified.

Submit results of ground resistance test and generator set load test. Refer to Sections 16355 and 16450 for detailed information on these tests.

Submit shop drawings by email in Adobe pdf format files.

OPERATION AND MAINTENANCE MANUALS
Submit operation and maintenance documents for the Automatic Transfer Switch and Generator Set. Refer to Sections 16355 and 16495 for detailed information on these documents.

WARRANTY
Warrant the work to be free of defects for a period of one year from the date of Substantial Completion. Repair defects within the warranty period in a timely manner without additional charge to the Owner.

Do not warrant damage from improper maintenance or use by the owner.

QUALITY ASSURANCE
Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 – PRODUCTS

MATERIALS
Provide only products that are new, and of the type and quality specified.

UL APPROVAL AND LISTING
Provide only products that are approved and listed by Underwriter's Laboratories, Inc.

PART 3 - EXECUTION

INSTALLATION IN GENERAL
Coordinate scheduling of work with the Owner's local representative.

Do not disrupt power during normal business hours without first scheduling work with the Owner's local representative.

Precisely locate equipment and components. Arrange equipment so that routine maintenance is facilitated and components may be replaced.

Provide all required slots, chases, and openings in the building structures. Do not cut structural members without the written permission of the Engineer.

Install equipment in strict accordance with manufacturers' installation instructions and recommendations. Provide copies of these instructions in the 0 & M manuals.

Provide all structural supports and mounting accessories for panelboards and other equipment enclosures.

Provide all required adjustments for proper operation of the electrical systems. Check all safety devices and associated wiring for safe and proper operation.

At the completion of the project provide thorough instruction to the Owner's personnel on the proper operation and maintenance of the modified electrical system.

EXCAVATION, FILL, BACKFILL, AND COMPACTION
Provide all excavation, trenching, backfilling, and compaction required for the electrical work.

Test backfilled trenches for proper compaction to 95% Proctor.

CLEANING
Keep the premises clear of unnecessary accumulation of debris during the project. On completion, remove all rubbish and debris resulting from the work or the work of subcontractors and dispose of properly.

Clean all equipment and fixtures at the completion of the project of accumulated plaster, dust, or other dirt and leave in a condition satisfactory for use. Vacuum chips, insulation stubs, and other debris from all panelboards, switches, and other enclosures.

END OF SECTION

SECTION 16110

CONDUIT

PART 1 - GENERAL

SECTION INCLUDES
Rigid metal conduit and fittings.
Electrical metallic tubing and fittings.
Non-metallic conduit and fittings.
Surface metal raceway.

REFERENCES
ANSI C80.3 - Electrical Metallic Tubing, Zinc-Coated.
ANSI C80.4 - Fittings for Rigid Metal Conduit and Electrical Metallic Tubing
ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies
UL 514B - Fittings for Conduit and Outlet Boxes
UL 797- Electrical Metallic Tubing
NEMA TC 2 - Conduit (EPC-40 and EPC-80).
NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.
NEC - National Electric Code (2014)

PART 2 - PRODUCTS

ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS
EMT: galvanized tubing that conforms to UL 797 and ANSI C80.3. Conduit shall bear UL label.

Fittings and Conduit Bodies: conform to ANSI/NEMA FB 1 and UL 514B; steel, insulated throat compression or set screw type except in poured concrete or wet locations use only the compression type. Cast or crimp (indent) type fittings are not acceptable.

RIGID NON-METALLIC CONDUIT AND FITTINGS
Conduit: Schedule 80 PVC, UL listed for 90°C; NEMA TC 2, conform to NEC Article 347.

Fittings and Conduit Bodies: PVC sleeve type, suitable for, and manufactured specifically for use with the conduit by the manufacturer; NEMA TC 3.

Plastic cement for joining conduit and fittings shall be supplied by the manufacturer of the conduit and shall be suitable for the ambient temperature at the time of installation.

CONDUIT EXPANSION FITTING
Manufacturer and Model: OZ Gedney AXB series.

UL listed 174B, wet location, rigid galvanized steel conduit expansion joint, 4” conduit movement, weatherproof, field inspect-able, internal bonding jumper, ductile iron, hot dipped galvanized finish.

CONDUIT SUPPORTS
Refer to Section 16195.

PART 3 - EXECUTION

CONDUIT SIZING
Size conduit for conductor type installed in compliance with the NEC.

Conduit sizes shall change only at the entrance or exit to a junction box.

CONDUIT ARRANGEMENT
Arrange conduit to maintain headroom and present a neat appearance. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls, structure, and adjacent piping.

Maintain minimum 6 inch clearance between conduit and piping. Maintain 12 inch clearance between conduit and heat sources such as flues, and heating appliances.

Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers.

CONDUIT SUPPORTS
Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction, before conductors are pulled.

Use only PVC straps to secure PVC conduit used for grounding conductors.

Conduit shall be held in place by the correct size of conduit clamps or straps, or other UL listed support devices specifically designed for conduit support. Support conduit at nominal intervals of 5’ on center, but never exceed spans permitted by the NEC.

Do not support conduit from lay-in ceiling hanger wires, ceiling support channels, ductwork, or piping.

On concrete or masonry construction, use insert anchors or expansion shields installed with plated steel

CONDUIT INSTALLATION SCHEDULE
Refer to schedule on the drawings.

END OF SECTION

SECTION 16120

WIRE

PART 1 - GENERAL

SECTION INCLUDES
Building wire
Wiring connections and terminations

REFERENCES
NEC - National Electric Code (2014)
NEMA WC 5 - Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy

PART 2 - PRODUCTS

BUILDING WIRE
Thermoplastic-insulated Building Wire: NEMA WC 5.

Feeders and branch circuits 10 AWG and smaller: Solid or stranded copper conductor, 600 volt insulation, THHN/THWN-2.

Feeders and branch circuits larger than 10 AWG: Copper, stranded conductor, 600 volt insulation, THHN/THWN-2.

Feeders and branch circuits larger than 10 AWG in below grade conduit: Copper, stranded conductor, 600 volt insulation, THWN-2.

PART 3 - EXECUTION

GENERAL WIRING METHODS
Use no wire smaller than 12 AWG for power and lighting circuits.

Use 10 AWG (minimum) for 20 ampere, 120 volt branch circuit home runs longer than 75 feet, regardless of wire size noted on panel schedule.

Splice only in junction or outlet boxes.

Neatly train and lace wiring inside boxes, equipment, and panelboards.

Make conductor lengths for parallel circuits equal.

Use industry standard color code for all conductors.

Provide green equipment grounding conductor in all conduits.

WIRING INSTALLATION IN RACEWAYS
Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

Completely and thoroughly swab raceway system before installing conductors.

Wires shall not be laid on ground before pulling nor dragged over the ground.

Only nylon rope shall be used for pulling wires or cables.

Leave at least 6” ends in device or fixture boxes for connections.

WIRING CONNECTIONS AND TERMINATIONS
Splice only in accessible junction boxes.

Use solderless pressure connectors with metal inserts and insulating covers for copper wire splices and taps, 8 AWG and smaller. Use insulated spring wire connectors with plastic caps, 10 AWG or smaller. All plastic or ceramic wire nuts are not acceptable.

Use copper compression connectors applied with circumferential crimp for copper wire splices and taps, 6 AWG and larger. Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor.

Thoroughly clean wires before installing lugs and connectors.

Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

Terminate spare conductors with electrical tape.

FIELD QUALITY CONTROL
Inspect wire and cable for physical damage and proper connection.

Torque test conductor connections and terminations to manufacturer's recommended values.

Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION

SECTION 16130

BOXES

PART 1 - GENERAL

SECTION INCLUDES
Pull and junction boxes.
Surface metal boxes.

RELATED SECTIONS
Section 16110 - Conduit
Section 16141 - Wiring Devices

REFERENCES
UL 514A - Metallic Outlet Boxes, Electrical
UL 514B - Fittings for Conduit and Outlet Boxes
ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies
ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports
ANSI/NFPA 70 - National Electrical Code (2014)

REGULATORY REQUIREMENTS
Conform to requirements of ANSI/NFPA 70.

Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

PART 2 - PRODUCTS

OUTDOOR JUNCTION BOXES, ABOVE GROUND
NEMA 4X, size as noted on the drawings, gasketed stainless steel enclosure, with clamp down cover, full perimeter gasket, and stainless steel hardware.

PART 3 - EXECUTION

INSTALLATION
Install electrical boxes as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

Install electrical boxes to maintain headroom and to present neat mechanical appearance.

Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

Install boxes to preserve fire resistance rating of partitions and other elements.

Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.

Remove knockouts only as required. Knockouts mistakenly removed shall be properly plugged.

END OF SECTION

SECTION 16141

WIRING DEVICES

PART 1 - GENERAL

SECTION INCLUDES
Receptacles
Device plates and box covers

RELATED SECTIONS
Section 16110 - Conduit
Section 16120 - Wire
Section 16130 - Boxes

REFERENCES
NEMA WD 1 - General Purpose Wiring Devices
NEMA WD 6 - Wiring Device Configurations

SUBMITTALS
Submit under provisions of Section 16010.

Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

REGULATORY REQUIREMENTS
Conform to requirements of ANSI/NFPA 70 - National Electric Code (2014).

Provide products listed and classified by Underwriters Laboratories, Inc.

PART 2 - PRODUCTS

WIRING DEVICES - ACCEPTABLE MANUFACTURERS & MODELS

DEVICE	P&S	HUBBELL
Receptacle, duplex, 20A, GFCI	2095	GF20L

All devices shall be from the same manufacturer.

RECEPTACLE
Duplex 20A Receptacle: NEMA WD 1; NEMA Type 5-15R, colored Nylon™ thermoplastic face.

GFCI Duplex 20A Receptacles GFI and WP: NEMA 5-20R, colored Nylon™ thermoplastic face UL943 and UL498 compliant, feed through convenience receptacle with integral ground fault circuit interrupter rated at 125V, 20A, 5mA +/- 1mA ground fault sensitivity, screw terminals only. Use plate furnished with receptacle for indoor installation, provide NEMA 3R cover for outdoor installation (see below).

Receptacles shall be from same manufacturer as switches.

Color: Selected by Owner, submit color choices.

WALL PLATE
Satin finish stainless steel.

PART 3 - EXECUTION

PREPARATION
Clean debris from outlet boxes.

INSTALLATION
Install products in accordance with manufacturer's instructions.

Install devices plumb and level.

Install receptacles with grounding pole on top. Connect wiring device grounding terminal to outlet box with bonding jumper or to branch circuit equipment grounding conductor.

Connect wiring devices by wrapping conductor around side screw terminal for solid conductors and by clamping with back wired terminals for stranded wire.

FIELD QUALITY CONTROL
Inspect each wiring device for defects.

Verify that each receptacle device is energized. Test each receptacle device for proper polarity and ground.

Test each GFCI receptacle device for proper operation.

ADJUSTING
Adjust devices and wall plates to be flush and level.

END OF SECTION

SECTION 16190

SUPPORTING DEVICES

PART 1 - GENERAL

SECTION INCLUDES
Conduit and equipment supports
Fastening hardware

SUMMARY OF WORK
Furnish and install hangers, struts, and brackets required to support electrical work.

Furnish and install foundations, bases, and supports for items of equipment involved in the Work.

Comply with the 2014 NEC.

RELATED SECTIONS
Section 16110 – Conduit
Section 16130 – Boxes

PART 2 - PRODUCTS

STEEL STRUTS- ACCEPTABLE MANUFACTURERS
B-Line
Unistrut
T&B Superstrut/Kindorf

Inside Installation
Steel Struts, Inside: Corrosion resistant galvanized steel, nominally 1-5/8" square size.

Fasteners: Corrosion resistant, galvanized steel.

Hanger Rods: Corrosion resistant, galvanized steel threaded rods.

Conduit Clamps: UL listed for application, galvanized steel.

Outside Installation
Steel Struts, Outside: Stainless steel, nominally 1-5/8" square size.

Fasteners: Stainless steel.

Conduit Clamps: UL listed for application, Stainless steel.

CONDUIT SUPPORTS
Provide conduit supports and fittings that are UL listed for their intended application.

Provide Rigid PVC clamps for PVC conduit.

Provide stainless steel strut, hangers, clamps, and fasteners for all support materials within the Brine Building.

Provide galvanized steel strut, hangers, clamps, and fasteners for all support materials within the existing maintenance building.

PART 3 - EXECUTION

INSTALLATION

Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors, preset inserts, or beam clamps.

Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchors on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

Do not fasten supports to piping, ductwork, mechanical equipment, conduit, or ceiling hanger wires.

Do not drill structural members without written permission of the Engineer.

Do not use powder actuated (explosive) anchors without specific permission from the Engineer.

Provide supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

Install surface mounted cabinets and panelboards with a minimum of four anchors. Provide steel support channels to stand cabinets and panelboards away from wall.

END OF SECTION

SECTION 16195

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

SECTION INCLUDES
Equipment labels.
Nameplates and tape labels.
Wire and cable markers.
Conductor color coding.

REFERENCES
NEC - National Electric Code (2014)

SUBMITTALS
Submit Shop Drawings under provisions of Section 16010.

Include schedule for nameplates and tape labels.

PART 2 - PRODUCTS

MATERIALS
NEC required equipment labels: Provided vinyl self-adhesive labels for warnings and information required by the NEC and OSHA regarding arc-flash hazards.

Nameplates: Engraved three-layer laminated plastic, black letters on a white background.

Wire and Cable Markers: Preprinted vinyl tape or split sleeve plastic markers.

PART 3 - EXECUTION

INSTALLATION
Degrease and clean surfaces to receive nameplates.

Install nameplates parallel to equipment lines.

Secure nameplates to equipment fronts using screws, or pop rivets. Secure nameplate to inside face of recessed panelboard doors in finished locations.

Embossed tape or adhesive only nameplates will not be permitted for any application.

JUNCTION BOX IDENTIFICATION
Identify junction boxes with the panel designation and circuit number of the circuits within. Neatly print the identification using an indelible marker on the outside of the cover for concealed boxes and on the inside for exposed boxes.

WIRE IDENTIFICATION
Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, or with control wire number.

NAMEPLATE ENGRAVING SCHEDULE
Provide nameplates to identify all electrical distribution and control equipment, and loads served. Include voltage/phase information on panels. Comply with all NEC requirements for equipment labeling.

Letter Height: 1/4 inch for distribution and control equipment identification.

Examples:

Panel 'MDP' **120/240V 1 Phase** **400A** **FED FROM 'ATS'**	**Panel 'P1'** **120/240V 1 Phase** **200A** **FED FROM 'ATS'**

CONDUCTOR COLOR CODING

In each pull box, outlet cabinet, etc., the wires and cables when visible shall be color coded. The same color coding shall be used throughout the entire electrical system, therefore maintaining proper phasing throughout the entire project.

All wires and cables, 6 AWG or larger, used in motor circuits, main feeders, sub-main feeders, and branch circuits shall be coded by the application of plastic tape. The tape shall be 3M, Plymouth, or Permacel in colors specified below. The tape shall be applied at each conductor termination with two 1" tape bands at 6" centers. Color coding shall be applied at all panels, switches, boxes, etc., where terminations are made.

Wire and cables smaller than 6 AWG shall be color coded by the manufacturer.

Conductors shall be color coded as follows:

120/240 Volt, 1ϕ, 3-Wire plus ground:

Phase	Black
Phase	Red
Neutral	White
Equipment Ground	Green

END OF SECTION

SECTION 16355

DUAL FUEL NG/LPG GENERATOR SET (GENSET)

DUAL FUEL ENGINE-GENERATOR SET

Furnish an engine-generator set (genset) that is dual natural gas (NG) and liquefied petroleum gas (LPG) (propane) fueled. This shall be accomplished when both fuels are permanently piped to the genset, and by the genset control system automatically switching to LPG if the natural gas pressure drops to a pre-determined low level. Fuel piping from the sources to the genset will by Others-not in contract. All controls, regulators, automatic valves, and other components required to affect this automatic fuel change-over shall be factory installed and tested.

LPG will be the only fuel used initially; the natural gas capability is for future use. Ship the genset ready for connection to an LPG fuel source. Plug all natural gas pipe openings and connection points.

SUPPLIER REQUIREMENTS

The completed engine-generator set shall be supplied by the Manufacturer's authorized distributor only.

The engine-generator supplier shall maintain a local parts and service facility within 100 miles of this installation. Further, the supplier shall have factory-trained service technicians to furnish all installation, test, and start-up supervision necessary for final approval and acceptance as well as perform maintenance and repairs on all components as required.

Supplier must have a factory fill rate for emergency orders of >90% of all parts within two business days. Manufacturer must guarantee availability of spares for a period of no less than 10 years after final production of the model offered.

Distributor must make technical support available 7 x 24 hours; in addition, the manufacturer must have 7 x 24 emergency phone support available.

The supplier shall maintain a national service organization that is factory trained and certified. In addition, the genset dealer organization shall be available 24 hours per day, 365 days per year.

POWER RATING

Power rating of the engine-generator set shall be based on operation at rated rpm when equipped with all necessary operating accessories, such as air cleaners, oil pump, jacket water pump, governor, alternating current generator, and exciter regulator. Radiator fan shall be included as necessary operating accessory.

A prototype test to the demands of NFPA 110, Level 1 and an endurance test of at least 1,000 hours at 100% of the Standby rating shall have been conducted for the engine-generator set being bid.

Package will be EPA certified for emergency power applications with air/fuel ratio controls built into the control panel.

SUBMITTAL DATA

Submit Shop Drawings for equipment, in electronic pdf format files, including the following:

Make and model of engine-generator.

Manufacturer-produced dimension drawings of the complete engine-generator set clearly showing entrance points for each of the interconnections required.

Location and descriptions of the supplier's parts and service facilities within a 100 mile radius of the job site, including parts inventory and number of qualified engine-generator set service personnel.

Electrical wiring diagrams, including schematic diagrams and interconnection wiring diagrams for all equipment to be supplied.

Manufacturer warranty statements.

CODES AND STANDARDS
The genset shall conform to the requirements of the following codes and standards:

CSA C22.2, No. 14 – M91 Industrial Control Equipment.
EN50082-2, Electromagnetic Compatibility – Generic Immunity Requirements, Part 2: Industrial.
EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
IEC8528 part 4. Control Systems for Generator Sets.
IEC Std 801.2, 801.3, and 801.5 for susceptibility, conducted, and radiated electromagnetic emissions.
IEEE446 – Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
Mil Std 461D –1993. Military Standard, Electromagnetic Interference Characteristics.
Mil Std 462D - 1993. Military Standard, Measurement of Electromagnetic Interference Characteristics.
NFPA 70 – National Electrical Code (2011). Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
NFPA 110 – Emergency and Standby Power Systems. The generator set shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit; component level type tests will not substitute for this requirement.
UL2200. The genset shall be listed to UL2200.

WARRANTY
The engine-generator set shall be warranted against defects in materials and workmanship for a period of two years for standby applications; coverage to include both 100% parts and labor.

The warranty will start at the date of acceptance after testing has been successfully performed.

If a defect in material or workmanship arises during the warranty period the Supplier will during normal working hours:

Replace or, at the Supplier's discretion, repair the defective parts.
Provide for reasonable and customary labor costs to correct the defect.
Provide for the cost of service supplies such as coolant oil and filters which are made unserviceable by the defect.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS-GENSETS
Refer to the Genset Schedule on the drawing.

RATINGS
Refer to the Genset Schedule on the drawings for rating information.

GENERAL
The emergency generator set shall be completely assembled and factory tested. Both engine and generator shall be the responsibility of a single manufacturer and be of a standard model or series in regular production at the manufacturer's place of business. No unit assembled by anyone other than a recognized manufacturer will be accepted.

The engine, generator, and all major items of auxiliary equipment shall be manufactured in the United States.

All controls, regulators, automatic valves, and other components required to affect an automatic fuel change-over between NG and LPG shall be factory installed within the genset enclosure and factory tested.

The generator set shall be mounted on skids which in turn shall be mounted on high efficiency pad type vibration isolators.

The generator set shall start and deliver power in less than 10 seconds from the time of the power failure signal.

Provide a re-settable line current sensing circuit breaker with inverse time versus current response which protects the generator. This circuit breaker shall not trip within the 10 seconds specified above to allow selective tripping of down-stream fuses or circuit breakers under a fault condition. This breaker shall not automatically reset, preventing restoration of voltage if maintenance is being performed. A field current-sensing breaker is not acceptable.

The engine fuel rate shall not be adjusted higher than the fuel rate recommended by the engine manufacturer.

The engine shall be provided with one or more dry type air cleaners of sufficient capacity to effectively protect the working parts of the engine from dust and grit. Air cleaner(s) shall be provided with a visual service indicator for regularly scheduled maintenance.

ENGINE

The engine shall be a four stroke cycle, internal combustion engine, dual NG and LPG fueled, liquid cooled by radiator and fan, and shall have an engine driven type full pressure lubrication system. The engine shall not be turbo charged.

The engine shall be equipped with lube oil, lube oil coolers, carburetor(s), engine driven water pump, engine mounted fuel filter, run-time hour meter, water temperature gauge, and lubricating oil pressure gauge.

Governor: Engine governor shall be electronic type which shall control the frequency within 3% of rated frequency from no load to full load for droop operation or isochronous frequency regulation when supplying electronic or other non-linear loads. The frequency of any constant load shall remain within a steady-state band width of ±0.25% of rated frequency.

Mounting: The engine-generator set shall be factory mounted on a structural base.

Protective Devices: Safety shutoffs, that automatically shut the unit down shall be provided, for high water temperature, low oil pressure, electrical over-speed, and engine over-cranking.

Provide thermostatically controlled engine block heater sized to maintain manufacturers recommended engine coolant temperature to meet the start-up requirements of NFPA-99 and NFPA-110, Level 1.

GENERATOR

Rating: The generator shall be rated for standby electrical service as scheduled.

Type: The generator shall be three-phase, single-bearing, synchronous type, wet wound, high humidity resistant, and built to NEMA standards. The process for winding, insertion and varnish shall be machine precision wound and machine finished.

Exciter Field : Brushless type. Class H insulation shall be used on the stator and rotor, and both shall be further protected with an asphalt modified epoxy on all end coils. The rating will be at a generator temperature rise not to exceed 120° C at 40° C ambient.

Circuit Breaker: The generator shall include a resettable thermal protector and fuse for exciter/regulator protection against extended low power factor loads and faults.

Balancing: The generator rotor shall be dynamically balanced within 0.0005" peak-to-peak amplitude displacements at both ends of shaft and shall sustain 25% over-speed.

Regulation: An electronic automatic volts-per-Hz type, solid-state exciter/regulator, manufactured by the generator manufacturer, shall be included and shock mounted inside the generator control panel enclosure. Voltage regulation shall be ±0.25% from no load to full-rated load. Readily accessible voltage droop, voltage level, and voltage gain controls shall be included in the module. Voltage level adjustment shall be a minimum of ±10%.

The module shall include the following protective features:

Current limit circuits shall restrain the exciter field current while allowing full forcing voltage to be applied to obtain rapid response during transient conditions or service overloading on the generator.

A time-delay circuit shall sense the current limit operation and cut off all field current to the generator after 10 seconds.

The generator shall be of heavy duty ball bearing drip proof construction and be suitable for direct coupling to the engine flywheel housing. It shall be connected to the engine through a semi-flexible coupling.

MAIN LINE CIRCUIT BREAKER

A genset-mounted main line circuit breaker carrying the UL mark shall be factory installed. The circuit breaker shall meet standards established by UL, NEMA, and the NEC. The breaker shall be rated as recommended by the manufacturer.

The trip unit for each pole shall have elements providing inverse time delay during overload conditions and instantaneous magnetic tripping for short circuit protection.

Generator/exciter field circuit breakers do not meet the above electrical standards and are unacceptable for line protection.

Provide a junction box large enough for wiring access and connections to the circuit breaker lugs.

GENERATOR CONTROL PANEL

The control panel shall be designed and built by the engine-generator manufacturer, and generator set mounted. The panel shall be properly labeled for identification of all control and monitoring devices. The control panel shall include factory warranty and manufacturer's parts and service support.

Operating Temperature Range: Control panel will operate in -40 to +150 °F.

Generator-mounted Control Panel: Designed and built by the system manufacturer and incorporating 100% solid-state circuitry, sealed dust-tight, watertight modular components and instrumentation. The panel shall be shock mounted to the generator.

It shall comply with IEC, IEC 144, IP22, NEMA 1 for external environmental resistance and IP44/NEMA 12 resistance for internal sealed modules. The panel shall include the following equipment:

General AC Output Metering Devices:
- AC voltmeter 3-1/2" 2%
- AC ammeter 3-1/2" 2%
- Dial Frequency Meter 3-1/2" 2%
- Voltmeter-Ammeter Phase selector switch, 4 Position

Engine Monitoring Devices:
- Water temperature gauge
- Running time meter
- Oil pressure gauge

Start/Stop Controls:

1 start-stop switch, cycle cranking with cool-down timer, auto start-stop, manual start, off, and reset positions.
1 voltage adjust rheostat
1 alarm horn with silence switch. Horn must be 100 dB.
1 panel light and on/off switch for same
1 alarm module with five red flashing lights to annunciate shutdowns for over-speed, low oil pressure, high water temperature, and over-crank

Two communication ports, Modbus supported
All input signals from sensors will use 4-20 mA input signal.
Load imbalance thermal protection.

Include an interior remote annunciator panel and mount near the existing main distribution panel.

OUTDOOR SOUND ENCLOSURE
Weather resistant 14 gauge. painted steel, sound-attenuating close enclosure with interior mounted critical silencer. Air intake and discharge openings shall be designed for temperatures from 35°F below zero to 120°F above zero. Side panels will be lockable and easily removed for servicing. Doors shall be lift-off removable type with bolted stainless-steel hinges and hardware. The use of pop rivets as fasteners is not acceptable. All enclosure access points must use oil resistant rubber gasketing to provide protection against environmental wear.

The enclosure shall be primed and painted with two coats of baked-on enamel paint; enclosure color choices shall be included in Shop Drawing submittal.

Total sound output from the generator set shall not exceed 75 dBA at 23 feet.

Minimum wind ratings: 100 mph.

Include a conduit stub up area.

Wiring: Provide internally wired circuits for 120V convenience GFCI duplex receptacle, battery charger, and jacket water heater. Include steel junction boxes for simple connection to external power.

Provide fixed and exhaust louvers, providing the enclosure has been designed to block the entry of excessive rain and snow while the engine is off. If this is not true, provide motorized or gravity type dampers.

Silencer: Critical grade, internally mounted.

The enclosure shall be vermin proof with no openings that are not closed by removable, secured, covers, or corrosion resistant metal screening with openings no larger than ½" square. Openings used for lifting or similar installation tasks shall be covered or closed after installation.

ACCESSORIES
Include the following accessories:

Run Relay to provide a contact for indicating that the generator is running.

Common Failure relay to remotely signal auxiliary faults, emergency stop, high engine temperature, low oil pressure, over-crank, and overspeed via one contact.

STARTING SYSTEM
The engine starting system shall include 12 volt DC starting motor, starter relay, automatic reset circuit breaker, and batteries. Batteries shall be heavy-duty diesel starting type, low maintenance, lead acid type mounted near the starting motor. A corrosion resistant or coated steel battery rack shall be provided for the battery. Required cables shall be furnished and sized to satisfy starting requirements. The system shall be capable of starting a properly equipped engine within 10 seconds at the ambient temperature

stated. Battery warranty, within the overall equipment warranty time period, shall be the responsibility of the generator set manufacturer and his authorized dealer.

Provide an automatic float-type battery charger with 120VAC input. The charger shall have automatic overload protection, DC voltmeter and ammeter, fused AC input and DC output, provisions for automatically switching to float mode when the battery is fully charged and proper NFPA alarm contacts. The charger shall float at 2.17 volts per cell and equalize at 2.33 volts per cell. It should include overload protection, silicon diode full wave rectifiers, voltage surge suppressors, DC ammeter, and fused AC output, and battery malfunctions alarm relay. AC input voltage shall be 120 volts, single phase. Amperage output shall be no less than 10 amperes.

ENCLOSURE LIGHTING
Provide two (2) LED interior lighting fixtures with a conveniently located switch that illuminate the interior of the enclosure to allow routine maintenance to be performed at night.

LOCKOUT
Provide a factory wired and tested lockout/tagout device for the genset starting circuit that complies with OSHA regulation 29 CFR 1910.147. Include training of Owner's personnel on the use of this device.

JACKET WATER HEATER
Jacket water heater(s) shall be provided to maintain coolant temperature at 90°F at an ambient temperature of -20°F. Heater(s) shall 120/240V, single phase power and include thermostatic control. Isolation valves shall be installed on both sides of the heater(s) element to facilitate servicing.

LPG FUEL SYSYTEM
Provide a complete, fully functional LPG fuel system for the genset as shown on the Drawings.

PART 3 - EXECUTION

PREDELIVERY INSPECTION
A predelivery inspection must be performed by the system manufacturer's local dealer at the dealer's facility to ensure no damage occurred in transit and all generator set components, controls, and switchgear are included as specified herein.

SHIPMENT TO JOBSITE
Delivery shall be FOB to the jobsite by the system manufacturer's authorized dealer. Approximate delivery locations are indicated on the schedule.

Include unloading to the ground near the installation location, without use of the owner's equipment.

FIELD QUALITY CONTROL
The complete installation (by others) shall be checked for procedural and operational compliance by a representative of the system manufacturer's authorized local dealer. The engine lubrication oil and antifreeze, as recommended by the system manufacturer, shall be provided and installed by the generator set dealer. If switchgear and generator sets are furnished by different manufacturers, technical representatives of both manufacturers' authorized dealers shall verify that installation meets requirements. Any deficiencies shall be noted and corrected by the contractor.

The system manufacturer's dealer representative shall be present to perform: startup, systems check, adjusting, and site testing after the installation is complete.

Accessories that normally function while the set is standing by, shall be checked prior to cranking the engine. These shall include: block heaters, battery charger, generator strip heaters, and remote annunciator.

Perform an initial start-up under test mode to check for exhaust leaks, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage and frequency, and phase rotation.

Perform an automatic start-up by means of simulated power outage to test remote-automatic starting, transfer of the load, and automatic shutdown. Prior to this test, all transfer switch timers shall be adjusted for proper system coordination. Engine coolant temperature, oil pressure, and battery charge level along with generator voltage, amperes, and frequency shall be monitored throughout the test.

Load Test: Perform a load test using a variable load bank capable of load increments of 25%, 50%, 75%, and 100% of the generator set rating. Run the unit for 30 minutes at 25%, 50%, and 75% followed by a 100% for 3 hours. Record voltage, frequency, load current, oil pressure, exhaust gas temperature as recommended by the manufacturer, and coolant temperature periodically during the test (a minimum of every 20 minutes). Block load the generator set at 50%, 75%, and 100% to verify performance.

Upon completion of the installation and testing, inspect system components, replace any if necessary, and clean the unit and surrounding areas as necessary.

The engineer, regular operators, and the maintenance staff shall be notified of the time and date of the site test, at least 1 week in advance of the test.

DOCUMENTATION

The system manufacturer's authorized local dealer shall furnish one copy of each of the manuals and books listed below for each unit under this Contract. All manuals and books described below shall be contained in rigid plastic binders. Furnish two (2) complete sets per generator set.

Operating Instructions with description and illustration of all switchgear controls and indicators, and engine and generator controls.

Parts Books that illustrate and list all assemblies, sub-assemblies, and components except standard fastening hardware (nuts, bolts, washers, etc.).

Preventative Maintenance Instructions on the complete system that cover daily, weekly, monthly, biannual, and annual maintenance requirements and include a complete lubrication chart.

Routine Test Procedures for all electronic and electrical circuits and for the main AC generator.

Trouble Shooting Chart covering the complete generator set showing description of trouble, probable cause, and suggested remedy.

Wiring Diagrams and Schematics showing function of all electrical components.

Report on the results of the load test specified above.

END OF SECTION

SECTION 16420

SERVICE ENTRANCE

PART 1 - GENERAL

SECTION INCLUDES
Arrangement with the local electric utility company for modified electric service, and to schedule power shut-down and restoration.

Other items, not specifically listed, required by the local electric utility company.

SUMMARY
Modify and upgrade the service entrance at the Iowa DOT maintenance facility.

Comply with the requirements of the local electric utility and the 2014 NEC.

Establish the new service and feeder circuits as far as practical prior to demolishing the existing service. Refer to Special Conditions article in Section 16010.

Refer to the drawings for system power information.

QUALITY ASSURANCE
Install service entrance in accordance with the local electric utility company's rules.

Coordinate with the local electric utility company's construction department regarding the schedule for replacing the service entrance.

PART 2 - PRODUCTS

GENERAL
Provide sleeves, conduit, and other items as required by the electric utility company for electrical service.

ENCLOSED CIRCUIT BREAKER
Provide an enclosed main circuit breaker to replace the existing one as shown on the Drawings.

Acceptable Manufacturer: Match the manufacturer of the other distribution equipment (load center).

Coordinate with the local electric utility company and comply with their requirements, including mounting arrangement on the existing power pole.

Ratings: Refer to the drawings.

Enclosure: NEMA 4X

UL Listing: Provide an enclosed circuit breaker that is UL Lisyed as suitable for service entrance equipment.

PART 3 - EXECUTION

COORDINATION
Coordinate with the local electric utility company and arrange for modifications to the electric service.

END OF SECTION

SECTION 16450

SECONDARY GROUNDING

PART 1 - GENERAL

SECTION INCLUDES
Secondary Power system grounding.
Electrical equipment and raceway grounding and bonding.
Ground resistance test.

SYSTEM DESCRIPTION
Ground the electrical service system neutral at service entrance equipment to metallic water service, and to supplementary grounding electrodes as called for on the Drawings.

Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing systems.

REFERENCES
NEC - National Electric Code (2014 Edition).

PART 2- PRODUCTS

MATERIALS
Ground Rods: Copper-clad steel, 3/4 inch diameter, minimum length 10 feet.

Ground Rod Connection: Burndy ‘Hyground’ compression grounding system. Use connectors and install as recommended by the manufacturer (typical for all ground rod connections).

Water Service Connector: UL listed copper alloy with silicone bronze U-bolt, Specification Grade. Burndy, O-Z/Gedney Type CG.

PART 3 - EXECUTION

INSTALLATION
Provide a separate, insulated equipment grounding conductor in every circuit.

Terminate each end on a grounding lug, bus, or bushing.

Connect grounding electrode conductor to metal water pipe using a water service connector.

Cadweld the conductors to the grounding rods strictly following the manufacturer’s instructions.

FIELD QUALITY CONTROL
Inspect grounding and bonding system conductors and connections for tightness and proper installation.

GROUND RESISTANCE TEST
Measure ground resistance from system neutral connection at service entrance to convenient ground reference points using suitable ground testing equipment. Resistance shall not exceed 5 ohms. If it does, inspect all conductors and connections to determine the problem and remedy. Submit the results of the test to the Engineer

END OF SECTION

SECTION 16470

PANELBOARD

PART 1 - GENERAL

SECTION INCLUDES
Branch circuit panelboard.

REFERENCES
NEMA AB 1 - Molded Case Circuit Breakers
NEMA KS 1 - Enclosed Switches
NEMA PB 1 - Panelboards
NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less
NEMA PB 1.2 - Application Guide for Ground-fault Protective Devices and Equipment

SUBMITTALS
Submit Shop Drawings for equipment and component devices under provisions of Section 16010.

Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.

SPARE PARTS
Keys: Furnish four (4) each to the Owner.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS – PANELBOARD
Square D Company.
Cutler Hammer.
Eaton

PANELBOARD
UL labeled circuit breaker type panelboard, main current ratings as scheduled on the Drawings.

Minimum Short Circuit Series Current Rating: 65,000 RMS symmetrical amperes at 240 volts AC. The panelboard series rating shall be determined by the main circuit breaker and branch circuit breaker combination tested in accordance with UL 489.

Interior: tin plated copper bus bars suitable for plug-on or bolt-on branch circuit breakers, field convertible for top or bottom incoming feed, split neutral bus, and equipment grounding bar. Bus ratings shall be determined by heat-rise tests conducted in accordance with UL 67. All current carrying parts shall be insulated from ground and phase-to-phase by Noryl™ high dielectric strength thermoplastic or equivalent.

Interior trim shall be of dead-front construction to shield user from energized parts. Dead-front trim shall have pre- formed twistouts covering unused mounting space. Metal nameplates shall be secured to dead-front with rivets or screws. Sticker or foil nameplates are not acceptable. Interior wiring diagram, neutral wiring diagram, UL listed label and short circuit current rating shall be displayed on the interior.

Enclosure: NEMA PB 1 Type 1, surface or flush mount as indicated on the Drawings, nominally 20” wide (minimum), galvanized steel tub constructed in accordance with UL 50 requirements, galvanealed steel is not acceptable. Trim front shall be one-piece with door, steel shall meet strength and rigidity requirements per UL 50 standards and shall have ANSI 49 gray enamel electrodeposited over cleaned phosphatized steel. Front shall have cylindrical tumbler type lock with catch and spring loaded stainless steel door pull.

CIRCUIT BREAKERS
Provide circuit breakers as shown on the Drawings and UL listed accessories and miscellaneous materials required for a proper installation.

Molded Case Circuit Breakers: NEMA AB 1; thermal/magnetic trip bolt-on type circuit breakers. Circuit breakers shall clearly indicate CLOSED-OPEN-TRIPPED positions with common trip handle for all poles. All 15A and 20A one pole circuit breakers shall be UL listed as Type SWD. Breaker handle and faceplate shall indicate rated ampacity.

Molded case circuit breakers shall have an overcenter, trip- free, toggle mechanism which will provide quick-make, quick- break contact action. Circuit breakers shall have a permanent trip unit with thermal and magnetic trip elements in each pole. Each thermal element shall be factory calibrated to operate in a 40°C ambient environment. Thermal elements shall be ambient compensating above 40°C.

Two circuit breakers shall have an internal common trip crossbar to provide simultaneous tripping. External handle ties are not acceptable.

Circuit breakers frame sizes above 100 amperes shall have a single magnetic trip adjustment located on the front of the breaker which allows the user to simultaneously select the desired trip level of all poles, and a push-to-trip button for maintenance and testing purposes.

Lugs shall be UL listed to accept solid or stranded copper conductors only. Lugs shall be suitable for 75° C rated wire, sized according to the 75° C temperature rating per NEC Table 310-16. Lug body shall be bolted in place; snap-in designs are not acceptable.

A.I.C. rating (minimum) for the branch panelboard circuit breakers shall be 10,000.

TVSS
TVSS: Provide a factory installed interior-mounted (integral) TVSS device for the panelboard; protection for L-L, L-N, L-G, 240 kA per phase rating.

PART 3 - EXECUTION

INSTALLATION IN GENERAL
Install panelboard plumb in conformance with NEMA PB 1.1 and the manufacturer’s installation instructions with height of top 6 ft. above final grade.

Provide grounding electrode conductors according to NEC and as shown on Drawings.

Torque lugs and other conductor fasteners to manufacturer’s recommended values.

Provide filler plates for unused spaces in panelboards.

Provide typed circuit directory in frame under clear plastic for each panelboard. Directory shall be removable for future changes

END OF SECTION

SECTION 16495

AUTOMATIC TRANSFER SWITCH SYSTEM

PART 1 - GENERAL

AUTOMATIC TRANSFER SWITCH

Provide service entrance rated automatic transfer switch (ATS) for each building in the project that is new, and completely assembled and factory tested by an approved manufacturer, and that is matched to the ratings of the Generator Set specified in Section 16355.

Furnish automatic transfer switch (ATS) with number of poles, amperage, voltage, and withstand current ratings as specified herein and scheduled. ATS shall consist of an inherently double throw power transfer switch unit and a microprocessor controller, interconnected to provide complete automatic operation.

Furnish a NEMA 4X enclosure for the ATS that is UL 891 listed for service entrance. It shall provide all of the proper disconnecting, over-current protection, grounding and bonding required for service entrance equipment.

The automatic transfer switch and all major items of auxiliary equipment shall be manufactured in the United States.

Include documentation, testing and start-up services as specified herein.

ACCEPTABLE MANUFACTURERS

Service Entrance Automatic transfer switches shall be ASCO Series 7000. This matches existing equipment in use by the Iowa DOT.

CODES AND STANDARDS

The automatic transfer switches and accessories shall conform to the applicable requirements of:

UL 1008--Standard for Automatic Transfer Switches.
NFPA 70--National Electrical Code (2014), including use in emergency and standby systems in accordance with Articles 517, 700.
NFPA 110--Standard for Emergency and Standby Power Systems.
IEEE Standard 446--Recommended Practice for Emergency and Standby Power Systems (Orange Book).
IEEE Standard 241--Recommended Practice for Electric Power Systems in Commercial Buildings (Gray Book).
NEMA Standard ICS10-1993 (formerly ICS 2-447) Automatic Transfer Switches.
UL 508 – Standard for industrial Control Equipment.
UL 891 - Standard for Dead-Front Switchboards
EN61000-4-5 Surge Immunity Class 4 (voltage sensing and programmable inputs only).
EN61000-4-4 Fast Transient Immunity Severity Level 4.
IEC Specifications for EMI/EMC Immunity as follows:
CISPR 1 Radiated Emissions.
IEC 1000-4-2, Electrostatic Discharge.
IEC 1000-4-3, Radiated Electromagnetic Fields.
IEC 1000-4-4, Electrical Fast Transient (Bursts).
IEC 1000-4-5, Surge Voltage.
IEC 1000-4-6, Conducted RF Disturbances.
IEC 1000-4-8, Magnetic Fields.
IEC 1000-4-11, Voltage Variations and Interruptions.

SUPPLIER REQUIREMENTS

The ATS shall be supplied by the Manufacturer's authorized distributor only.

The ATS supplier shall maintain a local parts and service facility within 100 miles of this installation. Further, the supplier shall have factory-trained service technicians to furnish all installation, test, and start-up supervision necessary for final approval and acceptance as well as perform maintenance and repairs on all components as required.

Supplier shall have a factory fill rate for emergency orders of >90% of all parts within two business days. Manufacturer must guarantee availability of spares for a period of no less than 10 years after final production of the model offered.

Supplier shall make technical support available 7 x 24 hours; in addition, the manufacturer must have 7 x 24 emergency phone support available.

Supplier shall maintain a national service organization that is factory trained and certified. In addition, the genset dealer organization shall be available 24 hours per day, 365 days per year.

SUBMITTAL DATA
Submit Shop Drawings for equipment, in electronic pdf format files, including the following:

Make and model of ATS.

Manufacturer-produced dimension drawings of the ATS.

Location and descriptions of the supplier's parts and service facilities within a 100 mile radius of the job site, including parts inventory and number of qualified engine-generator set service personnel.

Electrical wiring diagrams, including schematic diagrams and interconnection wiring diagrams for all equipment to be supplied.

Manufacturer warranty statements.

Submit (2) copies of bound Operation and Maintenance documents.

TESTING
The manufacturer and/or local representative shall be responsible for three separate tests: design prototype tests, final production tests, and site tests.

PRODUCTION TESTS
Final Production Tests: Each transfer switch shall be tested under load with all guards in place.

The complete automatic transfer switch shall be tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency, and time delay settings are in compliance with the specification requirements.

The complete automatic transfer switch shall be subjected to a dielectric strength test per NEMA Standard ICS 1-109.05.

The control panel shall meet or exceed the voltage surge withstand capability in accordance with ANSI C37.90a-2978 and the impulse withstand voltage test in accordance with NEMA Standard ICS 1-109.

Upon request, arrangements to either witness this test will be made, or a certified test record will be sent prior to shipment.

SITE TESTS
The manufacturer's local representative shall perform an installation check, start-up, and building load test. The engineer, regular operators, and the maintenance staff shall be notified of the time and date of the site test.

WARRANTY & MAINTENANCE
A two (2) year warranty for the automatic transfer switch shall be included to guarantee against defective material and workmanship in accordance with the manufacturer's published warranty from date of start-up. Optional warranties shall be available upon request.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS-AUTOMATIC TRANSFER SWITCH
ASCO Series 7000, or equivalent AMP equipment.

MECHANICALLY HELD AUTOMATIC TRANSFER SWITCH
The transfer switch unit shall be electrically operated and mechanically held, open transition, and shall incorporate a manual bypass switch with visible contacts (to meet electric utility requirements). The electrical operator shall be a single-solenoid mechanism, momentarily energized. Main operators which include over-current disconnect devices will not be accepted. The switch shall be mechanically interlocked to ensure only one of two possible positions, normal or emergency.

The switch shall be positively locked and unaffected by momentary outages so that contact pressure is maintained at a constant value and temperature rise at the contacts is minimized for maximum reliability and operating life.

Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.

Provide a neutral terminal plate with fully-rated AL-CU pressure connectors.

Including the following features and accessories:

UL listed as suitable for service entrance equipment.
Current Limiting Main Breaker (Square D or Cutler Hammer).
Time Delay Engine Start.
Time Delay Normal to Emergency.
Time Delay Emergency to Normal.
Test Switch.
Exerciser Clock.
Neutral and grounding bars.
Line, load, and emergency power lugs for circuit conductors as shown on the Drawings.

MECHANICAL REQUIREMENTS
All main contacts shall be of silver composition. The main contacts shall be protected by arcing contacts in sizes 400 amperes and above. The main contacts shall be of the blow-on configuration and of segmented construction in ratings 600 amperes and above.

All contacts, coils, springs, and control elements shall be conveniently removable from the front of the transfer switch without major disassembly or disconnection of power conductors.

The contact transfer time shall not exceed one-sixth of a second.

All moveable parts of the operating mechanism shall remain in positive mechanical contact with the main contacts during the transfer operation without the use of separate mechanical interlocks.

All contacts, coils, springs, and control elements shall be conveniently removable from the front of the transfer switch without major disassembly or disconnection of power conductors.

The neutral conductor shall be solidly connected, a neutral conductor terminal plate with fully rated AL-CU pressure connectors shall be provided.

A manual operating handle shall be provided for maintenance purposes. The handle shall permit the operator to manually stop the contacts at any point throughout their entire travel to inspect and service the contacts when required.

ELECTRICAL REQUIREMENTS
Provide automatic transfer switch that is rated for continuous duty.

The transfer switch unit shall be open transition, and shall incorporate a manual bypass switch with visible contacts.

Include a distribution branch circuit breaker for a local panel as shown on the Drawings.

The automatic transfer switch shall be rated in amperes for total system transfer including control of motors, electric-discharge lamps, electric heating, and tungsten-filament lamp load. Switches rated 400 amperes and below shall be suitable for 100% tungsten-filament lamp load.

The automatic transfer switch shall be rated to withstand 50,000 rms symmetrical short circuit current at the automatic transfer switch line terminals.

WITHSTAND AND CLOSING RATINGS
The ATS shall be rated to close on and withstand the available rms symmetrical short circuit current at the ATS terminals with the included over-current protection. Withstand and closing ratings shall be 65,000A when used with the installed main circuit breaker:

ADDITIONAL FEATURES
A set of gold-flashed contacts rated 10 amps, 32 VDC shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.

A push-button type test switch shall be provided to simulate a normal source failure.

A push-button type switch to bypass the time delay on transfer to emergency, the engine exerciser period on the retransfer to normal time delay whichever delay is active at the time the push-button is activated.

Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of one contact, closed when the ATS is connected to the normal source and one contact, closed, when the ATS is connected to the emergency source.

Indicating lights shall be provided, one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red). Also provide indicating lights for both normal and emergency source availability.

Terminals shall be provided to indicate actual availability of the normal and emergency sources, as determined by the voltage sensing pickup and dropout settings for each source.

Engine Exerciser: - An engine generator exercising timer shall be provided, including a selector switch to select exercise with or without load transfer.

In-phase Monitor: - An In-phase monitor shall be inherently built into the controls. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require

external control of power sources. The in-phase monitor shall be specifically designed for and be the product of the ATS manufacturer.

Programmable Engine Exerciser: - Include a seven or fourteen day programmable engine exerciser with digital readout display. It shall include one form C contact for availability of normal and emergency. Include “with or without” load control switch for exerciser period. The exerciser shall be backed up by a permanent battery.

Enclosure Heater - A 125 watt enclosure heater with transformer and thermostat (adjustable from 30° to 140 ° F).

MAINTENANCE BYPASS
Provide an open transition bypass switch, with visible contacts within the ATS enclosure. The bypass shall allow Normal or Emergency modes to be selected manually while bypassing the automatic switch.

ENCLOSURE
The ATS shall be furnished in a NEMA type 4X stainless steel enclosure.

Provide strip heater with thermostat for humidity control, with built-in power distribution for this heater.

The complete assembly shall be degreased, and thoroughly cleaned through a five-stage aqueous process. The finish shall be ANSI-61, light gray, electrostatically-charged polyester powder paint over a phosphate coating, at a minimum of 2.0 mils in density. Finish shall be suitable for indoor and outdoor environments.

The connection between the normal disconnecting device and the ATS shall be made with the appropriate size insulated copper conductors.

A pressure disconnect link shall be provided to disconnect the normal source neutral connection from the emergency and load neutral connections for 4-wire applications. A ground bus shall be provided for connection of the grounding conductor to the grounding electrode. A pressure disconnect link for the neutral to ground bonding jumper shall be provided to connect the normal neutral connection to the ground bus.

Control wiring shall be rated for 600 volt, UL 1015. Wires shall be placed in wire duct or harnessed, and shall be supported to prevent sagging or breakage from weight or vibration. All wiring to hinged doors shall be run through door terminal blocks or connection plugs.

ENCLOSURE LIGHTING
Provide one (1) LED interior lighting fixture, in each enclosure section, with a conveniently located switches that illuminate the interior of the enclosure to allow routine maintenance to be performed at night.

DISCONNECTING AND OVER-CURRENT PROTECTION DEVICE
The normal connection shall be provided with a thermal magnetic, 3 pole, 100% rated molded case circuit breaker with current ratings as shown on the schedule. It shall have a thermal magnetic trip unit.

EQUIPMENT RATINGS
Refer to the Automatic Transfer Switch Schedule Drawings for ratings.

TRANSFER SWITCH CONTROL SYSTEM
An electronic, microprocessor-based, controller shall direct the operation of the ATS. The controller sensing and logic shall be a built-in system. The control settings shall be stored in nonvolatile EEPROM. The module shall contain an integral battery-backed programmable clock and calendar. The controller shall have a keyed disconnect plug to enable the control module to be disconnected from the transfer mechanism for routine maintenance.

Controller shall include semi-flush-mounted display, on an inner door, with LED indicators for switch position and source availability. It shall also include test and time delay bypass switches.

The control module shall be mounted separately from the transfer mechanism unit for safety and ease of maintenance.

Interfacing relays shall be industrial control grade plug-in type with dust cover.

The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:

ANSI C37.90A/IEEE 472 Voltage Surge Test
NEMA ICS – 109.21 Impulse Withstand Test
IEC801-2 Electrostatic discharge (ESD) immunity
ENV50140 and IEC 801 – 3 Radiated electromagnetic field immunity
IEC 801 – 4 Electrical fast transient (EFT) immunity
ENV50142 Surge transient immunity
ENV50141: Conducted radio-frequency field immunity
EN55011: Group 1, Class A conducted and radiated emissions
EN61000 –4 – 11 Voltage dips and interruptions immunity

The control module shall include a user interface keypad with tactile feedback pushbuttons and light-emitting diode status indication. These features shall be user accessible when the enclosure door is closed:

Keypad pushbuttons:

Start/end system test
Set/end exercise
End time delay
Lamp test/service reset

Light-emitting diode status indicators:
Contactor Position: Normal, Off, Emergency
Source Available: Normal, Emergency
Service required: immediate, maintenance
Not in automatic mode
Four stage time delay remaining
Exercise: load, no load, set/disabled
Test: load, no load
Load control active: peak shave, load shed, pre/post-transfer signal
In-phase monitor active

Output Contacts:
Generator engine start gold flashed contact rated 2 amps @ 30 VDC/250VAC.
Pre-transfer load control, one normally open contact rated 10 amps @ 30 VDC/250 VAC.
One Programmable output, factory-set to load bank control rated 2 amps @ 30 VDC/250 VAC.

OPERATION
All phases of normal and all phases of emergency shall be monitored for over and under voltage and single phase of normal and emergency for over- and under-frequency. In addition, the controller shall use anti-single phasing protection that detects regenerative voltage (using the phase angle of the source) to determine a failed source condition.

Voltage and frequency sensing:

Undervoltage pick-up set at 90% of nominal voltage, adjustable 85% - 100% of nominal voltage.
Undervoltage dropout set at 90% of pickup voltage, adjustable 75% - 98% of pickup voltage.
Overvoltage dropout set at 110% of nominal voltage, adjustable 105% - 135% of nominal voltage.
Overvoltage pick-up set at 95% of dropout voltage, adjustable 85% - 100% of nominal voltage.
Voltage dropout time set at 0.5 seconds adjustable 0.1 – 9.9 seconds.

Voltage accuracy: 2%.
Under frequency pick-up set at 90% of nominal frequency, adjustable 85% - 95% of nominal frequency.
Under frequency dropout set at 99% of pick-up frequency, adjustable 95% - 99% of pick-up frequency.
Over frequency dropout set at 101% of pick-up frequency, adjustable 101% - 105% of nominal frequency.
Over frequency pick-up set at 110% of nominal frequency, adjustable 105% - 120% of nominal frequency.
Frequency accuracy: 1%

Time Delays:

Time delay for engine start to delay initiation of transfer for momentary source outages: Range 0-6 seconds. Factory set at 3 seconds.
Time delay for transfer to standby: Range 0-60 minutes. Factory set at 1 second.
Time delay for transfer back to normal: Range 0-60 minutes. Factory set at 15 minutes.
Time delay for engine cool down: Range 0-60 minutes. Factory set at 0 minutes.
Failure to acquire standby source: Range 0-60 minutes. Factory set at 1 minute.
Pre-transfer to normal signal: Range 0-60 minutes. Factory set at 3 second.
Pre-transfer to standby signal: Range 0-60 minutes. Factory set at 3 second.
Post-transfer to normal signal: Range 0-60 minutes. Factory set at 0 minute.
Post-transfer to standby signal: Range 0-60 minutes. Factory set at 0 minute.

User terminals shall be available to connect a normally open contact that, when closed, signals the control module to start and transfer load to the engine-generator. Opening these contacts shall initiate a retransfer and engine cool down sequence. The load shall be transferred to an available utility source immediately if the generator source should fail.

The following features shall be built into the control module logic. These features shall be enabled at the factory or in the field:

Phase rotation sensing programmable ABC or CBA.

In-phase monitoring shall continuously monitor the contactor transfer times, source voltage, frequency and phase angle to provide a self-adjusting, zero crossing contactor transfer signal. A flashing LED on the user interface panel shall indicate active in-phase monitoring.

Plant Exerciser: Programmable seven-day or fourteen-day exerciser with user selectable load or no-load operation. An LED, on the user interface, shall indicate the type of exercise (load or no load). The time remaining on the exercise shall be indicated. The exercise time may be reset at any time with a single keystroke. The engine shall be allowed to run when the exercise period is terminated. The exerciser may be disabled for maintenance purposes. An amber LED shall flash on the user interface if the exerciser has been disabled.
The exerciser shall have the capability of being programmed, using up to twenty-one (21) event for a calendar mode.

The controller shall have provisions for disconnecting a load bank (during exercise) if there is a loss of normal power.

PART 3 - EXECUTION

START-UP SERVICES
Provide start-up services by a factory representative of the transfer switch manufacturer. Responsibilities shall include inspection of completed installation, supervision of start-up, and adjustments required for proper operation.

TESTING AND ADJUSTMENT

Test the completed system for proper functioning. Notify the Owner so that the test may be witnessed. Make any adjustments required for proper operation.

END OF SECTION

Form 131084wd
12-11

Iowa Department of Transportation

PROPOSAL GUARANTY / BID BOND

KNOW ALL PERSONS BY THESE PRESENTS: That we, _____
(Contractor's/Bidder's Name)

_____ of _____
(City,State)

as principal, and the _____
(Surety)

of _____ as Surety, are held and firmly bound unto the Iowa Department of
(Address)

Transportation and to the State of Iowa, or Municipality as defined in Iowa Code, Section 73A.1 as applicable, hereinafter defined as Obligee, in the penal sum as shown in the contract documents of the specified project, for which payment said principal and surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

WHEREAS, the principal is herewith submitting his/her or its sealed proposal for:

County _____ Bid Order # _____
(not required by Purchasing Section)

Type of Work _____

Date of Letting _____ , 20 _____ .

NOW THEREFORE, if the said proposal bid by said principal be accepted, and the principal shall enter into a contract with the Obligee in accordance with the terms of such bid, and give such bond as may be specified in the bidding or contract documents with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, then this obligation shall become null and void or in the event of the failure of the principal to enter such contract and give such bond, the principal shall pay to the Obligee the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

IN WITNESS WHEREOF, the principal and surety have caused these presents to be signed this _____ day of

_____ , 20 _____ .

_____
Principal
(Contractor's/Bidder's Name)

By _____
Contractor's/Bidder's Signature

_____
Address

_____
Surety

By _____
Authorized Surety Representative

Bidder_____

_____

_____

_____

SEALED BID

PROPOSAL NO: 14842

PROPOSAL DESCRIPTION: Electrical Upgrade to Newton Maintenance Facility

LETTING DATE: August 19, 2015

Iowa Department of Transportation
PURCHASING – SEALED BID PROPOSAL
800 Lincoln Way
Ames, Iowa 50010