 <p align="center">UNIVERSITY OF SOUTH CAROLINA</p>	<p>Invitation for Bid</p>	<p>Solicitation Number: Date Issued: Procurement Officer: Phone: E-Mail Address:</p>	<p>USC-IFB-3480-JB April 30, 2019 Juaquana Brookins 803.777.3596 jbrookin@mailbox.sc.edu</p>
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DESCRIPTION: Furnish and Deliver Packaged Engine Generator & Automatic Transfer Switches

USING GOVERNMENTAL UNIT: University of South Carolina

The Term "Offer" Means Your "Bid" or "Proposal". Your offer must be submitted in a sealed package. Solicitation Number & Opening Date must appear on package exterior. See "Submitting Your Paper Offer or Modification" provision.

SUBMIT YOUR SEALED OFFER TO EITHER OF THE FOLLOWING ADDRESSES:

<p>MAILING ADDRESS: University of South Carolina 1600 Hampton Street, Suite 606 Columbia SC 29208</p>	<p>PHYSICAL ADDRESS: University of South Carolina 1600 Hampton Street, Suite 606 Columbia SC 29208</p>
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SUBMIT OFFER BY (Opening Date/Time): May 17, 2019 2:00 PM EST (See "Deadline For Submission Of Offer" provision)

QUESTIONS MUST BE RECEIVED BY: May 8, 2019 10:00 AM EST (See "Questions From Offerors" provision)

NUMBER OF COPIES TO BE SUBMITTED: One (1) paper copy

<p>CONFERENCE TYPE: NA DATE & TIME:</p> <p>(As appropriate, see "Conferences - Pre-Bid/Proposal" & "Site Visit" provisions)</p>	<p>LOCATION: NA</p>
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<p align="center">AWARD & AMENDMENTS</p>	<p>Award will be posted on 05/20/2019. The award, this solicitation, any amendments, and any related notices will be posted at the following web address: http://www.purchasing.sc.edu</p>
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You must submit a signed copy of this form with Your Offer. By signing, You agree to be bound by the terms of the Solicitation. You agree to hold Your Offer open for a minimum of thirty (30) calendar days after the Opening Date.
(See "Signing Your Offer" provision.)

<p>NAME OF OFFEROR</p> <p>(full legal name of business submitting the offer)</p>	<p>Any award issued will be issued to, and the contract will be formed with, the entity identified as the Offeror. The entity named as the offeror must be a single and distinct legal entity. Do not use the name of a branch office or a division of a larger entity if the branch or division is not a separate legal entity, i.e., a separate corporation, partnership, sole proprietorship, etc.</p>
<p>AUTHORIZED SIGNATURE</p> <p>(Person must be authorized to submit binding offer to contract on behalf of Offeror.)</p>	<p>DATE SIGNED</p>
<p>TITLE</p> <p>(business title of person signing above)</p>	<p>STATE VENDOR NO.</p> <p>(Register to Obtain S.C. Vendor No. at www.procurement.sc.gov)</p>
<p>PRINTED NAME</p> <p>(printed name of person signing above)</p>	<p>STATE OF INCORPORATION</p> <p>(If you are a corporation, identify the state of incorporation.)</p>

<p>OFFEROR'S TYPE OF ENTITY: (Check one) (See "Signing Your Offer" provision.)</p>		
<p><input type="checkbox"/> Sole Proprietorship</p>	<p><input type="checkbox"/> Partnership</p>	<p><input type="checkbox"/> Other _____</p>
<p><input type="checkbox"/> Corporate entity (not tax-exempt)</p>	<p><input type="checkbox"/> Corporation (tax-exempt)</p>	<p><input type="checkbox"/> Government entity (federal, state, or local)</p>

PAGE TWO
(Return Page Two with Your Offer)

<p>HOME OFFICE ADDRESS (Address for offeror's home office / principal place of business)</p> 	<p>NOTICE ADDRESS (Address to which all procurement and contract related notices should be sent.) (See "Notice" clause)</p> <p>Area Code - Number - Extension Facsimile</p> <p>_____ E-mail Address</p>
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<p>PAYMENT ADDRESS (Address to which payments will be sent.) (See "Payment" clause)</p> <p>____ Payment Address same as Home Office Address ____ Payment Address same as Notice Address (check only one)</p>	<p>ORDER ADDRESS (Address to which purchase orders will be sent) (See "Purchase Orders and "Contract Documents" clauses)</p> <p>____ Order Address same as Home Office Address ____ Order Address same as Notice Address (check only one)</p>
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ACKNOWLEDGMENT OF AMENDMENTS
 Offerors acknowledges receipt of amendments by indicating amendment number and its date of issue. (See "Amendments to Solicitation" Provision)

Amendment No.	Amendment Issue Date	Amendment No.	Amendment Issue Date	Amendment No.	Amendment Issue Date	Amendment No.	Amendment Issue Date

<p>DISCOUNT FOR PROMPT PAYMENT (See "Discount for Prompt Payment" clause)</p>	<p>10 Calendar Days (%)</p>	<p>20 Calendar Days (%)</p>	<p>30 Calendar Days (%)</p>	<p>____ Calendar Days (%)</p>
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PREFERENCES - A NOTICE TO VENDORS (SEP. 2009): On June 16, 2009, the South Carolina General Assembly rewrote the law governing preferences available to in-state vendors, vendors using in-state subcontractors, and vendors selling in-state or US end products. This law appears in Section 11-35-1524 of the South Carolina Code of Laws. A summary of the new preferences is available at www.procurement.sc.gov/preferences. **ALL THE PREFERENCES MUST BE CLAIMED AND ARE APPLIED BY LINE ITEM, REGARDLESS OF WHETHER AWARD IS MADE BY ITEM OR LOT. VENDORS ARE CAUTIONED TO CAREFULLY REVIEW THE STATUTE BEFORE CLAIMING ANY PREFERENCES. THE REQUIREMENTS TO QUALIFY HAVE CHANGED. IF YOU REQUEST A PREFERENCE, YOU ARE CERTIFYING THAT YOUR OFFER QUALIFIES FOR THE PREFERENCE YOU'VE CLAIMED. IMPROPERLY REQUESTING A PREFERENCE CAN HAVE SERIOUS CONSEQUENCES.** [11-35-1524(E)(4)&(6)]

PREFERENCES - ADDRESS AND PHONE OF IN-STATE OFFICE: Please provide the address and phone number for your in-state office in the space provided below. An in-state office is necessary to claim either the Resident Vendor Preference (11-35-1524(C)(1)(i)&(ii)) or the Resident Contractor Preference (11-35-1524(C)(1)(iii)). Accordingly, you must provide this information to qualify for the preference. An in-state office is not required, but can be beneficial, if you are claiming the Resident Subcontractor Preference (11-35-1524(D)).

____ In-State Office Address same as Home Office Address
 ____ In-State Office Address same as Notice Address (check only one)

Solicitation Outline

- I. Scope of Solicitation
- II. Instructions to Offerors
 - A. General Instructions
 - B. Special Instructions
- III. Scope of Work / Specifications
May be blank if Bidding Schedule / Cost Proposal attached
- IV. Information for Offerors to Submit
- V. Qualifications
- VI. Award Criteria
- VII. Terms and Conditions
 - A. General
 - B. Special
- VIII. Bidding Schedule / Cost Proposal
- IX. Attachments to Solicitation

I. SCOPE OF SOLICITATION

The University of South Carolina is soliciting bids from qualified sources of supply to furnish and deliver one (1) packaged engine generator and three (3) automatic transfer switches, as stated herein.

ACQUIRE SUPPLIES / EQUIPMENT (JAN 2006)

The purpose of this solicitation is to establish a source or sources of supply for the purchase of new supplies and/or equipment as listed.

II. INSTRUCTIONS TO OFFERORS - A. GENERAL INSTRUCTIONS

DEFINITIONS, CAPITALIZATION, AND HEADINGS (DEC 2015)

CLAUSE HEADINGS USED IN THIS SOLICITATION ARE FOR CONVENIENCE ONLY AND SHALL NOT BE USED TO CONSTRUE MEANING OR INTENT. EVEN IF NOT CAPITALIZED, THE FOLLOWING DEFINITIONS ARE APPLICABLE TO ALL PARTS OF THE SOLICITATION, UNLESS EXPRESSLY PROVIDED OTHERWISE.

AMENDMENT means a document issued to supplement the original solicitation document.

BOARD means the South Carolina Budget & Control Board or its successor in interest.

BUSINESS means any corporation, partnership, individual, sole proprietorship, joint stock company, joint venture, or any other legal entity. [11-35-310(3)]

CHANGE ORDER means any written alteration in specifications, delivery point, rate of delivery, period of performance, price, quantity, or other provisions of any contract accomplished by mutual agreement of the parties to the contract. [11-35-310(4)]

CONTRACT See clause entitled Contract Documents & Order of Precedence.

CONTRACT MODIFICATION means a written order signed by the procurement officer, directing the contractor to make changes which the clause of the contract titled "Changes," if included herein, authorizes the Procurement Officer to order without the consent of the contractor. [11-35-310(9)]

CONTRACTOR means the Offeror receiving an award as a result of this solicitation.

COVER PAGE means the top page of the original solicitation on which the solicitation is identified by number. Offerors are cautioned that Amendments may modify information provided on the Cover Page.

OFFER means the bid or proposal submitted in response this solicitation. The terms Bid and Proposal are used interchangeably with the term Offer.

OFFEROR means the single legal entity submitting the offer. The term Bidder is used interchangeably with the term Offeror. See bidding provisions entitled Signing Your Offer and Bid/Proposal As Offer To Contract.

PAGE TWO means the second page of the original solicitation, which is labeled Page Two.

PROCUREMENT OFFICER means the person, or his successor, identified as such on either the Cover Page, an amendment, or an award notice.

YOU and YOUR means Offeror.

SOLICITATION means this document, including all its parts, attachments, and any Amendments.

STATE means the Using Governmental Unit(s) identified on the Cover Page.

SUBCONTRACTOR means any person you contract with to perform or provide any part of the work.

US or WE means the using governmental unit.

USING GOVERNMENTAL UNIT means the unit(s) of government identified as such on the Cover Page. If the Cover Page identifies the Using Governmental Unit as "Statewide Term Contract," the phrase "Using Governmental Unit" means any South Carolina Public Procurement Unit [11-35-4610(5)] that has submitted a Purchase Order to you pursuant to the contract resulting from this solicitation. Reference the clauses titled "Purchase Orders" and "Statewide Term Contract."

WORK means all labor, materials, equipment, services, or property of any type, provided or to be provided by the Contractor to fulfill the Contractor's obligations under the Contract.

AMENDMENTS TO SOLICITATION

(a) The **Solicitation may be amended at any time prior to opening. All actual and prospective Offerors should monitor the following** web site for the issuance of Amendments: <http://purchasing.sc.edu>. (b) Offerors shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date in the space provided for this purpose on Page Two, (3) by letter, or (4) by submitting a bid that indicates in some way that the bidder received the amendment. (c) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.

AUTHORIZED AGENT (FEB 2015)

All authority regarding this procurement is vested solely with the responsible Procurement Officer. Unless specifically delegated in writing, the Procurement Officer is the only government official authorized to bind the government with regard to this procurement or the resulting contract.

AWARD NOTIFICATION (FEB 2015)

Notice regarding any award, cancellation of award, or extension of award will be posted at the location and on the date specified on the Cover Page or, if applicable, any notice of extension of award. Should the contract resulting from this Solicitation have a total or potential value of one hundred thousand dollars or more, such notice will be sent to all Offerors responding to the Solicitation and any award will not be effective until the eleventh day after such notice is given.

BID / PROPOSAL AS OFFER TO CONTRACT (JAN 2004)

By submitting Your Bid or Proposal, You are offering to enter into a contract with the Using Governmental Unit(s). Without further action by either party, a binding contract shall result upon final award. Any award issued will be issued to, and the contract will be formed with, the entity identified as the Offeror on the Cover Page. An Offer may be submitted by only one legal entity; "joint bids" are not allowed.

BID ACCEPTANCE PERIOD (JAN 2004)

In order to withdraw Your Offer after the minimum period specified on the Cover Page, You must notify the Procurement Officer in writing.

BID IN ENGLISH & DOLLARS (JAN 2004)

Offers submitted in response to this solicitation shall be in the English language and in US dollars, unless otherwise permitted by the Solicitation.

CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (MAY 2008)

GIVING FALSE, MISLEADING, OR INCOMPLETE INFORMATION ON THIS CERTIFICATION MAY RENDER YOU SUBJECT TO PROSECUTION UNDER SECTION 16-9-10 OF THE SOUTH CAROLINA CODE OF LAWS AND OTHER APPLICABLE LAWS.

(a) By submitting an offer, the offeror certifies that-

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to—

(i) Those prices;

(ii) The intention to submit an offer; or

(iii) The methods or factors used to calculate the prices offered.

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory-

- (1) Is the person in the offeror's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to paragraphs (a)(1) through (a)(3) of this certification; or
- (2)(i) Has been authorized, in writing, to act as agent for the offeror's principals in certifying that those principals have not participated, and will not participate in any action contrary to paragraphs (a)(1) through (a)(3) of this certification [As used in this subdivision (b)(2)(i), the term "principals" means the person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal];
- (ii) As an authorized agent, does certify that the principals referenced in subdivision (b)(2)(i) of this certification have not participated, and will not participate, in any action contrary to paragraphs (a)(1) through (a)(3) of this certification; and
- (iii) As an agent, has not personally participated, and will not participate, in any action contrary to paragraphs (a)(1) through (a)(3) of this certification.
- (c) If the offeror deletes or modifies paragraph (a)(2) of this certification, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

CERTIFICATION REGARDING DEBARMENT AND OTHER RESPONSIBILITY MATTERS (JAN 2004)

- (a) (1) By submitting an Offer, Offeror certifies, to the best of its knowledge and belief, that-
- (i) Offeror and/or any of its Principals-
- (A) Are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any state or federal agency;
- (B) Have not, within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and
- (C) Are not presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.
- (ii) Offeror has not, within a three-year period preceding this offer, had one or more contracts terminated for default by any public (Federal, state, or local) entity.
- (2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).
- (b) Offeror shall provide immediate written notice to the Procurement Officer if, at any time prior to contract award, Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (c) If Offeror is unable to certify the representations stated in paragraphs (a)(1), Offer must submit a written explanation regarding its inability to make the certification. The certification will be considered in connection with a review of the Offeror's responsibility. Failure of the Offeror to furnish additional information as requested by the Procurement Officer may render the Offeror nonresponsible.
- (d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- (e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly or in bad faith rendered an erroneous certification, in addition to other remedies available to the State, the Procurement Officer may terminate the contract resulting from this solicitation for default.

CODE OF LAWS AVAILABLE (JAN 2006)

The South Carolina Code of Laws, including the Consolidated Procurement Code, is available at

<http://www.scstatehouse.gov/code/statmast.php>.

The South Carolina Regulations are available at:

<http://www.scstatehouse.gov/coderegs/statmast.php>.

DISCLOSURE OF CONFLICTS OF INTEREST OR UNFAIR COMPETITIVE ADVANTAGE (FEB 2015)

You warrant and represent that your offer identifies and explains any unfair competitive advantage you may have in competing for the proposed contract and any actual or potential conflicts of interest that may arise from your participation in this competition or your receipt of an award. The two underlying principles are (a) preventing the existence of conflicting roles that might bias a contractor's judgment, and (b) preventing an unfair competitive

advantage. If you have an unfair competitive advantage or a conflict of interest, the state may withhold award. Before withholding award on these grounds, an offeror will be notified of the concerns and provided a reasonable opportunity to respond. Efforts to avoid or mitigate such concerns, including restrictions on future activities, may be considered. Without limiting the foregoing, you represent that your offer identifies any services that relate to either this solicitation or the work and that has already been performed by you, a proposed subcontractor, or an affiliated business of either.

DEADLINE FOR SUBMISSION OF OFFER (JAN 2004)

Any offer received after the Procurement Officer of the governmental body or his designee has declared that the time set for opening has arrived, shall be rejected unless the offer has been delivered to the designated purchasing office or the governmental bodies' mail room which services that purchasing office prior to the bid opening. [R.19-445.2070(H)]

DRUG FREE WORK PLACE CERTIFICATION (JAN 2004)

By submitting an Offer, Contractor certifies that, if awarded a contract, Contractor will comply with all applicable provisions of The Drug-free Workplace Act, Title 44, Chapter 107 of the South Carolina Code of Laws, as amended.

DUTY TO INQUIRE (FEB 2015)

Offeror, by submitting an Offer, represents that it has read and understands the Solicitation and that its Offer is made in compliance with the Solicitation. Offerors are expected to examine the Solicitation thoroughly and should request an explanation of any ambiguities, discrepancies, errors, omissions, or conflicting statements in the Solicitation. Failure to do so will be at the Offeror's risk. All ambiguities, discrepancies, errors, omissions, or conflicting statements in the Solicitation shall be interpreted to require the better quality or greater quantity of work and/or materials, unless otherwise directed by amendment. Offeror assumes responsibility for any patent ambiguity in the Solicitation that Offeror does not bring to the State's attention. See clause entitled "Questions from Offerors."

ETHICS CERTIFICATE (MAY 2008)

By submitting an offer, the offeror certifies that the offeror has and will comply with, and has not, and will not, induce a person to violate Title 8, Chapter 13 of the South Carolina Code of Laws, as amended (ethics act). The following statutes require special attention: Section 8-13-700, regarding use of official position for financial gain; Section 8-13-705, regarding gifts to influence action of public official; Section 8-13-720, regarding offering money for advice or assistance of public official; Sections 8-13-755 and 8-13-760, regarding restrictions on employment by former public official; Section 8-13-775, prohibiting public official with economic interests from acting on contracts; Section 8-13-790, regarding recovery of kickbacks; Section 8-13-1150, regarding statements to be filed by consultants; and Section 8-13-1342, regarding restrictions on contributions by contractor to candidate who participated in awarding of contract. The state may rescind any contract and recover all amounts expended as a result of any action taken in violation of this provision. If contractor participates, directly or indirectly, in the evaluation or award of public contracts, including without limitation, change orders or task orders regarding a public contract, contractor shall, if required by law to file such a statement, provide the statement required by Section 8-13-1150 to the procurement officer at the same time the law requires the statement to be filed.

OMIT TAXES FROM PRICE (JAN 2004)

Do not include any sales or use taxes in Your price that the State may be required to pay.

OPEN TRADE REPRESENTATION (JUN 2015)

By submitting an Offer, Offeror represents that Offeror is not currently engaged in the boycott of a person or an entity based in or doing business with a jurisdiction with whom South Carolina can enjoy open trade, as defined in SC Code Section 11-35-5300.

PROTESTS (JUN 2006)

Any prospective bidder, offeror, contractor, or subcontractor who is aggrieved in connection with the solicitation of a contract shall protest within fifteen days of the date of issuance of the applicable solicitation document at issue. Any actual bidder, offeror, contractor, or subcontractor who is aggrieved in connection with the intended award or award of a contract shall protest within ten days of the date notification of award is posted in

accordance with this code. A protest shall be in writing, shall set forth the grounds of the protest and the relief requested with enough particularity to give notice of the issues to be decided, and must be received by the appropriate Chief Procurement Officer within the time provided. See clause entitled "Protest-CPO". [Section 11-35-4210]

PROHIBITED COMMUNICATIONS AND DONATIONS (FEB 2015)

Violation of these restrictions may result in disqualification of your offer, suspension or debarment, and may constitute a violation of law.

(a) During the period between publication of the solicitation and final award, ***you must not communicate, directly or indirectly, with the Using Governmental Unit or its employees, agents or officials regarding any aspect of this procurement activity***, unless otherwise approved in writing by the Procurement Officer. All communications must be solely with the Procurement Officer. [R. 19-445.2010]

(b) You are advised to familiarize yourself with Regulation 19-445.2165, which restricts donations to a governmental entity with whom you have or seek to have a contract. ***You represent that your offer discloses any gifts made, directly or through an intermediary, by you or your named subcontractors to or for the benefit of the Using Governmental Unit during the period beginning eighteen months prior to the Opening Date.*** [R. 19-445.2165]

PUBLIC OPENING (JAN 2004)

Offers will be publicly opened at the date / time and at the location identified on the Cover Page, or last Amendment, whichever is applicable.

QUESTIONS FROM OFFERORS (FEB 2015)

Submit Questions via Email only to jbrookin@mailbox.sc.edu

Subject: Solicitation # USC-IFB-3480-JB

(a) Any prospective offeror desiring an explanation or interpretation of the solicitation, drawings, specifications, etc., must request it in writing. Questions regarding the original solicitation or any amendment must be received by the Procurement Officer no later than five (5) days prior to opening unless an earlier date is stated on the Cover Page. Label any communication regarding your questions with the name of the procurement officer, and the solicitation's title and number. Oral explanations or instructions will not be binding. [See R. 19-445.2042(B)] Any information given a prospective offeror concerning a solicitation will be furnished promptly to all other prospective offerors as an Amendment to the solicitation, if that information is necessary for submitting offers or if the lack of it would be prejudicial to other prospective offerors. See clause entitled "Duty to Inquire." We will not identify you in our answer to your question. (b) The State seeks to permit maximum practicable competition. Offerors are urged to advise the Procurement Officer -- as soon as possible -- regarding any aspect of this procurement, including any aspect of the Solicitation that unnecessarily or inappropriately limits full and open competition. [See R. 19-445.2140]

REJECTION/CANCELLATION

This solicitation does not commit the State of South Carolina to award a contract, to pay any costs incurred in the preparation of an offer, or to procure or contract for the articles of goods or services. The State may cancel this solicitation in whole or in part. The State may reject any or all offers in whole or in part. [Section 11-35-1710 & R.19-445.2065]

RESPONSIVENESS/IMPROPER OFFERS (JUN 2015)

(a) Bid as Specified. Offers for supplies or services other than those specified will not be considered unless authorized by the Solicitation.

(b) Multiple Offers. Offerors may submit more than one Offer, provided that each Offer has significant differences other than price. Each separate Offer must satisfy all Solicitation requirements. If this solicitation is an Invitation for Bids, each separate offer must be submitted as a separate document. If this solicitation is a Request for Proposals, multiple offers may be submitted as one document, provided that you clearly differentiate between each offer and you submit a separate cost proposal for each offer, if applicable.

(c) Responsiveness. Any Offer which fails to conform to the material requirements of the Solicitation may be rejected as nonresponsive. Offers which impose conditions that modify material requirements of the Solicitation may be rejected. If a fixed price is required, an Offer will be rejected if the total possible cost to the State cannot be determined. Offerors will not be given an opportunity to correct any material nonconformity. Any deficiency

resulting from a minor informality may be cured or waived at the sole discretion of the Procurement Officer. [R.19-445.2070 and Section 11-35-1520(13)]

(d) Price Reasonableness: Any offer may be rejected if the Procurement Officer determines in writing that it is unreasonable as to price. [R. 19-445.2070].

(e) Unbalanced Bidding. The State may reject an Offer as nonresponsive if the prices bid are materially unbalanced between line items or subline items. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the State even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advance payment.

(f) **Do not submit bid samples or descriptive literature unless expressly requested.** Unsolicited bid samples or descriptive literature will not be examined or tested, will not be used to determine responsiveness, and will not be deemed to vary any of the provisions of the solicitation. S.C. Code Ann. Reg. 19-445.2077(D).

SIGNING YOUR OFFER (JAN 2004)

Every Offer must be signed by an individual with actual authority to bind the Offeror. (a) If the Offeror is an individual, the Offer must be signed by that individual. If the Offeror is an individual doing business as a firm, the Offer must be submitted in the firm name, signed by the individual, and state that the individual is doing business as a firm. (b) If the Offeror is a partnership, the Offer must be submitted in the partnership name, followed by the words "by its Partner," and signed by a general partner. (c) If the Offeror is a corporation, the Offer must be submitted in the corporate name, followed by the signature and title of the person authorized to sign. (d) An Offer may be submitted by a joint venturer involving any combination of individuals, partnerships, or corporations. If the Offeror is a joint venture, the Offer must be submitted in the name of the Joint Venture and signed by every participant in the joint venture in the manner prescribed in paragraphs (a) through (c) above for each type of participant. (e) If an Offer is signed by an agent, other than as stated in subparagraphs (a) through (d) above, the Offer must state that it has been signed by an Agent. Upon request, Offeror must provide proof of the agent's authorization to bind the principal.

STATE OFFICE CLOSINGS (JAN 2004)

If an emergency or unanticipated event interrupts normal government processes so that offers cannot be received at the government office designated for receipt of bids by the exact time specified in the solicitation, the time specified for receipt of offers will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal government processes resume. In lieu of an automatic extension, an Amendment may be issued to reschedule bid opening. If state offices are closed at the time a pre-bid or pre-proposal conference is scheduled, an Amendment will be issued to reschedule the conference. Useful information may be available at: <http://www.scemd.org/closings>.

SUBMITTING CONFIDENTIAL INFORMATION (FEB 2015)

(An overview is available at www.procurement.sc.gov) For every document Offeror submits in response to or with regard to this solicitation or request, Offeror must separately mark with the word "CONFIDENTIAL" every page, or portion thereof, that Offeror contends contains information that is exempt from public disclosure because it is either (a) a trade secret as defined in Section 30-4-40(a)(1), or (b) privileged and confidential, as that phrase is used in Section 11-35-410. For every document Offeror submits in response to or with regard to this solicitation or request, Offeror must separately mark with the words "TRADE SECRET" every page, or portion thereof, that Offeror contends contains a trade secret as that term is defined by Section 39-8-20 of the Trade Secrets Act. For every document Offeror submits in response to or with regard to this solicitation or request, Offeror must separately mark with the word "PROTECTED" every page, or portion thereof, that Offeror contends is protected by Section 11-35-1810. All markings must be conspicuous; use color, bold, underlining, or some other method in order to conspicuously distinguish the mark from the other text. Do not mark your entire response (bid, proposal, quote, etc.) as confidential, trade secret, or protected. If your response, or any part thereof, is improperly marked as confidential or trade secret or protected, the State may, in its sole discretion, determine it nonresponsive. If only portions of a page are subject to some protection, do not mark the entire page. By submitting a response to this solicitation or request, Offeror (1) agrees to the public disclosure of every page of every document regarding this solicitation or request that was submitted at any time prior to entering into a contract (including, but not limited to, documents contained in a response, documents submitted to clarify a response, and documents submitted during negotiations), unless the page is conspicuously marked "TRADE SECRET" or "CONFIDENTIAL" or "PROTECTED", (2) agrees that any information not marked, as required by these bidding instructions, as a "Trade Secret" is not a trade secret as defined by the Trade Secrets Act, and (3) agrees that, notwithstanding any claims or markings otherwise, any prices, commissions, discounts, or other financial figures used to determine the award, as well as the final contract amount, are subject to public disclosure. In determining whether to release documents, the State will detrimentally rely on Offeror's marking of documents, as required by these bidding instructions, as

being either "Confidential" or "Trade Secret" or "PROTECTED". By submitting a response, Offeror agrees to defend, indemnify and hold harmless the State of South Carolina, its agencies, officers and employees, from every claim, demand, loss, expense, cost, damage or injury, including attorney's fees, arising out of or resulting from withholding information by the State of South Carolina or any of its agencies, that Offeror marked as "confidential" or "trade secret" or "PROTECTED". (All references to S.C. Code of Laws.)

SUBMITTING A PAPER OFFER OR MODIFICATION

Paper offers are required. (a) All prices and notations should be printed in ink or typewritten. Errors should be crossed out, corrections entered and initialed by the person signing the bid. Do not modify the solicitation document itself (including bid schedule). (b) (1) All copies of the offer or modification, and any other documents required to be submitted with the offer shall be enclosed in a sealed, opaque envelope or package. (2) Submit your offer or modification to the address on the Cover Page. (3) The envelope or package must show the time and date specified for opening, the solicitation number, and the name and address of the bidder. If the offer or modification is sent by mail or special delivery service (UPS, Federal Express, etc.), the outermost envelope or wrapper must be labeled "OFFER ENCLOSED" on the face thereof. (c) If you are responding to more than one solicitation, submit each offer in a separate envelope or package. (d) Submit the number of copies indicated on the Cover Page. (e) Facsimile or e-mail offers, modifications, or withdrawals, will not be considered unless authorized by the Solicitation.

TAX CREDIT FOR SUBCONTRACTING WITH DISADVANTAGED SMALL BUSINESSES (JAN 2008)

Pursuant to Section 12-6-3350, a taxpayer having a contract with this State who subcontracts with a socially and economically disadvantaged small business is eligible for an income tax credit equal to four percent of the payments to that subcontractor for work pursuant to the contract. The subcontractor must be certified as a socially and economically disadvantaged small business as defined in Section 11-35-5010 and regulations pursuant to it. The credit is limited to a maximum of fifty thousand dollars annually. A taxpayer is eligible to claim the credit for ten consecutive taxable years beginning with the taxable year in which the first payment is made to the subcontractor that qualifies for the credit. After the above ten consecutive taxable years, the taxpayer is no longer eligible for the credit. A taxpayer claiming the credit shall maintain evidence of work performed for the contract by the subcontractor. The credit may be claimed on Form TC-2, "Minority Business Credit." A copy of the subcontractor's certificate from the Governor's Office of Small and Minority Business (OSMBA) is to be attached to the contractor's income tax return. Questions regarding the tax credit and how to file are to be referred to: SC Department of Revenue, Research and Review, Phone: (803) 898-5786, Fax: (803) 898-5888. Questions regarding subcontractor certification are to be referred to: Governor's Office of Small and Minority Business Assistance, Phone: (803) 734-0657, Fax: (803) 734-2498.

TAXPAYER IDENTIFICATION NUMBER

(a) If Offeror is owned or controlled by a common parent as defined in paragraph (b) of this provision, Offeror shall submit with its Offer the name and TIN of common parent.

(b) Definitions: "Common parent," as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member. "Taxpayer Identification Number (TIN)," as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(c) If Offeror does not have a TIN, Offeror shall indicate if either a TIN has been applied for or a TIN is not required. If a TIN is not required, indicate whether (i) Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States; (ii) Offeror is an agency or instrumentality of a state or local government; (iii) Offeror is an agency or instrumentality of a foreign government; or (iv) Offeror is an agency or instrumentality of the Federal Government.

WITHDRAWAL OR CORRECTION OF OFFER (JAN 2004)

Offers may be withdrawn by written notice received at any time before the exact time set for opening. If the Solicitation authorizes facsimile offers, offers may be withdrawn via facsimile received at any time before the exact time set for opening. A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for opening, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid. The withdrawal and correction of Offers is governed by S.C. Code Section 11-35-1520 and Regulation 19-445.2085.

II. INSTRUCTIONS TO OFFERORS -- B. SPECIAL INSTRUCTIONS

CLARIFICATION (NOV 2007)

Pursuant to Section 11-35-1520(8), the Procurement Officer may elect to communicate with you after opening for the purpose of clarifying either your offer or the requirements of the solicitation. Such communications may be conducted only with offerors who have submitted an offer which obviously conforms in all material aspects to the solicitation. Clarification of an offer must be documented in writing and included with the offer. Clarifications may not be used to revise an offer or the solicitation. [Section 11-35-1520(8); R.19-445.2080]

DESCRIPTIVE LITERATURE – LABELLING (JAN 2006)

Include offeror's name on the cover of any specifications or descriptive literature submitted with your offer.

PREFERENCES – A NOTICE TO VENDORS (SEP 2009)

On June 16, 2009, the South Carolina General Assembly rewrote the law governing preferences available to in-state vendors, vendors using in-state subcontractors, and vendors selling in-state or US end products. This law appears in Section 11-35-1524 of the South Carolina Code of Laws. A summary of the new preferences is available at www.procurement.sc.gov/preferences. ALL THE PREFERENCES MUST BE CLAIMED AND ARE APPLIED BY LINE ITEM, REGARDLESS OF WHETHER AWARD IS MADE BY ITEM OR LOT. VENDORS ARE CAUTIONED TO CAREFULLY REVIEW THE STATUTE BEFORE CLAIMING ANY PREFERENCES. THE REQUIREMENTS TO QUALIFY HAVE CHANGED. IF YOU REQUEST A PREFERENCE, YOU ARE CERTIFYING THAT YOUR OFFER QUALIFIES FOR THE PREFERENCE YOU'VE CLAIMED. IMPROPERLY REQUESTING A PREFERENCE CAN HAVE SERIOUS CONSEQUENCES. [11-35-1524(E)(4)&(6)]

PREFERENCES - SC/US END-PRODUCT (SEP 2009)

Section 11-35-1524 provides a preference to vendors offering South Carolina end-products or US end-products, if those products are made, manufactured, or grown in SC or the US, respectively. An end-product is the tangible project identified for acquisition in this solicitation, including all component parts in final form and ready for the use intended. The terms "made," "manufactured," and "grown" are defined by Section 11-35-1524(A). By signing your offer and checking the appropriate space(s) provided and identified on the bid schedule, you certify that the end-product(s) is either made, manufactured or grown in South Carolina, or other states of the United States, as applicable. Preference will be applied as required by law. Post award substitutions are prohibited. See "Substitutions Prohibited - End Product Preferences (Sep 2009)" provision.

PREFERENCES - RESIDENT VENDOR PREFERENCE (SEP 2009)

To qualify for the RVP, you must maintain an office in this state. An office is a nonmobile place for the regular transaction of business or performance of a particular service which has been operated as such by the bidder for at least one year before the bid opening and during that year the place has been staffed for at least fifty weeks by at least two employees for at least thirty five hours a week each. In addition, you must either: (1) maintain at a location in South Carolina at the time of the bid an inventory of expendable items which are representative of the general type of commodities for which the award will be made and which have a minimum total value, based on the bid price, equal to the lesser of fifty thousand dollars [\$50,000] or the annual amount of the contract; or (2) be a manufacturer headquartered and having an annual payroll of at least one million dollars in South Carolina and the end product being sold is either made or processed from raw materials into a finished end product by that manufacturer or its affiliate (as defined in Section 1563 of the Internal Revenue Code).

PROTEST - CPO - MMO ADDRESS (JUN 2006)

Any protest must be addressed to the Chief Procurement Officer, Materials Management Office, and submitted in writing

(a) by email to protest-mmo@mmo.state.sc.us,

(b) by facsimile at 803-737-0639, or

(c) by post or delivery to 1201 Main Street, Suite 600, Columbia, SC 29201.

III. SCOPE OF WORK/SPECIFICATIONS

STATEMENT OF WORK (JUN 2007)

Please see **ATTACHMENT A** for STATEMENT OF WORK.

DELIVERY / PERFORMANCE LOCATION – PURCHASE ORDER (JAN 2006)

After award, all deliveries shall be made and all services provided to the location specified by the Using Governmental Unit in its purchase order.

QUALITY – NEW (JAN 2006)

All items must be new.

IV. INFORMATION FOR OFFERORS TO SUBMIT

INFORMATION FOR OFFERORS TO SUBMIT – GENERAL

You shall submit a signed Cover Page and Page Two. Your offer should include all other information and documents requested in this part and in parts II.B. Special Instructions; III. Scope of Work; V. Qualifications; VIII. Bidding Schedule/Price Proposal; and any appropriate attachments addressed in Part IX. Attachments to Solicitations. You should submit a summary of all insurance policies you have or plan to acquire to comply with the insurance requirements stated herein, if any, including policy types; coverage types; limits, sub-limits, and deductibles for each policy and coverage type; the carrier's A.M. Best rating; and whether the policy is written on an occurrence or claims-made basis.

MINORITY PARTICIPATION (DEC 2015)

Is the bidder a South Carolina Certified Minority Business? Yes No

Is the bidder a Minority Business certified by another governmental entity? Yes No

If so, please list the certifying governmental entity: _____

Will any of the work under this contract be performed by a SC certified Minority Business as a subcontractor? Yes No

If so, what percentage of the total value of the contract will be performed by a SC certified Minority Business as a subcontractor? _____

Will any of the work under this contract be performed by a minority business certified by another governmental entity as a subcontractor? Yes No

If so, what percentage of the total value of the contract will be performed by a minority business certified by another governmental entity as a subcontractor? _____

If a certified Minority Business is participating in this contract, please indicate all categories for which the Business is certified:

- Traditional minority
- Traditional minority, but female
- Women (Caucasian females)
- Hispanic minorities
- DOT referral (Traditional minority)
- DOT referral (Caucasian female)
- Temporary certification
- SBA 8 (a) certification referral
- Other minorities (Native American, Asian, etc.)

(If more than one minority contractor will be utilized in the performance of this contract, please provide the information above for each minority business.)

The Department of Administration, Division of Small and Minority Business Contracting and Certification, publishes a list of certified minority firms. The Minority Business Directory is available at the following URL: <http://osmba.sc.gov/directory.html>

V. QUALIFICATIONS

QUALIFICATION OF OFFEROR (MAR 2015)

(1) To be eligible for award, you must have the capability in all respects to perform fully the contract requirements and the integrity and reliability which will assure good faith performance. We may also consider a documented commitment from a satisfactory source that will provide you with a capability. We may consider information from any source at any time prior to award. We may elect to consider (i) key personnel, any predecessor business, and any key personnel of any predecessor business, including any facts arising prior to the date a business was established, and/or (ii) any subcontractor you identify. (2) You must promptly furnish satisfactory evidence of responsibility upon request. Unreasonable failure to supply requested information is grounds for rejection. (3) **Corporate subsidiaries are cautioned that the financial capability of an affiliated or parent company will not be considered in determining financial capability;** however, we may elect to consider any security, e.g., letter of credit, performance bond, parent-company corporate guaranty, that you offer to provide Instructions and forms to help assure acceptability are posted on procurement.sc.gov, link to "Standard Clauses & Provisions."

SUBCONTRACTOR – IDENTIFICATION (FEB 2015)

If you intend to subcontract, at any tier level, with another business for any portion of the work and that portion either (1) exceeds 10% of your cost, (2) involves access to any "government information," as defined in the clause entitled "Information Security - Definitions," if included, or (3) otherwise involves services critical to your performance of the work (err **on the** side of inclusion), your offer must identify that business and the work which they are to perform. Identify potential subcontractors by providing the business name, address, phone, taxpayer identification number, and point of contact. In determining your responsibility, the state may contact and evaluate your proposed subcontractors.

VI. AWARD CRITERIA

AWARD BY ITEM (JAN 2006)

Award will be made by individual item.

AWARD CRITERIA – BIDS (JAN 2006)

Award will be made to the lowest responsible and responsive bidder(s).

AWARD TO ONE OFFEROR (JAN 2006)

Award will be made to one Offeror.

VII. TERMS AND CONDITIONS -- A. GENERAL

ASSIGNMENT, NOVATION, AND CHANGE OF NAME, IDENTITY, OR STRUCTURE (FEB 2015)

(a) Contractor shall not assign this contract, or its rights, obligations, or any other interest arising from this contract, or delegate any of its performance obligations, without the express written consent of the responsible procurement officer. The foregoing restriction does not apply to a transfer that occurs by operation of law (e.g., bankruptcy; corporate reorganizations and consolidations, but not including partial asset sales). Notwithstanding the foregoing, contractor may assign monies receivable under the contract provided that the state shall have no obligation to make payment to an assignee until thirty days after contractor (not the assignee) has provided the responsible procurement officer with (i) proof of the assignment, (ii) the identity (by contract number) of the specific state contract to which the assignment applies, and (iii) the name of the assignee and the exact address or account information to which assigned payments should be made. (b) If contractor amends, modifies, or otherwise changes its name, its identity (including its trade name), or its corporate, partnership or other structure, or its FEIN, contractor shall provide the procurement officer prompt written notice of such change. (c) Any name change, transfer, assignment, or novation is subject to the conditions and approval required by Regulation 19-445.2180, which does not restrict transfers by operation of law.

BANKRUPTCY - GENERAL (FEB 2015)

(a) Notice. In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish written notification of the bankruptcy to the Using Governmental Unit. This notification shall be furnished within two (2) days of the initiation of the proceedings relating to the bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of all State contracts against which final payment has not been made. This obligation remains in effect until final payment under this Contract. (b) Termination. This contract is voidable and subject to immediate termination by the State upon the contractor's insolvency, including the filing of proceedings in bankruptcy.

CHOICE-OF-LAW (JAN 2006)

The Agreement, any dispute, claim, or controversy relating to the Agreement, and all the rights and obligations of the parties shall, in all respects, be interpreted, construed, enforced and governed by and under the laws of the State of South Carolina, except its choice of law rules. As used in this paragraph, the term "Agreement" means any transaction or agreement arising out of, relating to, or contemplated by the solicitation.

CONTRACT DOCUMENTS & ORDER OF PRECEDENCE (FEB 2015)

(a) Any contract resulting from this solicitation shall consist of the following documents: (1) a Record of Negotiations, if any, executed by you and the Procurement Officer, (2) the solicitation, as amended, (3) documentation of clarifications [11-35-1520(8)] or discussions [11-35-1530(6)] of an offer, if applicable, (4) your offer, (5) any statement reflecting the state's final acceptance (a/k/a "award"), and (6) purchase orders. These documents shall be read to be consistent and complimentary. Any conflict among these documents shall be resolved by giving priority to these documents in the order listed above.

(b) The terms and conditions of documents (1) through (5) above shall apply notwithstanding any additional or different terms and conditions in any other document, including without limitation, (i) a purchase order or other instrument submitted by the State, (ii) any invoice or other document submitted by Contractor, or (iii) any privacy policy, terms of use, or end user agreement. Except as otherwise allowed herein, the terms and conditions of all such documents shall be void and of no effect.

(c) No contract, license, or other agreement containing contractual terms and conditions will be signed by any Using Governmental Unit. Any document signed or otherwise agreed to by persons other than the Procurement Officer shall be void and of no effect.

DISCOUNT FOR PROMPT PAYMENT (JAN 2006)

(a) Discounts for prompt payment will not be considered in the evaluation of offers. However, any offered discount will form a part of the award, and will be taken if payment is made within the discount period indicated in the offer by the offeror. As an alternative to offering a discount for prompt payment in conjunction with the offer, offerors awarded contracts may include discounts for prompt payment on individual invoices.

(b) In connection with any discount offered for prompt payment, time shall be computed from the date of the invoice. If the Contractor has not placed a date on the invoice, the due date shall be calculated from the date the designated billing office receives a proper invoice, provided the state annotates such invoice with the date of receipt at the time of receipt. For the purpose of computing the discount earned, payment shall be considered to have been made on the date that appears on the payment check or, for an electronic funds transfer, the specified payment date. When the discount date falls on a Saturday, Sunday, or legal holiday when Federal Government offices are closed and Government business is not expected to be conducted, payment may be made on the following business day.

DISPUTES (JAN 2006)

(1) Choice-of-Forum. All disputes, claims, or controversies relating to the Agreement shall be resolved exclusively by the appropriate Chief Procurement Officer in accordance with Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws, or in the absence of jurisdiction, only in the Court of Common Pleas for, or a federal court located in, Richland County, State of South Carolina. Contractor agrees that any act by the Government regarding the Agreement is not a waiver of either the Government's sovereign immunity or the Government's immunity under the Eleventh Amendment of the United State's Constitution. As used in this paragraph, the term "Agreement" means any transaction or agreement arising out of, relating to, or contemplated by the solicitation. (2) Service of Process. Contractor consents that any papers, notices, or process necessary or proper for the initiation or continuation of any disputes, claims, or controversies relating to the Agreement; for any court action in connection therewith; or for the entry of judgment on any award made, may be served on Contractor by certified mail (return receipt requested) addressed to Contractor at the address provided as the Notice Address on Page Two or by personal service or by any other manner that is permitted by law, in or outside South Carolina. Notice by certified mail is deemed duly given upon deposit in the United States mail.

EQUAL OPPORTUNITY (JAN 2006)

Contractor is referred to and shall comply with all applicable provisions, if any, of Title 41, Part 60 of the Code of Federal Regulations, including but not limited to Sections 60-1.4, 60-4.2, 60-4.3, 60-250.5(a), and 60-741.5(a), which are hereby incorporated by reference.

FALSE CLAIMS (JAN 2006)

According to the S.C. Code of Laws § 16-13-240, "a person who by false pretense or representation obtains the signature of a person to a written instrument or obtains from another person any chattel, money, valuable security, or other property, real or personal, with intent to cheat and defraud a person of that property is guilty" of a crime.

FIXED PRICING REQUIRED (JAN 2006)

Any pricing provided by contractor shall include all costs for performing the work associated with that price. Except as otherwise provided in this solicitation, contractor's price shall be fixed for the duration of this contract, including option terms. This clause does not prohibit contractor from offering lower pricing after award.

NO INDEMNITY OR DEFENSE (FEB 2015)

Any term or condition is void to the extent it requires the State to indemnify, defend, or pay attorney's fees to anyone for any reason.

NOTICE (JAN 2006)

(A) After award, any notices shall be in writing and shall be deemed duly given (1) upon actual delivery, if delivery is by hand, (2) upon receipt by the transmitting party of automated confirmation or answer back from the recipient's device if delivery is by telex, telegram, facsimile, or electronic mail, or (3) upon deposit into the United States mail, if postage is prepaid, a return receipt is requested, and either registered or certified mail is used. (B) Notice to contractor shall be to the address identified as the Notice Address on Page Two. Notice to the state shall be to the Procurement Officer's address on the Cover Page. Either party may designate a different address for notice by giving notice in accordance with this paragraph.

OPEN TRADE (JUN 2015)

During the contract term, including any renewals or extensions, Contractor will not engage in the boycott of a person or an entity based in or doing business with a jurisdiction with whom South Carolina can enjoy open trade, as defined in SC Code Section 11-35-5300.

PAYMENT & INTEREST (FEB 2015)

(a) The State shall pay the Contractor, after the submission of proper invoices or vouchers, the prices stipulated in this contract for supplies delivered and accepted or services rendered and accepted, less any deductions provided in this contract. Unless otherwise specified herein, including the purchase order, payment shall not be made on partial deliveries accepted by the Government. (b) Unless otherwise provided herein, including the purchase order, payment will be made by check mailed to the payment address on "Page Two." (c) Notwithstanding any other provision, payment shall be made in accordance with S.C. Code Section 11-35-45, or Chapter 6 of Title 29 (real property improvements) when applicable, which provides the Contractor's exclusive means of recovering any type of interest from the Owner. Contractor waives imposition of an interest penalty unless the invoice submitted specifies that the late penalty is applicable. Except as set forth in this paragraph, the State shall not be liable for the payment of interest on any debt or claim arising out of or related to this contract for any reason. (d) Amounts due to the State shall bear interest at the rate of interest established by the South Carolina Comptroller General pursuant to Section 11-35-45 ("an amount not to exceed fifteen percent each year"), as amended, unless otherwise required by Section 29-6-30. (e) Any other basis for interest, including but not limited to general (pre- and post-judgment) or specific interest statutes, including S.C. Code Ann. Section 34-31-20, are expressly waived by both parties. If a court, despite this agreement and waiver, requires that interest be paid on any debt by either party other than as provided by items (c) and (d) above, the parties further agree that the applicable interest rate for any given calendar year shall be the lowest prime rate as listed in the first edition of the Wall Street Journal published for each year, applied as simple interest without compounding. (f) The State shall have all of its common law, equitable and statutory rights of set-off.

PUBLICITY (JAN 2006)

Contractor shall not publish any comments or quotes by State employees, or include the State in either news releases or a published list of customers, without the prior written approval of the Procurement Officer.

PURCHASE ORDERS (JAN 2006)

Contractor shall not perform any work prior to the receipt of a purchase order from the using governmental unit. The using governmental unit shall order any supplies or services to be furnished under this contract by issuing a purchase order. Purchase orders may be used to elect any options available under this contract, e.g., quantity, item, delivery date, payment method, but are subject to all terms and conditions of this contract. Purchase orders may be electronic. No particular form is required. An order placed pursuant to the purchasing card provision qualifies as a purchase order.

SURVIVAL OF OBLIGATIONS (JAN 2006)

The Parties' rights and obligations which, by their nature, would continue beyond the termination, cancellation, rejection, or expiration of this contract shall survive such termination, cancellation, rejection, or expiration, including, but not limited to, the rights and obligations created by the following clauses: Indemnification - Third Party Claims, Intellectual Property Indemnification, and any provisions regarding warranty or audit.

TAXES (JAN 2006)

Any tax the contractor may be required to collect or pay upon the sale, use or delivery of the products shall be paid by the State, and such sums shall be due and payable to the contractor upon acceptance. Any personal property taxes levied after delivery shall be paid by the State. It shall be solely the State's obligation, after payment to contractor, to challenge the applicability of any tax by negotiation with, or action against, the taxing authority. Contractor agrees to refund any tax collected, which is subsequently determined not to be proper and for which a refund has been paid to contractor by the taxing authority. In the event that the contractor fails to pay, or delays in paying, to any taxing authorities, sums paid by the State to contractor, contractor shall be liable to the State for any loss (such as the assessment of additional interest) caused by virtue of this failure or delay. Taxes based on Contractor's net income or assets shall be the sole responsibility of the contractor.

TERMINATION DUE TO UNAVAILABILITY OF FUNDS (JAN 2006)

Payment and performance obligations for succeeding fiscal periods shall be subject to the availability and appropriation of funds therefore. When funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal period, the contract shall be canceled. In the event of a cancellation pursuant to this paragraph, contractor will be reimbursed the resulting unamortized, reasonably incurred, nonrecurring costs. Contractor will not be reimbursed any costs amortized beyond the initial contract term.

THIRD PARTY BENEFICIARY (JAN 2006)

This Contract is made solely and specifically among and for the benefit of the parties hereto, and their respective successors and assigns, and no other person will have any rights, interest, or claims hereunder or be entitled to any benefits under or on account of this Contract as a third party beneficiary or otherwise.

WAIVER (JAN 2006)

The State does not waive any prior or subsequent breach of the terms of the Contract by making payments on the Contract, by failing to terminate the Contract for lack of performance, or by failing to strictly or promptly insist upon any term of the Contract. Only the Procurement Officer has actual authority to waive any of the State's rights under this Contract. Any waiver must be in writing.

VII. TERMS AND CONDITIONS -- B. SPECIAL

HIPAA LAW:

The Contractor agrees that to the extent that some or all of the activities within the scope of this Contract are subject to the Health Insurance Portability Accountability Act of 1996, P.L. 104-91, as amended ("HIPAA"), or its implementing regulations, it will comply with the HIPAA requirements and will execute such agreements and practices as the University of South Carolina may require to ensure compliance. Additional information may be viewed at: <http://www.sa.sc.edu/shs/hipaa>

BANKRUPTCY – GOVERNMENT INFORMATION (FEB 2015)

(a) All government information (as defined in the clause herein entitled "Information Security - Definitions") shall belong exclusively to the State, and Contractor has no legal or equitable interest in, or claim to, such information. Contractor acknowledges and agrees that in the event Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, government information in its possession and/or under its control will not be considered property of its bankruptcy estate.

(b) Contractor agrees to notify the State within forty-eight (48) hours of any determination that it makes to file for bankruptcy protection, and Contractor further agrees to turn over to the State, before such filing, all government information that is in Contractor's possession in a format that can be readily utilized by the State.

(c) In order to protect the integrity and availability of government information, Contractor shall take reasonable measures to evaluate and monitor the financial circumstances of any subcontractor that will process, store, transmit or access government information.

CHANGES (JAN 2006)

(1) Contract Modification. By a written order, at any time, and without notice to any surety, the Procurement Officer may, subject to all appropriate adjustments, make changes within the general scope of this contract in any one or more of the following:

(a) drawings, designs, or specifications, if the supplies to be furnished are to be specially manufactured for the [State] in accordance therewith;

(b) method of shipment or packing;

(c) place of delivery;

(d) description of services to be performed;

(e) time of performance (i.e., hours of the day, days of the week, etc.); or,

(f) place of performance of the services. Subparagraphs (a) to (c) apply only if supplies are furnished under this contract. Subparagraphs (d) to (f) apply only if services are performed under this contract.

(2) Adjustments of Price or Time for Performance. If any such change increases or decreases the contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed by the order, an adjustment shall be made in the contract price, the delivery schedule, or both, and the contract modified in writing accordingly. Any adjustment in contract price made pursuant to this clause shall be determined in accordance with the Price Adjustment Clause of this contract. Failure of the parties to agree to an adjustment shall not excuse the contractor from proceeding with the contract as changed, provided that the State promptly and duly make such provisional adjustments in payment or time for performance as may be reasonable. By proceeding with the work, the contractor shall not be deemed to have prejudiced any claim for additional compensation, or an extension of time for completion.

(3) Time Period for Claim. Within 30 days after receipt of a written contract modification under Paragraph (1) of this clause, unless such period is extended by the Procurement Officer in writing, the contractor shall file notice of intent to assert a claim for an adjustment. Later notification shall not bar the contractor's claim unless the State is prejudiced by the delay in notification.

(4) Claim Barred After Final Payment. No claim by the contractor for an adjustment hereunder shall be allowed if notice is not given prior to final payment under this contract.

CISG (JAN 2006)

The parties expressly agree that the UN Convention on the International Sale of Goods shall not apply to this agreement.

COMPLIANCE WITH LAWS (JAN 2006)

During the term of the contract, contractor shall comply with all applicable provisions of laws, codes, ordinances, rules, regulations, and tariffs.

CONTRACTOR'S OBLIGATION – GENERAL (JAN 2006)

The contractor shall provide and pay for all materials, tools, equipment, labor and professional and nonprofessional services, and shall perform all other acts and supply all other things necessary, to fully and properly perform and complete the work. The contractor must act as the prime contractor and assume full responsibility for any subcontractor's performance. The contractor will be considered the sole point of contact with regard to all situations, including payment of all charges and the meeting of all other requirements.

CONTRACTOR'S USE OF STATE PROPERTY (JAN 2006)

Upon termination of the contract for any reason, the State shall have the right, upon demand, to obtain access to, and possession of, all State properties, including, but not limited to, current copies of all State application programs and necessary documentation, all data, files, intermediate materials and supplies held by the contractor. Contractor shall not use, reproduce, distribute, display, or sell any data, material, or documentation owned exclusively by the State without the State's written consent, except to the extent necessary to carry out the work.

CONTRACTOR'S LIABILITY INSURANCE - GENERAL (FEB 2015)

(a) Without limiting any of the obligations or liabilities of Contractor, Contractor shall procure from a company or companies lawfully authorized to do business in South Carolina and with a current A.M. Best rating of no less than A: VII, and maintain for the duration of the contract, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work and the results of that work by the contractor, his agents, representatives, employees or subcontractors. (b) Coverage shall be at least as broad as: (1) Commercial General Liability (CGL): Insurance Services Office (ISO) Form CG 00 01 12 07 covering CGL on an "occurrence" basis, including products-completed operations, personal and advertising injury, with limits no less than \$1,000,000 per occurrence. If a general aggregate limit applies, the general aggregate limit shall be twice the required occurrence limit. This contract shall be considered to be an "insured contract" as defined in the policy. (2) Auto Liability: ISO Form Number CA 00 01 covering any auto (Code 1), or if Contractor has no owned autos, hired, (Code 8) and non-owned autos (Code 9), with limits no less than \$1,000,000 per accident for bodily injury and property damage. (3) Worker's Compensation: As required by the State of South Carolina, with Statutory Limits, and Employer's Liability Insurance with limit of no less than \$1,000,000 per accident for bodily injury or disease. (c) Every applicable Using Governmental Unit, and the officers, officials, employees and volunteers of any of them, must be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance at least as broad as ISO Form CG 20 10 11 85 or if not available, through the addition of both CG 20 10 and CG 20 37 if a later edition is used. (d) For any claims related to this contract, the Contractor's insurance coverage shall be primary insurance as respects the State, every applicable Using Governmental Unit, and the officers, officials, employees and volunteers of any of them. Any insurance or self-insurance maintained by the State, every applicable Using Governmental Unit, or the officers, officials, employees and volunteers of any of them, shall be excess of the Contractor's insurance and shall not contribute with it.

(e) Prior to commencement of the work, the Contractor shall furnish the State with original certificates and amendatory endorsements or copies of the applicable policy language effecting coverage required by this section. All certificates are to be received and approved by the State before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the Contractor's obligation to provide them. The State reserves the right to require complete, certified copies of all required insurance policies, including endorsements required by this section, at any time. (f) Should any of the above described policies be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions. In addition, the Contractor shall notify the State immediately upon receiving any information that any of the coverages required by this section are or will be changed, cancelled, or replaced. (g) Contractor hereby grants to the State and every applicable Using Governmental Unit a waiver of any right to subrogation which any insurer of said Contractor may acquire against the State or applicable Using Governmental Unit by virtue of the payment of any loss under such insurance. Contractor agrees to obtain any endorsement that may be necessary to effect this waiver of

subrogation, but this provision applies regardless of whether or not the State or Using Governmental Unit has received a waiver of subrogation endorsement from the insurer. (h) Any deductibles or self-insured retentions must be declared to and approved by the State. The State may require the Contractor to purchase coverage with a lower deductible or retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. (i) The State reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

Insurance Requirements: Successful bidder (contractor) must provide a copy of its liability insurance certificate within ten (10) days upon the posting of the intent to award statement or award statement and on each contract anniversary date thereafter attesting to such insurance coverage.

DEFAULT (JAN 2006)

(a) (1) The State may, subject to paragraphs (c) and (d) of this clause, by written notice of default to the Contractor, terminate this contract in whole or in part if the Contractor fails to: (i) Deliver the supplies or to perform the services within the time specified in this contract or any extension; (ii) Make progress, so as to endanger performance of this contract (but see paragraph (a)(2) of this clause); or (iii) Perform any of the other material provisions of this contract (but see paragraph (a)(2) of this clause). (2) The State's right to terminate this contract under subdivisions (a)(1)(ii) and (1)(iii) of this clause, may be exercised if the Contractor does not cure such failure within 10 days (or more if authorized in writing by the Procurement Officer) after receipt of the notice from the Procurement Officer specifying the failure. (b) If the State terminates this contract in whole or in part, it may acquire, under the terms and in the manner the Procurement Officer considers appropriate, supplies or services similar to those terminated, and the Contractor will be liable to the State for any excess costs for those supplies or services. However, the Contractor shall continue the work not terminated. (c) Except for defaults of subcontractors at any tier, the Contractor shall not be liable for any excess costs if the failure to perform the contract arises from causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (1) acts of God or of the public enemy, (2) acts of the State in either its sovereign or contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather. In each instance the failure to perform must be beyond the control and without the fault or negligence of the Contractor. (d) If the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either, the Contractor shall not be liable for any excess costs for failure to perform, unless the subcontracted supplies or services were obtainable from other sources in sufficient time for the Contractor to meet the required delivery schedule.

(e) If this contract is terminated for default, the State may require the Contractor to transfer title and deliver to the State, as directed by the Procurement Officer, any (1) completed supplies, and (2) partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (collectively referred to as "manufacturing materials" in this clause) that the Contractor has specifically produced or acquired for the terminated portion of this contract. Upon direction of the Procurement Officer, the Contractor shall also protect and preserve property in its possession in which the State has an interest. (f) The State shall pay contract price for completed supplies delivered and accepted. The Contractor and Procurement Officer shall agree on the amount of payment for manufacturing materials delivered and accepted and for the protection and preservation of the property; if the parties fail to agree, the Procurement Officer shall set an amount subject to the Contractor's rights under the Disputes clause. Failure to agree will be a dispute under the Disputes clause. The State may withhold from these amounts any sum the Procurement Officer determines to be necessary to protect the State against loss because of outstanding liens or claims of former lien holders. (g) If, after termination, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall, if the contract contains a clause providing for termination for convenience of the State, be the same as if the termination had been issued for the convenience of the State. If, in the foregoing circumstances, this contract does not contain a clause providing for termination for convenience of the State, the contract shall be adjusted to compensate for such termination and the contract modified accordingly subject to the contractor's rights under the Disputes clause. (h) The rights and remedies of the State in this clause are in addition to any other rights and remedies provided by law or under this contract.

CONTRACTOR PERSONNEL (JAN 2006)

The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

DISPOSAL OF PACKAGING (JAN 2006)

Contractor shall dispose of all wrappings, crating, and other disposable materials pertaining to this contract at the

end of each working day and upon completion of installation

ILLEGAL IMMIGRATION (NOV 2008)

(An overview is available at www.procurement.sc.gov) By signing your offer, you certify that you will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agree to provide to the State upon request any documentation required to establish either: (a) that Title 8, Chapter 14 is inapplicable to you and your subcontractors or sub-subcontractors; or (b) that you and your subcontractors or sub-subcontractors are in compliance with Title 8, Chapter 14. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." You agree to include in any contracts with your subcontractors language requiring your subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14.

INDEMNIFICATION-THIRD PARTY CLAIMS – GENERAL (NOV 2011)

Notwithstanding any limitation in this agreement, and to the fullest extent permitted by law, Contractor shall defend and hold harmless Indemnitees for and against any and all suits or claims of any character (and all related damages, settlement payments, attorneys' fees, costs, expenses, losses or liabilities) by a third party which are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property arising out of or in connection with the goods or services acquired hereunder or caused in whole or in part by any act or omission of contractor, its subcontractors, their employees, workmen, servants, agents, or anyone directly or indirectly employed by them or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by an Indemnitee, and whether or not such claims are made by a third party or an Indemnitee; however, if an Indemnitee's negligent act or omission is subsequently determined to be the sole proximate cause of a suit or claim, the Indemnitee shall not be entitled to indemnification hereunder. Contractor shall be given timely written notice of any suit or claim. Contractor's obligations hereunder are in no way limited by any protection afforded under workers' compensation acts, disability benefits acts, or other employee benefit acts. This clause shall not negate, abridge, or reduce any other rights or obligations of indemnity which would otherwise exist. The obligations of this paragraph shall survive termination, cancelation, or expiration of the parties' agreement. This provision shall be construed fairly and reasonably, neither strongly for nor against either party, and without regard to any clause regarding insurance. As used in this clause, "Indemnitees" means the State of South Carolina, its instrumentalities, agencies, departments, boards, political subdivisions and all their respective officers, agents and employees.

INDEMNIFICATION - INTELLECTUAL PROPERTY (JAN 2006)

(a) Without limitation and notwithstanding any provision in this agreement, Contractor shall, upon receipt of notification, defend and indemnify the State, its instrumentalities, agencies, departments, boards, political subdivisions and all their respective officers, agents and employees against all actions, proceedings or claims of any nature (and all damages, settlement payments, attorneys' fees (including inside counsel), costs, expenses, losses or liabilities attributable thereto) by any third party asserting or involving an IP right related to an acquired item. State shall allow Contractor to defend such claim so long as the defense is diligently and capably prosecuted. State shall allow Contractor to settle such claim so long as (i) all settlement payments are made by Contractor, and (ii) the settlement imposes no non-monetary obligation upon State. State shall reasonably cooperate with Contractor's defense of such claim. (b) In the event an injunction or order shall be obtained against State's use of any acquired item, or if in Contractor's opinion, the acquired item is likely to become the subject of a claim of infringement or violation of an IP right, Contractor shall, without in any way limiting the foregoing, and at its expense, either: (1) procure for State the right to continue to use, or have used, the acquired item, or (2) replace or modify the acquired item so that it becomes non-infringing but only if the modification or replacement does not adversely affect the specifications for the acquired item or its use by State. If neither (1) nor (2), above, is practical, State may require that Contractor remove the acquired item from State, refund to State any charges paid by State therefor, and take all steps necessary to have State released from any further liability. (c) Contractors obligations under this paragraph do not apply to a claim to the extent (i) that the claim is caused by Contractor's compliance with specifications furnished by the State unless Contractor knew its compliance with the State's specifications would infringe an IP right, or (ii) that the claim is caused by Contractor's compliance with specifications furnished by the State if the State knowingly relied on a third party's IP right to develop the specifications provided to Contractor and failed to identify such product to Contractor. (d) As used in this paragraph, these terms are defined as follows: "IP right(s)" means a patent, copyright, trademark, trade secret, or any other proprietary right. "Acquired item(s)" means the rights, goods, or services furnished under this agreement. "Specification(s)" means a detailed, exact statement of particulars such as a statement prescribing materials, dimensions, and quality of work. (e)

Contractor's obligations under this clause shall survive the termination, cancellation, rejection, or expiration of this Agreement.

INDEMNIFICATION - THIRD PARTY CLAIMS – DISCLOSURE OF INFORMATION (FEB 2015)

(a) Without limitation, Contractor shall defend and hold harmless Indemnitees from and against any and all suits, claims, investigations, or fines (hereinafter "action") of any character (and all related damages, settlement payments, attorneys' fees, costs, expenses, losses or liabilities) by a third party which arise out of or in connection with a disclosure of government information (as defined in the clause titled Information Security - Definitions) caused in whole or in part by any act or omission of contractor, its subcontractors at any tier, their employees, workmen, servants, agents, or anyone directly or indirectly employed by them or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by an Indemnitee, and whether or not such action is brought by a third party or an Indemnitee, but only if the act or omission constituted a failure to perform some obligation imposed by the contract or the law. (b) Indemnitee must notify contractor in writing within a reasonable period of time after Indemnitee first receives written notice of any action. Indemnitee's failure to provide or delay in providing such notice will relieve contractor of its obligations under this clause only if and to the extent that such delay or failure materially prejudices contractor's ability to defend such action. Indemnitee must reasonably cooperate with contractor's defense of such actions (such cooperation does not require and is without waiver of an Indemnitee's attorney/client, work product, or other privilege) and, subject to Title 1, Chapter 7 of the South Carolina Code of Laws, allow contractor sole control of the defense, so long as the defense is diligently and capably prosecuted. Indemnitee may participate in contractor's defense of any action at its own expense. Contractor may not, without Indemnitee's prior written consent, settle, compromise, or consent to the entry of any judgment in any such commenced or threatened action unless such settlement, compromise or consent (i) includes an unconditional release of Indemnitee from all liability related to such commenced or threatened action, and (ii) is solely monetary in nature and does not include a statement as to, or an admission of fault, culpability or failure to act by or on behalf of, an Indemnitee or otherwise adversely affect an Indemnitee. Indemnitee's consent is necessary for any settlement that requires Indemnitee to part with any right or make any payment or subjects Indemnitee to any injunction. (c) Notwithstanding any other provision, contractor's obligations pursuant to this clause are without any limitation whatsoever. Contractor's obligations under this clause shall survive the termination, cancellation, rejection, or expiration of the contract. This provision shall be construed fairly and reasonably, neither strongly for nor against either party, and without regard to any clause regarding insurance. (d) "Indemnitee" means the State of South Carolina, its instrumentalities, agencies, departments, boards, political subdivisions and all their respective officers, agents and employees.

INFORMATION SECURITY - DEFINITIONS (FEB 2015)

The following definitions are used in those clauses that cross reference this clause.

Compromise means disclosure of information to unauthorized persons, or a violation of the security policy of a system in which unauthorized intentional or unintentional disclosure, modification, destruction, or loss of an object may have occurred. Without limitation, the term "compromise" includes copying the data through covert network channels, or copying the data to unauthorized media, or disclosure of information in violation of any obligation imposed by this contract.

Data means a subset of information in an electronic format that allows it to be retrieved or transmitted.

Government information means information (i) provided to Contractor by, or generated by Contractor for, the using governmental unit, or (ii) acquired or accessed by Contractor as a result of performing the Work. Without limiting the foregoing, government information includes any information that Contractor acquires or accesses by software or web-based services, which includes, without limitation, any metadata or location data. Government information excludes unrestricted information.

Information means any communication or representation of knowledge such as facts, statistics, or opinions, in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual.

Information system means a discrete set of information resources organized for the collection, processing, maintenance, use, sharing, dissemination, or disposition of information.

Public information means any specific information, regardless of form or format, that the State has actively and intentionally disclosed, disseminated, or made available to the public. Information is not public information solely because it may be subject to inspection pursuant to an unfulfilled public records request.

Software means any computer program accessed or used by the Using Governmental Unit or a third party pursuant to or as a result of this contract.

Third party means any person or entity other than the Using Governmental Unit, the Contractor, or any subcontractors at any tier.

Unrestricted information means (1) public information acquired other than through performance of the work, (2) information acquired by Contractor prior to contract formation, (3) information incidental to your contract administration, such as financial, administrative, cost or pricing, or management information, and (4) any ideas,

concepts, know-how, methodologies, processes, technologies, techniques which Contractor develops or learns in connection with Contractor's performance of the work.

Web-based service means a service accessed over the Internet and acquired, accessed, or used by the using governmental unit or a third party pursuant to or as a result of this contract, including without limitation, cloud services, software-as-a-service, and hosted computer services.

LICENSES AND PERMITS (JAN 2006)

During the term of the contract, the Contractor shall be responsible for obtaining, and maintaining in good standing, all licenses (including professional licenses, if any), permits, inspections and related fees for each or any such licenses, permits and /or inspections required by the State, county, city or other government entity or unit to accomplish the work specified in this solicitation and the contract.

MATERIAL AND WORKMANSHIP (JAN 2006)

Unless otherwise specifically provided in this contract, all equipment, material, and articles incorporated in the work covered by this contract are to be new and of the most suitable grade for the purpose intended.

OWNERSHIP OF DATA & MATERIALS (JAN 2006)

All data, material and documentation prepared for the state pursuant to this contract shall belong exclusively to the State

PRICE ADJUSTMENTS (JAN 2006)

(1) Method of Adjustment. Any adjustment in the contract price made pursuant to a clause in this contract shall be consistent with this Contract and shall be arrived at through whichever one of the following ways is the most valid approximation of the actual cost to the Contractor (including profit, if otherwise allowed):

(a) by agreement on a fixed price adjustment before commencement of the pertinent performance or as soon thereafter as practicable;

(b) by unit prices specified in the Contract or subsequently agreed upon;

(c) by the costs attributable to the event or situation covered by the relevant clause, including profit if otherwise allowed, all as specified in the Contract; or subsequently agreed upon;

(d) in such other manner as the parties may mutually agree; or,

(e) in the absence of agreement by the parties, through a unilateral initial written determination by the Procurement Officer of the costs attributable to the event or situation covered by the clause, including profit if otherwise allowed, all as computed by the Procurement Officer in accordance with generally accepted accounting principles, subject to the provisions of Title 11, Chapter 35, Article 17 of the S.C. Code of Laws.

(2) Submission of Price or Cost Data. Upon request of the Procurement Officer, the contractor shall provide reasonably available factual information to substantiate that the price or cost offered, for any price adjustments is reasonable, consistent with the provisions of Section 11-35-1830.

PRICING DATA – AUDIT – INSPECTION (JAN 2006)

[Clause Included Pursuant to Section 11-35-1830, - 2210, & -2220] (a) Cost or Pricing Data. Upon Procurement Officer's request, you shall submit cost or pricing data, as defined by 48 C.F.R. Section 2.101 (2004), prior to either (1) any award to contractor pursuant to 11-35-1530 or 11-35-1560, if the total contract price exceeds \$500,000, or (2) execution of a change order or contract modification with contractor which exceeds \$100,000. Your price, including profit or fee, shall be adjusted to exclude any significant sums by which the state finds that such price was increased because you furnished cost or pricing data that was inaccurate, incomplete, or not current as of the date agreed upon between parties. (b) Records Retention. You shall maintain your records for three years from the date of final payment, or longer if requested by the chief Procurement Officer. The state may audit your records at reasonable times and places. As used in this subparagraph (b), the term "records" means any books or records that relate to cost or pricing data submitted pursuant to this clause. In addition to the obligation stated in this subparagraph (b), you shall retain all records and allow any audits provided for by 11-35-2220(2). (c) Inspection. At reasonable times, the state may inspect any part of your place of business which is related to performance of the work. (d) Instructions Certification. When you submit data pursuant to subparagraph (a), you shall (1) do so in accordance with the instructions appearing in Table 15-2 of 48 C.F.R. Section 15.408 (2004) (adapted as necessary for the state context), and (2) submit a Certificate of Current Cost or Pricing Data, as prescribed by 48 CFR Section 15.406-2(a) (adapted as necessary for the state context). (e) Subcontracts. You shall include the above text of this clause in all of your subcontracts. (f) Nothing in this clause limits any other rights of the state.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The University of South Carolina requires that all contractual activities to be in compliance with local, state and federal mandates concerning “protection of human health and the environment”. In addition, the University of South Carolina is a “Drug Free Work Place” and requires all contractors to comply with South Carolina Code of Laws Section 41-15-10 ET sequence (1976 w/amendments). Any contractor doing business with the University will be required to document compliance with these mandates and to furnish specific information requested by the University’s Department of Environmental Health and Safety when notified to do so. The Contractor understands and agrees that jobsites are open at all times work is being performed by the Contractor to authorized University employees who have been trained to identify unsafe work conditions. The Contractor will immediately correct any deficiencies noted by these inspections when requested by the University’s Department of Environmental Health and Safety to do so. In work areas where a specific hazard is posed which includes but is not limited to lead paint and asbestos abatement projects, Contractors will be required to produce Lead Compliance Plans and Asbestos Project Designs which outline their method of work prior to the start of work. Each contractor shall designate a responsible member of the Contractor’s organization to be at the site whose duty shall be the prevention of accidents. By submission of this bid, the vendor agrees to take all necessary steps to insure compliance with the requirements outlined above.

RELATIONSHIP OF THE PARTIES (JAN 2006)

Neither party is an employee, agent, partner, or joint venturer of the other. Neither party has the right or ability to bind the other to any agreement with a third party or to incur any obligation or liability on behalf of the other party.

RESTRICTIONS ON PRESENTING TERMS OF USE OR OFFERING ADDITIONAL SERVICES (FEB 2015)

(a) Citizens, as well as public employees (acting in their individual capacity), should not be unnecessarily required to agree to or provide consent to policies or contractual terms in order to access services acquired by the government pursuant to this contract (hereinafter “applicable services”) or, in the case of public employees, to perform their job duties; accordingly, in performing the work, contractor shall not require or invite any citizen or public employee to agree to or provide consent to any end user contract, privacy policy, or other terms of use (hereinafter “terms of use”) not previously approved in writing by the procurement officer. Contractor agrees that any terms of use regarding applicable services are void and of no effect.

(b) Unless expressly provided in the solicitation, public contracts are not intended to provide contractors an opportunity to market additional products and services; accordingly, in performing the work, contractor shall not – for itself or on behalf of any third party – offer citizens or public employees (other than the procurement officer) any additional products or services not required by the contract.

(c) Any reference to contractor in items (a) or (b) also includes any subcontractor at any tier. Contractor is responsible for compliance with these obligations by any person or entity that contractor authorizes to take any action related to the work.

(d) Any violation of this clause is a material breach of contract. The parties acknowledge the difficulties inherent in determining the damage from any breach of these restrictions. Contractor shall pay the state liquidated damages of \$1,000 for each contact with a citizen or end user that violates this restriction.

SHIPPING / RISK OF LOSS (JAN 2006)

F.O.B. Destination. Destination is the shipping dock of the Using Governmental Units’ designated receiving site, or other location, as specified herein. (See Delivery clause)

STORAGE OF MATERIALS (JAN 2006)

Absent approval of the using governmental unit, Contractor shall not store items on the premises of the using governmental unit prior to the time set for installation.

SUBSTITUTIONS PROHIBITED - END PRODUCT PREFERENCES (SEP 2009)

If you receive the award as a result of the South Carolina end product or United States end product preference, you may not substitute a nonqualifying end product for a qualified end product. If you violate this provision, the State may terminate your contract for cause and you may be debarred. In addition, you shall pay to the State an amount equal to twice the difference between the price paid by the State and your evaluated price for the item for which you delivered a substitute.

TERMINATION FOR CONVENIENCE (JAN 2006)

(1) Termination. The Procurement Officer may terminate this contract in whole or in part, for the convenience of the State. The Procurement Officer shall give written notice of the termination to the contractor specifying the part of the contract terminated and when termination becomes effective.

(2) Contractor's Obligations. The contractor shall incur no further obligations in connection with the terminated work and on the date set in the notice of termination the contractor will stop work to the extent specified. The contractor shall also terminate outstanding orders and subcontracts as they relate to the terminated work. The contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated work. The Procurement Officer may direct the contractor to assign the contractor's right, title, and interest under terminated orders or subcontracts to the State. The contractor must still complete the work not terminated by the notice of termination and may incur obligations as are necessary to do so.

(3) Right to Supplies. The Procurement Officer may require the contractor to transfer title and deliver to the State in the manner and to the extent directed by the Procurement Officer: (a) any completed supplies; and (b) such partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "manufacturing material") as the contractor has specifically produced or specially acquired for the performance of the terminated part of this contract. The contractor shall, upon direction of the Procurement Officer, protect and preserve property in the possession of the contractor in which the State has an interest. If the Procurement Officer does not exercise this right, the contractor shall use best efforts to sell such supplies and manufacturing materials in accordance with the standards of Uniform Commercial Code Section 2-706. Utilization of this Section in no way implies that the State has breached the contract by exercise of the Termination for Convenience Clause.

(4) Compensation. (a) The contractor shall submit a termination claim specifying the amounts due because of the termination for convenience together with cost or pricing data required by Section 11-35-1830 bearing on such claim. If the contractor fails to file a termination claim within one year from the effective date of termination, the Procurement Officer may pay the contractor, if at all, an amount set in accordance with Subparagraph (c) of this Paragraph.

(b) The Procurement Officer and the contractor may agree to a settlement and that the settlement does not exceed the total contract price plus settlement costs reduced by payments previously made by the State, the proceeds of any sales of supplies and manufacturing materials under Paragraph (3) of this clause, and the contract price of the work not terminated;

(c) Absent complete agreement under Subparagraph (b) of this Paragraph, the Procurement Officer shall pay the contractor the following amounts, provided payments agreed to under Subparagraph (b) shall not duplicate payments under this Subparagraph:

(i) contract prices for supplies or services accepted under the contract;

(ii) costs reasonably incurred in performing the terminated portion of the work less amounts paid or to be paid for accepted supplies or services;

(iii) reasonable costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to Paragraph (2) of this clause. These costs must not include costs paid in accordance with Subparagraph (c)(ii) of this paragraph;

(iv) any other reasonable costs that have resulted from the termination. The total sum to be paid the contractor under this Subparagraph shall not exceed the total contract price plus the reasonable settlement costs of the contractor reduced by the amount of payments otherwise made, the proceeds of any sales of supplies and manufacturing materials under Subparagraph (b) of this Paragraph, and the contract price of work not terminated.

(d) Contractor must demonstrate any costs claimed, agreed to, or established under Subparagraphs (b) and (c) of this Paragraph using its standard record keeping system, provided such system is consistent with any applicable Generally Accepted Accounting Principles.

(5) Contractor's failure to include an appropriate termination for convenience clause in any subcontract shall not (i) affect the state's right to require the termination of a subcontract, or (ii) increase the obligation of the state beyond what it would have been if the subcontract had contained an appropriate clause.

WARRANTY – STANDARD (JAN 2006)

Contractor must provide the manufacturer's standard written warranty upon delivery of product. Contractor warrants that manufacturer will honor the standard written warranty provided.

VIII. BIDDING SCHEDULE / PRICE-BUSINESS PROPOSAL

BIDDING SCHEDULE (NOV 2007)

ITEM	DESCRIPTION	COST	RVP	SC EPP	US EPP
1	All cost associated to furnish and deliver 1 packaged engine generator and 3 automatic transfer switches, as stated herein.	\$			

Please refer to the preference clauses listed in the additional conditions of this solicitation to ensure that you qualify to select the above preferences.

IX. ATTACHMENTS TO SOLICITATION

LIST OF ATTACHMENTS

The following documents are attached to this solicitation:

1. NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT INCOME TAX WITHHOLDING
2. OFFEROR'S CHECKLIST
3. ATTACHMENT A – SPECIFICATIONS/SCOPE OF WORK

IMPORTANT TAX NOTICE - NONRESIDENTS ONLY

Withholding Requirements for Payments to Nonresidents: Section 12-8-550 of the South Carolina Code of Laws requires persons hiring or contracting with a nonresident conducting a business or performing personal services of a temporary nature within South Carolina to withhold 2% of each payment made to the nonresident. The withholding requirement does not apply to (1) payments on purchase orders for tangible personal property when the payments are not accompanied by services to be performed in South Carolina, (2) nonresidents who are not conducting business in South Carolina, (3) nonresidents for contracts that do not exceed \$10,000 in a calendar year, or (4) payments to a nonresident who (a) registers with either the S.C. Department of Revenue or the S.C. Secretary of State and (b) submits a Nonresident Taxpayer Registration Affidavit - Income Tax Withholding, Form I-312 to the person letting the contract.

The withholding requirement applies to every governmental entity that uses a contract ("Using Entity"). Nonresidents should submit a separate copy of the Nonresident Taxpayer Registration Affidavit - Income Tax Withholding, Form I-312 to every Using Entity that makes payment to the nonresident pursuant to this solicitation. Once submitted, an affidavit is valid for all contracts between the nonresident and the Using Entity, unless the Using Entity receives notice from the Department of Revenue that the exemption from withholding has been revoked.

Section 12-8-540 requires persons making payment to a nonresident taxpayer of rentals or royalties at a rate of \$1,200.00 or more a year for the use of or for the privilege of using property in South Carolina to withhold 7% of the total of each payment made to a nonresident taxpayer who is not a corporation and 5% if the payment is made to a corporation. Contact the Department of Revenue for any applicable exceptions.

For information about other withholding requirements (e.g., employee withholding), contact the Withholding Section at the South Carolina Department of Revenue at 803-898-5383 or visit the Department's website at: <https://dor.sc.gov>

This notice is for informational purposes only. This agency does not administer and has no authority over tax issues. All registration questions should be directed to the License and Registration Section at 803-898-5872 or to the South Carolina Department of Revenue, Registration Unit, Columbia, S.C. 29214-0140. All withholding questions should be directed to the Withholding Section at 803-896-1420.

PLEASE SEE THE "NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT INCOME TAX WITHHOLDING" FORM (FORM NUMBER I-312) LOCATED AT: <https://dor.sc.gov/forms-site/Forms/I312.pdf>

OFFEROR'S CHECKLIST -- AVOID COMMON BID/PROPOSAL MISTAKES

Review this checklist prior to submitting your bid/proposal.

If you fail to follow this checklist, you risk having your bid/proposal rejected.

- Do not include any of your standard contract forms!
- Unless expressly required, do not include any additional boilerplate contract clauses.
- Reread your entire bid/proposal to make sure your bid/proposal does not take exception to any of the state's mandatory requirements.
- Make sure you have properly marked all protected, confidential, or trade secret information in accordance with the instructions entitled: SUBMITTING CONFIDENTIAL INFORMATION. **DO NOT mark your entire bid/proposal as confidential, trade secret, or protected! Do not include a legend on the cover stating that your entire response is not to be released!**
- Have you properly acknowledged all amendments? Instructions regarding how to acknowledge an amendment should appear in all amendments issued.
- Make sure your bid/proposal includes a copy of the solicitation cover page. Make sure the cover page is signed by a person that is authorized to contractually bind your business.
- Make sure your Bid/proposal includes the number of copies requested.
- Check to ensure your Bid/proposal includes everything requested!
- If you have concerns about the solicitation, do not raise those concerns in your response! **After opening, it is too late! If this solicitation includes a pre-bid/proposal conference or a question & answer period, raise your questions as a part of that process!** Please see instructions under the heading "submission of questions" and any provisions regarding pre-bid/proposal conferences.

SECTION 16231 - PACKAGED ENGINE GENERATOR

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes packaged diesel-engine generator sets with the following features and accessories:
 - 1. Engine.
 - 2. Governor.
 - 3. Generator, excitor, and voltage regulator.
 - 4. Generator overcurrent and fault protection.
 - 5. Control and monitoring.
 - 6. Engine cooling system.
 - 7. Fuel supply system.
 - 8. Engine exhaust system.
 - 9. Combustion-Air-Intake system.
 - 10. Starting system.
 - 11. Outdoor generator set enclosure.
- B. Related Sections include the following:
 - 1. Division 16 Section "Automatic Transfer Switches" for transfer switches, including sensors and relays to initiate automatic-starting and -stopping signals for engine generator sets.

1.2 DEFINITIONS

- A. Prime Duty Rating: Power output rating equal to the power the generator set delivers continuously under normally varying load factors for an unlimited run time.
- B. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.
- C. Steady-State Voltage Modulation: The uniform cyclical variation of voltage within the operational bandwidth, expressed in Hertz or cycles per second.

1.3 SUBMITTALS

- A. Product Data: Include data on features, components, ratings, and performance. Include the following:
1. Factory published specification sheet in PDF form.
 2. Manufacturer's catalog cut sheets of all auxiliary components such as battery charger, control panel, enclosure, etc. in PDF form.
 3. Dimensional elevation and layout drawings of the generator set, custom enclosure, and related accessories in PDF form.
 4. Weights of all equipment.
 5. Engine mechanical data, including heat rejection, exhaust gas flows, combustion air and ventilation air flows, fuel consumption, etc. in PDF form.
 6. Generator electrical data including resistances, reactances, time constants, **maximum surge kVA based on instantaneous voltage dip as defined per NEMA MG-1**, temperature and insulation data, cooling requirements, excitation ratings, voltage regulation, voltage regulator, efficiencies, waveform distortion and telephone influence factor in PDF form.
 7. Generator locked rotor motor starting curves in PDF form.
 8. Thermal damage curve for generator in PDF form.
 9. Time-current characteristic curves for generator protective devices in PDF form.
- B. Shop Drawings: Indicate fabrication details, dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
1. Vibration Isolation Base Details: Detail fabrication, including anchorage and attachments to structure and to supported equipment. Include base weights. Provide drawings in PDF format.
 2. Wiring Diagrams: Interconnect wiring diagram of complete emergency system, including generator, switchgear, day tank, battery charger, control panel, and remote alarm indications. Differentiate between factory-installed and field-installed wiring. Provide drawings in PDF format.
 3. Instructions for mounting/anchoring the generator set and associated enclosure and fuel tank on the existing concrete pad, showing stub-up locations of existing electrical raceways. Provide drawings in PDF format.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article. Provide in PDF format.
- D. Field Test and Observation Reports: Indicate and interpret test results and inspection records relative to compliance with performance requirements. Provide in PDF format.
- E. Certified summary of prototype-unit test report. Provide in PDF format.
- F. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit. Provide in PDF format.

- G. Certified Summary of Performance Tests: Demonstrate compliance with specified requirement to meet performance criteria for sensitive loads. Provide in PDF format.
- H. Factory Test Reports: For units to be shipped for this Project, showing evidence of compliance with specified requirements. Provide in PDF format.
- I. Exhaust Emissions Test Report: To show compliance with applicable regulations. Provide in PDF format.
- J. Sound measurement test report. Provide in PDF format.
- K. Certification of Torsional Vibration Compatibility: Comply with NFPA 110. Provide in PDF format.
- L. Field test report of tests specified in Part 3. Provide in PDF format.
- M. Manufacturer's and dealer's written warranty. Provide in PDF format.
- N. Operating and Maintenance Manuals: Provide one electronic (PDF) set and one hardcopy set bound in a 3-ring binder/notebook with labeled section tabs/dividers. Prepare operating and maintenance manuals to include the following information for equipment items:
 - 1. Detail operating instructions for both normal and abnormal conditions. Each set of operation and maintenance manuals shall cover the generator, switchgear, and auxiliary components. Include final as-built wiring interconnect diagrams.
 - 2. Description of function, normal operating characteristics and limitations, engineering data and tests, and complete nomenclature with commercial numbers of replacement parts.
 - 3. Manufacturer's printed operating procedures to include start-up, routine and normal operating instructions; control, shutdown, and emergency instructions.
 - 4. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; and adjusting instructions.
 - 5. Servicing instructions and schedules.
 - 6. List of tools and replacement items recommended to be stored at the Project Site for ready access. Include parts list and drawing numbers, current unit prices, and source of supply.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All equipment shall be of new and current production by a manufacturer who has a minimum of 10 years of experience building this type of equipment. Maintain a service center capable of emergency maintenance and repairs at the Project Site with eight hours maximum response time. Manufacturer shall be ISO 9001 certified.

- B. The engine-generator supplier shall maintain 24-hour parts and service capability. The distributor shall stock parts as needed to support the generator set package for this specific project. The supplier must carry sufficient inventory to cover no less than 80% parts service within 24 hours and 95% within 48 hours. The supplier shall maintain qualified factory-trained and certified service personnel.
- C. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the InterNational Electrical Testing Association and that is acceptable to authorities having jurisdiction.
- D. Source Limitations: Obtain packaged engine generator and auxiliary components specified in this Section through one source from a single manufacturer. There shall be one source responsibility for warranty; parts and service through a local representative with factory trained service personnel.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- F. Comply with the 2014 Edition of NFPA 70.
- G. Comply with the 2016 Edition of NFPA 110 requirements for Level 1 emergency power supply system.
- H. Comply with CSA C22.2 No14.
- I. Comply with CSA 100.
- J. Comply with CSA 282.
- K. Comply with EN 61000-6.
- L. Comply with EN 55011.
- M. Comply with FCC Part 15, Subpart B.
- N. Comply with ISO 8528.
- O. Comply with IEC 61000.
- P. Comply with UL 142.
- Q. Comply with UL 508.
- R. Comply with UL 2200.
- S. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

1.5 WARRANTY

- A. **General Warranty:** Warranty shall provide for 100 percent of parts and labor costs for failures due to defects in materials and workmanship. All repairs shall be performed by factory-trained and certified dealer service personnel, and warranty shall provide for all travel and mileage required for repair personnel.
- B. **Special Warranty: Written warranty, executed by the manufacturer agreeing to repair and/or replace packaged engine generator and auxiliary components that fail in materials or workmanship within specified warranty period.**
 - 1. **Warranty Period: Five years from "date of installation". Note that the installation of the generator will be performed under a separate contract and that the warranty period shall begin on the date that the generator installation reaches substantial completion under that future contract, which shall be not more than one year from date of physical delivery of equipment to the University of South Carolina.**

1.6 EXTRA MATERIALS

- A. **Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.**
 - 1. **Fuses: One for every ten of each type and rating, but not less than one of each.**
 - 2. **Indicator Lamps: Two for every six of each type used, but not less than two of each.**
 - 3. **Filters: Two sets each of lubricating oil, fuel, and combustion-air filters.**

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Manufacturers: Subject to compliance with requirements, provide products by one of the following:**
 - 1. Caterpillar, Inc.
 - 2. Detroit Diesel
 - 3. Kohler
 - 4. Onan Corp; Industrial Business Group

2.2 SERVICE CONDITIONS

- A. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:
1. Ambient Temperature: Minus 15 to plus 40 deg C.
 2. Relative Humidity: 0 to 95 percent.
 3. Altitude: Sea level to 1000 feet (300 m).

2.3 ENGINE GENERATOR SET

- A. Furnish a coordinated assembly of compatible components.
- B. Safety Standard: Comply with ASME B15.1.
- C. Nameplates: Each major system component shall be equipped with a conspicuous nameplate of component manufacturer. Nameplate shall identify manufacturer of origin, address, and model & serial number of item.
- D. Power Output Ratings: **The generator set shall be "Prime Duty" rated at 1500 kW, 1875 kVA, 1800 RPM, 0.8 power factor, 480 V, 3-Phase, 4-wire, 60 hertz, including radiator fan and all parasitic loads.** Generator set shall be rated to operate at full load at a maximum ambient of 110F (43.3C) and at an altitude of 500.0 feet (152.4 m). Ratings shall be evidenced by records of prototype testing.
- E. Skid: Adequate strength and rigidity to maintain alignment of mounted components without depending on a concrete foundation. Skid shall be free from sharp edges and corners. Lifting attachments shall be arranged to facilitate lifting with slings without damaging any components.
- F. Rigging Diagram: Inscribed on a metal plate permanently attached to skid. Diagram shall indicate location and lifting capacity of each lifting attachment and location of center of gravity.

2.4 GENERATOR-SET PERFORMANCE

- A. Generator surge kVA (skVA) capability shall be nominal 4,200 based on a 30% maximum instantaneous voltage dip as defined per NEMA MG-1. Sustained voltage dip data is not acceptable.
- B. Steady-State Voltage Operational Bandwidth: 4 percent of rated output voltage from no load to full load.
- C. Steady-State Voltage Modulation Frequency: Less than 1 Hz.
- D. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover to remain within the steady-state operating band within three seconds.

- E. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
- F. Steady-State Frequency Stability: When system is operating at any constant load within rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
- G. Transient Frequency Performance: Less than 5 percent variation for a 50 percent step-load increase or decrease. Frequency shall recover to remain within the steady-state operating band within five seconds.
- H. Output Waveform: At no load, harmonic content measured line-to-line or line-to-neutral shall not exceed 5 percent total and 3 percent for single harmonics. The telephone influence factor, determined according to NEMA MG 1, shall not exceed 50.
- I. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, the system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to any generator system component.
- J. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.5 ENGINE

- A. Comply with NFPA 37.
- B. Fuel: Fuel oil, Grade DF-2.
- C. Rated Engine Speed: 1800 rpm.
- D. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm (11.4 m/s).
- E. Lubrication System: Pressurized by a positive-displacement pump driven from engine crankshaft. The following items shall be mounted on the engine or the engine skid:
 - 1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
 - 2. Thermostatic Control Valve: Valve shall control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and shall be designed to be fail-safe.
 - 3. Crankcase Drain: Drain shall be arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps or siphons or special tools or appliances. Drain system shall be piped to the exterior of the generator set enclosure for servicing. **Piping shall be rigid black iron type.**
- F. Engine Fuel System: Comply with NFPA 37. System shall include the following:

1. Main Fuel Pump: Mounted on engine. Pump shall ensure adequate primary fuel flow under starting and load conditions.
 2. Fuel/Water Separator: Racor or equal.
 3. Relief/Bypass Valve: Valve shall automatically regulate pressure in fuel line and return excess fuel to source.
- G. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system, complete with by-pass isolation valves for servicing without draining of the cooling system. Comply with NFPA 110 requirements for Level 1 equipment.
- H. Emissions requirements / certifications of generator set package: EPA TIER 4

2.6 GOVERNOR

- A. The engine governor shall be an electronic Engine Control Module (ECM) with 24-volt DC Electric Actuator. The ECM shall be enclosed in an environmentally sealed, housing which isolates and protects electronic components from moisture and dirt contamination. Speed droop shall be adjustable from 0 (isochronous) to 10%, from no load to full rated load. Steady state frequency regulation shall be +/- 0.25%. Speed shall be sensed by a magnetic pickup off the engine flywheel ring gear. A remote speed adjustment feature shall be included. The ECM shall adjust fuel delivery according to exhaust smoke, altitude and cold mode limits. In the event of a DC power loss, the forward acting actuator shall move to the minimum fuel position.

2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

- A. Comply with NEMA MG 1 and specified performance requirements.
- B. Drive: Generator shaft shall be coupled to the engine shaft by means of a flex coupling. Exciter shall be rotated integrally with generator rotor.
- C. The generator shall meet performance class G3 of IEC.
- D. The excitation system shall be of brushless construction and shall be arranged to sustain generator output under short-circuit conditions.
- E. Electrical Insulation: Class H or Class F, 105 degrees C. rise.
- F. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.
- G. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- H. Enclosure: Drip-Proof.

- I. Instrument Transformers: Mount within generator enclosure.
- J. Digital Voltage Regulator: The digital voltage regulator shall be microprocessor based with fully programmable operating and protection characteristics. The regulator shall maintain generator output voltage within +/- 0.25% for any constant load between no load and full load. The regulator shall be capable of sensing true RMS in each of the three phases of alternator output voltage, each operating in a single-phase sensing mode. The voltage regulator shall include a VAR/Pf control feature as standard. The regulator shall provide an adjustable dual-slope regulation characteristic in order to optimize voltage and frequency response for site conditions.
 - 1. Voltage adjustment control on control & monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band. Voltage adjustments shall be made via a controller keypad. Additionally, the controller shall allow system parameter setup and monitoring, and provide fault alarm and shutdown information through the controller. A PC-based user interface shall be provided to allow viewing and modification of operating parameters in a Windows 10 operating system compatible environment.
- K. **Variable Frequency Drive Accommodation: There are two large, existing variable frequency drives that the generator set will be required to power. Each of the two variable frequency drives powers a 200 horsepower HVAC fan motor. Engine and generator design shall be adjusted as required to compensate for starting and running these two large loads. The existing, measured, connected load for the generator is 1,220 amperes, which includes the running load of the two 200 horsepower fan motors.**
- L. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- M. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- N. Subtransient Reactance: 12 percent, maximum.

2.8 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Circuit Breakers: Breakers shall be molded-case, electronic-trip type, and shall comply with UL 489. Breakers shall be housed in **NEMA 3R** rated enclosures which shall be isolated from vibrations induced by the generator set. Breakers shall have provisions for connection of compression type wire connectors, of number and size to accommodate feeders as indicated below.

Breaker Number 1 – For connection to future Switchboard:

- 1. Tripping Characteristics: Adjustable long-time, short-time, instantaneous, and ground fault (LISG) settings.
- 2. Breaker Ampere Rating: **100%** rated at 2,500 amperes.
- 3. Trip Rating: 2,500 amperes.

4. Adjustable Trip Settings: Matched to generator thermal damage curve as closely as possible.
5. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
6. Contacts: One set of Form "C" auxiliary contacts.
7. Lugs: Lugs on each phase shall accommodate six (6) 600 MCM copper conductors.

Breaker Number 2 – For connection to future Load Bank:

1. Tripping Characteristics: Adjustable long-time, short-time, instantaneous, and ground fault (LISG) settings.
2. Breaker Ampere Rating: **80%** rated at 2,500 amperes.
3. Trip Rating: 2,500 amperes.
4. Adjustable Trip Settings: Matched to generator thermal damage curve as closely as possible.
5. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
6. Contacts: One set of Form "C" auxiliary contacts.
7. Lugs: Lugs on each phase shall accommodate six (6) 600 MCM copper conductors.

Breaker Number 3 – For future connection to a Fire Pump:

1. Tripping Characteristics: Standard thermal-magnetic type (non-adjustable).
2. Breaker Ampere Rating: **100%** rated at 200 amperes.
3. Trip Rating: 200 amperes.
4. Contacts: One set of Form "C" auxiliary contacts.
5. Lugs: Lugs on each phase shall accommodate one 250 MCM copper conductor.

Enclosure shall also include a 2,500-amp rated copper neutral buss (isolated from enclosure/ground) and a 350 amp (minimum) rated copper ground buss. Ground buss shall be bonded to the generator set frame, enclosure, and tank with **350 MCM** copper wire. Busses shall be adequately sized for connection of compression type wire connectors.

- B. Generator Protector: Microprocessor-based unit that continuously monitors current level in each phase of generator output, integrates generator heating effect over time, and predicts when thermal damage of the alternator will occur. When signaled by the protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from the load circuits (this shall be coordinated with the load-shed controller specified below). Protector performs the following functions:

1. Protector shall initiate a generator overload alarm when the generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm shall be integrated with other generator-set malfunction alarms.
2. Under single or three-phase fault conditions, protector shall regulate the generator to 300 percent of rated full-load current for up to 10 seconds.
3. As heating effect on the generator of overcurrent approaches the thermal damage point of the unit, the protector shall switch the excitation system off, open the generator load circuit breaker (via shunt-trip), and shut down the generator set.
4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

2.9 CONTROL AND MONITORING

- A. Functional Description: When the mode-selector switch on the control and monitoring panel at the generator set and the remote annunciator panels is in the automatic position, remote-control contacts in the automatic-transfer switches (new and existing) shall initiate starting and stopping of the generator set. When the mode-selector switch at either of the control and monitoring panels is switched to the "on" position, the generator set shall manually start. The "off" position of the same switch shall initiate generator-set shutdown. When the generator set is running, system and/or equipment failures or derangement shall automatically shut down the generator set and initiate alarms. **Operation of a remote mounted emergency-stop switch shall also shut down the generator set.**
- B. Configuration: Operating and safety indications, protective devices, system controls, and engine display unit shall be grouped on a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration. Control and monitoring panel shall include a back-lighted LCD display with a common audible alarm signal for alarm conditions and controls for generator. Include silencing switch in face of panel to silence audible signal without altering visual indication. Arrangement shall be such that after an alarm is silenced, clearing of initiating condition will reactivate audible alarm until silencing switch is reset.

Digital display of generator prealarms and alarms at the generator control and monitoring panel shall include the following:

1. Overcrank alarm.
2. Low water temperature alarm.
3. High engine temperature prealarm.
4. High engine temperature alarm.
5. Low lube oil pressure prealarm.
6. Overspeed alarm.
7. Low fuel level (10% of tank capacity) alarm.
8. EPS supplying load alarm.
9. Control switch not in "automatic" position alarm.
10. High battery voltage alarm.

11. Low voltage battery alarm.
12. Battery charger input/output power failure alarm.
13. Fuel tank derangement alarm.
14. Generator overload alarm.

Digital display of operating conditions at the generator control and monitoring panel shall include the following:

1. AC voltage (output).
2. AC amperage (output).
3. AC frequency (output).
4. DC voltage (alternator battery charging).
5. Engine-coolant temperature.
6. Engine lubricating-oil pressure.
7. Total elapsed generator run-time.

Manual controls and auxiliary features at the generator control and monitoring panel shall include the following:

1. Lamp/Display test switch.
2. Contacts for common trouble alarm.
3. Audible alarm silencing switch.
4. Start-stop switch.
5. Ammeter-voltmeter, phase-selector switch(es).
6. Generator-voltage adjusting rheostat.

Protective Devices and Features:

1. Low fuel level (10% of tank capacity) engine shutdown feature.
2. Overspeed shutdown device.
3. Coolant high-temperature shutdown device.
4. Coolant low-level shutdown device.
5. Oil low-pressure shutdown device.

- C. Supporting Items: Include sensors, transducers, terminals, relays, and other devices, and wiring required to support specified items. Locate sensors and other supporting items on engine, generator, or elsewhere as required to suit manufacturer's standard.
- D. Remote Annunciator Panels (**Provide 2**): Backlighted LCD type display with common audible alarm signal for alarm conditions and controls for generator. Include silencing switch in face of panel to silence audible signal without altering visual indication. Arrangement shall be such that after an alarm is silenced, clearing of initiating condition will reactivate audible alarm until silencing switch is reset. Cabinet and faceplate shall be surface-mounting.

Display of generator prealarms and alarms at each remote annunciator panel shall include the following:

1. Overcrank alarm.
2. Low water temperature alarm.
3. High engine temperature prealarm.
4. High engine temperature alarm.
5. Low lube oil pressure prealarm.
6. Overspeed alarm.

7. Low fuel level (10% of tank capacity) alarm.
8. EPS supplying load alarm.
9. Control switch not in "automatic" position alarm.
10. High battery voltage alarm.
11. Low voltage battery alarm.
12. Battery charger input/output power failure alarm.
13. Fuel tank derangement alarm.
14. Generator overload alarm.

Manual controls and auxiliary features at each remote annunciator panel shall include the following:

1. Lamp/Display test switch.
 2. Audible alarm silencing switch.
 3. Start-stop, switch.
 4. Contacts for common trouble alarm.
 5. Remote Emergency-Stop Switch.
- E. Network Communications Module: Provide a BACnet compatible communications module that is capable of communicating with a Johnson Controls Metasys building management control panel.

2.10 ENGINE COOLING SYSTEM

- A. Description: Closed loop, liquid cooled, with radiator factory mounted on engine generator-set skid and integral engine-driven coolant pump. Horizontal air discharge fan on end of unit.
- B. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
- C. Expansion Tank: Constructed of welded steel plate and equipped with gage glass and petcock.
- D. Temperature Control: Self-contained, thermostatic-control valve shall modulate coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
- E. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
1. Rating: 50-psig (345-kPa) maximum working pressure with 180 deg F (82 deg C) coolant, and noncollapsible under vacuum.
 2. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.
- F. Monitoring and Control: Include a low coolant level shutdown system and alarm.
- G. Drain: Include a coolant drain system piped to the exterior of the generator set enclosure for servicing. **Piping shall be rigid black iron type.**

- H. Water Jacket Heater: Electric water jacket heater(s) shall be provided and shall be sized to ensure that genset will start within the specified time period and ambient conditions.

2.11 FUEL SUPPLY SYSTEM

- A. Comply with NFPA 30 and NFPA 37.
- B. Fuel Tank: The generator set shall be equipped with an in-base **5,000 gallon** fuel tank with the following features:
 - 1. The tank shall meet UL 142 standards.
 - 2. Containment: 120% capacity rupture basin underneath tank.
 - 3. Leak Detector: Locate in tank's interstitial space and connect to provide audible and visible alarm signal on annunciator unit at the generator set and the remote annunciator panels in the event of primary tank wall leak.
 - 4. Level Sensing: Both mechanical and digital.
 - a. Mechanical: Float level sensing with meter-type gage to readily detect the fuel level in the tank without the use of a measuring stick.
 - b. Digital: Electronic level sensor to indicate percentage-fill of tank on digital display unit at the generator set and the remote annunciator panels.
 - 5. Low-Level Alarm Sensing:
 - a. Provide alarm at 10 percent of tank capacity and automatically shutdown generator set in order to prevent loss of fuel system prime. Audibly and visibly annunciate alarm condition on annunciator unit at the generator set and the remote annunciator panels.
 - 6. Piping Connections: Factory-installed fuel supply and return lines from tank to engine; local fuel fill, vent line, overflow line; and tank drain line with shutoff valve. All fuel piping shall be black iron or stainless-steel flexible fuel hose rated for this service. No galvanized piping shall be provided. Flexible fuel lines shall be minimally rated for 300 degrees F and 100 psi. All necessary fuel vent lines for proper engine performance shall be provided.
 - 7. Fill Cap: Vandal-Resistant with pad-lock type cap.
 - 8. Provide **vibration isolation springs** on the bottom of the base tank for future installation onto an existing concrete pad.
- C. The fuel system shall be integral with the engine. In addition to the standard fuel filters provided by the engine manufacturer, there shall also be installed a primary fuel filter/water separator in the fuel inlet line to the engine.
- D. Provide wiring to cause low fuel level and leak detection alarm annunciation in the generator set and at each remote annunciator panel.

2.12 ENGINE EXHAUST SYSTEM

- A. Muffler: Critical, **stainless-steel** type, size as recommended by engine manufacturer. Measured sound level at a distance of 10 feet (3 m) from the exhaust discharge shall be 85 DBA or less. **Exhaust end of muffler shall be directed up and shall include a rain cap.**
- B. The silencer shall be mounted so that its weight is not supported by the engine nor will exhaust system growth due to thermal expansion be imposed on the engine. Exhaust pipe size shall be sufficient to ensure that exhaust backpressure does not exceed the maximum limitations specified by the engine manufacturer.
- C. Condensate Drain for Muffler: Schedule 40, black steel pipe connected to muffler drain outlet through a petcock.
- D. Connections from Engine to Exhaust System: Flexible section of corrugated **stainless-steel** pipe.
- E. Connection from Exhaust Pipe to Muffler: Stainless-steel expansion joint with liners.

2.13 COMBUSTION-AIR-INTAKE SYSTEM

- A. Air-Intake Silencer: Filter type shall provide filtration as recommended by engine manufacturer.
 - 1. Sound level emanating from air intake measured at a distance of 25 feet (8 m) shall be 54 DBA or less in 1200- to 4800-Hz frequency band and 56 DBA or less in 4800- to 10,000-Hz frequency band.
 - 2. Mounting: Factory installed on engine generator set at a location readily accessible for service.

2.14 STARTING SYSTEM

- A. Description: 12-V or 24-V electric, with negative ground and including the following items:
 - 1. A single DC electric starting system with positive engagement shall be furnished. The motor voltage shall be as recommended by the engine manufacturer.
 - 2. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Environmental Conditions" Paragraph in "Service Conditions" Article above.
 - 3. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
 - 4. Cranking Cycle: As required by NFPA 110 for System Level 1.

5. Batteries: Adequate capacity within ambient temperature range specified in "Environmental Conditions" Paragraph in "Service Conditions" Article above to provide specified cranking cycle at least three times without recharging.
6. Battery Cable: Size as recommended by generator set manufacturer for required cable length. Include required interconnecting conductors and connection accessories.
8. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 75-Amp minimum continuous rating.
9. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and shall include the following features:
 - a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit then automatically switches to a lower float-charging mode and continues operating in that mode until battery is discharged again.
 - b. Automatic Temperature Compensation: Adjusts float and equalizes voltages for variations in ambient temperature from minus 40 deg C to plus 60 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
 - c. Automatic Voltage Regulation: Maintains constant output voltage regardless of input voltage variations of up to plus or minus 10 percent.
 - d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
 - e. Safety Functions: Include sensing of abnormally low battery voltage arranged to annunciate a low battery voltage condition on digital display unit at both the generator set and each remote annunciator panel. Also include sensing and annunciation of high battery voltage and loss of ac input or dc output of battery charger.
 - f. Enclosure and Mounting: As recommended by manufacturer.

2.15 LOAD-SHED CONTROLLER

- A. Description: Provide a UL listed load-shed system to monitor generator current & frequency and control the addition and removal of loads on the generator set based output capacity of the generator and on priorities establish here-in. Loads shall be added and removed by controlling both new and existing automatic transfer switches.
- B. Loads/Automatic transfer switches to be controlled are as follows with their associated priorities.

<u>Load #</u>	<u>Equipment Mark #</u>	<u>Building</u>	<u>Priority</u>	<u>Shed</u>
1	ATS1 (new)	Coker	3	Yes
2	ATS2 (existing, life-safety)	Coker	1	Never
3	ATS3 (existing)	Coker	5	Yes

4	ATS1 (new)	EWS	4	Yes
5	ATS2 (existing, life-safety)	EWS	2	Never

- C. Current transformers: Provide current transformers to monitor all three phases of generator output and connect to the controller such that the controller can monitor loading of the generator and make decisions concerning load-shed requirements based on the priorities established above.
- D. Control Relays: Provide five (minimum) 50 amp, 600 volt rated, DPST relays to control automatic transfer switches and their associated loads.
- E. Controller Enclosure: Provide a steel NEMA type 3R enclosure for the load-shed controller and its associated control relays. Mount controller in the outdoor generator set enclosure at an accessible, code compliant location.

2.16 OUTDOOR GENERATOR-SET ENCLOSURE

- A. Description: Provide a weather-protected, walk-in type enclosure of formed-steel construction as designed and manufactured by Chillicothe Metal Company, Inc. (CMCO), Robinson Enclosures, or approved equal. The enclosure shall be designed in accordance with the 2015 Edition of the International Building Code and shall be able to withstand 110 mph lateral wind loads. The construction shall be modular steel with a minimum thickness of 14 gauge for all component parts. Component parts shall be bolted together using locknuts and all hardware shall be concealed from view on the exterior of the enclosure. Side panels and doors shall not exceed 36" in width. Enclosure shall be properly sized to allow for all normal generator operation and maintenance procedures from the inside of the enclosure. A working clearance of 3.5-foot minimum shall be provided in front of panelboards, control panels, and circuit breakers within the enclosure. A working clearance of 2-foot minimum shall be provided around the genset within the enclosure. **The generator enclosure will be mounted onto an existing concrete pad. The generator set manufacturer shall coordinate with the Owner's Representative to acquire existing pad dimensions and design/manufacture the enclosure to accommodate the existing concrete pad.**
- B. The weather protected enclosure shall be of formed-steel weatherproof construction such that the genset will be protected and will properly function during adverse weather conditions such as driving rain, sleet, and snow. An aisle, at least 24" wide, shall be provided on each side of the generator set and an extra 36" behind the generator set shall be included.
- C. Vents, fans, and operable louvers shall be provided for proper cooling of the genset for startup and at full output during summer months. Space heaters and operable louvers shall be provided in order to maintain minimum startup and operating temperatures within the enclosure during winter months. Cooling air exhaust and intake louvers shall be provided of aluminum construction. The louvers shall open automatically upon diesel generator start and close upon diesel generator shutdown. Heavy duty screens over the intake louvers shall be provided. **An exhaust fan shall be provided that vents through the roof of the enclosure.**

- D. Roof: The roof of the enclosure shall meet or exceed the minimum 14-gauge requirements specified above and shall be of one-piece construction (sectional roofing components are not acceptable). The roof shall be strengthened with steel support members in such a manner as to have the capacity to properly support the largest commercially available exhaust silencer recommended by the engine manufacturer for this application. The roof shall have a 2-degree pitch (minimum) for rain runoff and shall extend a minimum of 2 inches beyond the perimeter walls of the enclosure.
- E. Doors (4 minimum): All doors on the enclosure shall be strategically located in areas as to allow ease of maintenance on the generator set and allow proper access to and visibility of instruments, controls, engine gauges, etc. The doors shall be fitted with bolt-on, piano-type hinges constructed with stainless-steel hinge pins of a diameter not less than .25". Each door shall be fitted with flush-mounted, adjustable, stainless-steel, T-handle, keylock latches with stainless-steel fasteners. Doors shall be properly gasketed for weatherproof seal. Furnish 5 sets of keys to Owner.
- F. Stairs and Handrails: Provide exterior aluminum stairs and handrails at each of the four access doors of the generator set enclosure. Stairs shall overlap the width of each door opening by 12-inches on each side, minimum. **The generator enclosure will be mounted onto an existing concrete pad. The generator set manufacturer shall coordinate with the Owner's Representative to acquire existing pad dimensions and design/manufacture the stairs and handrails to accommodate the existing concrete pad.** Coordinate dimensions of the existing concrete pad and provide number and height of steps at each access door as required to provide for proper ingress and egress from finished grade to floor level inside the enclosure in accordance with the 2015 Edition of the International Building Code. Stairs shall be bolted to the generator set enclosure. Handrails shall be supported from stair structure.
- G. Louvers: All louvers shall be designed to prevent the entrance of driving rainwater, and shall have sufficient free area to allow for 120% of the total engine-generator cooling air requirements used in this application.
- H. Components: All components of the enclosure shall be assembled utilizing .375" minimum zinc-plated bolts, nuts, and lock washers. In addition, watertight neoprene flat washers shall be used on all roof bolts.
- I. Provisions for Exhaust Silencer: The manufacturer of the enclosure shall provide mounting brackets for the exhaust silencer. In addition, a stainless-steel tail pipe extension terminating in a horizontal plane and cut at a 45° angle to prevent the entrance of rainwater shall also be supplied. Further, a stainless steel, seamless, flexible exhaust tube and all necessary bolts, flanges, and gaskets to mate with the engine and exhaust silencer shall be provided. The length of the flexible tubing shall be such that additional solid metal nipples or sections shall not be required to be provided as spacers between the engine exhaust or the exhaust silencer.
- J. Rain Skirt: At the point where the exhaust pipe flexible tubing penetrates the roof of the enclosure, a suitable "rain skirt" and collar shall be provided by the manufacturer. It shall be designed to prevent the entrance of rain and allow expansion and vibration of

the exhaust piping without chafing or stress to the exhaust system. A detail of the rain skirt shall be shown on the shop drawings and shall be submitted for approval.

- K. Finish: Upon final assembly of the weather-protected enclosure, it shall be prime painted with a minimum of two (2) coats of rust-inhibiting primer. The final finish painting shall be a minimum of two (2) coats of "white" enamel.
- L. Sound Attenuation: The entire enclosure except for the louvered openings shall have sound attenuation material mechanically attached to the interior surfaces of the unit. The sound absorption material shall be held in place by a perforated galvanized metal sheeting to form a removable section easily inspected by maintenance personnel. The sound attenuation material and fastening system shall apply to the enclosure roof as well as the side panels and doors. The enclosure package shall be designed to achieve a 78-dBa sound rating when measured at a distance of 23 feet, free field.
- M. Scoop: The generator set enclosure shall include a manufactured steel scoop to direct engine cooling discharge air in an upward direction.
- N. Base: The generator set and its associated enclosure shall be mounted and shipped to the jobsite on a common structural steel sub-base manufactured by the enclosure company. Provisions for crane unloading of the complete package shall be designed into the base of the unit. The base and enclosure assembly shall allow room within the package to mount and maintain the specified battery charger, engine starting batteries, racks, and cables, generator mounted mainline circuit breaker(s), an engine/generator control panel, and other items as specified. The entire unit consisting of generator set, base, enclosure, and all other specified items including all liquids (i.e., fuel oil, lube oil and cooling water) shall be calculated by the manufacturer. The base of the unit shall be engineered, designed and manufactured as a heavy-duty, welded-steel frame with four-point lifting provisions as used on heavy-duty construction installations. Details and manufacturer's certification of the base construction shall be included with the shop drawings submitted for approval.
- O. Enclosure Flooring: The floor of the enclosure shall be designed and constructed in such a manner as to prevent the entrance of rodents. This may be accomplished with solid metal or expanded metal grating but, in any event, must be capable of supporting any ancillary equipment specified which may be secured to it (such as batteries, circuit breakers, etc.) plus the anticipated weight of maintenance personnel and their tools. Under no circumstances shall the floor area or any of its parts be considered for cooling air intake or discharge requirements of the generator set or its associated equipment, nor shall its properties as a "heat-sink" or heat dissipating medium be utilized in any manner whatsoever in this application.
- P. Enclosure Lighting (DC): A battery operated light deriving its power from the engine cranking batteries shall be installed in a strategic location within the enclosure and shall be controlled by a weatherproof switch located by one of the entrance doors. The light shall be bright enough to provide illumination in an emergency situation, yet not such that an overburdening drain will be placed on the starting batteries. In any event, during normal (idle) conditions, the specified battery charger limitations shall not be hampered in its primary duty should the light switch be inadvertently left on.

- Q. Enclosure Lighting (AC): Four (4) four-foot, totally enclosed and gasketed L.E.D. lights shall be installed within the enclosure and strategically located for even illumination in the enclosure. The lumen output of each fixture shall be 3800, minimum. They shall be ceiling mounted and parallel to the length of the unit. Their AC power source shall be taken from panelboard "G1" located in the generator set enclosure. Two (2) three-way switches and one four-way switch shall be provided to operate these fixtures and the switches shall be located adjacent to three of the entrance doors of the structure. Further, each light switch box shall have its own 20-amp rated, grounded, GFCI duplex receptacle mounted therein for use by maintenance personnel.
- R. Panelboard "G1": The enclosure shall be equipped with an auxiliary circuit breaker box (3-phase, 4-wire, 100-amp, 120/208-volt main breaker panelboard) as a single-entry point for commercial power supply conduits and wiring for the battery charger, jacket water heater(s), lighting, receptacles, louvers, exhaust fan, space heaters, etc. The placement of this breaker box shall be coordinated such that its mounting location complies with proper working clearances per the NEC. All internal wiring and conduit runs to the various ancillary equipment supplied with the package shall be prewired at the factory by the enclosure manufacturer in accordance with all governing codes pursuant to this application. Conduit shall be RMC and LFMC type raceways.
- S. Oil and Water Drains: All necessary fittings, hoses, shut-off valves, etc., shall be provided by the manufacturer of the weather protected enclosure to facilitate lube oil and water drain at the exterior of the enclosure. In addition, engines equipped with crankcase breather tubes shall have this tube terminate at the exterior of the enclosure directly under the radiator air discharge louver.
- T. Conduit Stub-Up Location: The generator and its enclosure will be installed on an existing concrete pad. **The enclosure manufacturer shall coordinate with the Owner's Representative to acquire information regarding the location of the existing conduit stub-ups and design/manufacture the enclosure to accommodate the existing conduit stub-ups.**

2.17 SOURCE QUALITY CONTROL

- A. Prototype Testing: Testing shall be performed on a separate engine generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
1. Tests: Comply with those required for Level 1 energy converters in NFPA 110.
 2. Generator Tests: Comply with IEEE 115.
 3. Components and Accessories: Items furnished with installed unit that are not identical to those on tested prototype shall be tested to demonstrate compatibility and reliability.

PART 3 - EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

- A. Provide heat-shrunk, plastic, weatherproof wrapping over/around the generator set enclosure.
- B. Deliver and off-load the engine generator set and system components to the University of South Carolina's Columbia Campus, at a location directed by the Owner. Manufacturer shall protect wrappings, containers, and other protection that will exclude dirt and moisture from the equipment and prevent damage from weather during delivery and offloading processes. **The generator set will be installed under a future contract.**

END OF SECTION 16231

SECTION 16415 – AUTOMATIC TRANSFER SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes transfer switches rated 600 V and less, including the following:
 - 1. Three service-entrance rated, combined main circuit breaker/automatic transfer switch/bypass-isolation switch line-ups designated as **Transfer Switch #1**, **Transfer Switch #2**, and **Transfer Switch #3**.
- B. Related Sections include the following:
 - 1. Division 16 Section "Packaged Engine Generator".

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.
 - 1. Single-Line Diagram: Show connections between main circuit breaker, automatic transfer switch, bypass/isolation switch, power sources, and load; and show interlocking provisions for each combined transfer switch and bypass/isolation switch.
- C. Manufacturer Seismic Qualification Certification: Submit certification that transfer switches, accessories, and components will withstand seismic forces defined in the 2015 Edition of the International Building Code. Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- D. Qualification Data: For manufacturer.

- E. Field quality-control test reports.
- F. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. In addition, include the following:
 - 1. Features and operating sequences, both automatic and manual.
 - 2. List of all factory settings of circuit breaker and relays; provide circuit breaker-setting, relay-setting, and calibration instructions, including software, where applicable. Also provide circuit breaker trip curves for each breaker.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Maintain a service center capable of providing training, parts, and emergency maintenance repairs within a response period of less than eight hours from time of notification.
- B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute.
- C. Source Limitations: Obtain combination automatic transfer switch and bypass-isolation switches through one source from a single manufacturer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Comply with NEMA ICS 1.
- F. Comply with NFPA 70, 2014 Edition.
- G. Comply with NFPA 110, 2016 Edition.
- H. Comply with UL 1008 unless requirements of these Specifications are stricter.
- I. IEEE 241: I.E.E.E. recommended practice for electrical power systems in commercial buildings.
- J. IEEE 446: I.E.E.E. recommended practice for emergency and standby power systems.
- K. NEMA 250: Enclosures.

1.4 WARRANTY

- A. **General Warranty:** Warranty shall provide for 100 percent of parts and labor costs for failures due to defects in materials and workmanship. All repairs shall be performed by factory-trained and certified dealer service personnel, and warranty shall provide for all travel and mileage required for repair personnel.
- B. **Special Warranty: Written warranty, executed by the manufacturer agreeing to repair and/or replace packaged engine generator and auxiliary components that fail in materials or workmanship within specified warranty period.**
 - 1. **Warranty Period: Five years from "date of installation". Note that the installation of the transfer switch line-ups will be performed under a separate contract and that the warranty period shall begin on the date that the transfer switch line-up installations reach substantial completion under that future contract, which shall be not more than one year from date of physical delivery of equipment to the University of South Carolina.**

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Manufacturers for Transfer Switches:** Subject to compliance with requirements, provide products by one of the following:
 - 1. Caterpillar; Engine Division.
 - 2. Emerson; ASCO Power Technologies, LP.
 - 3. GE Zenith Controls.
 - 4. Kohler Power Systems; Generator Division.
 - 5. Onan/Cummins Power Generation; Industrial Business Group.
 - 6. Spectrum Detroit Diesel.
- B. **Manufacturers for Busway and Busway Splice Connectors:** Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton (Cutler-Hammer).
 - 2. General Electric.
 - 3. Schneider Electric (Square-D).
 - 4. Siemens.

2.2 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

- A. **Physical Dimensions: Each combination main circuit breaker/automatic transfer switch/bypass-isolation switch line-up shall have enclosure dimensions such that it can be physically moved in through an existing equipment room doorway as follows:**

1. **Transfer Switch #1:** Equipment enclosure must be moved in through an equipment room doorway which has a framed opening of 3 feet wide by 7 feet tall (single leaf door). Switch may be furnished in shipping-splits as required to meet these requirements. Also, maximum height of transfer switch enclosure shall be 91 inches.
 2. **Transfer Switch #2:** Equipment enclosure must be moved in through an equipment room doorway which has a framed opening of 6 feet wide by 7 feet tall (double leaf door). Switch may be furnished in shipping-splits as required to meet these requirements. Also, maximum height of transfer switch enclosure shall be 91 inches.
 3. **Transfer Switch #3:** Equipment enclosure must be moved in through an equipment room doorway which has a framed opening of 6 feet wide by 7 feet tall (double leaf door). Switch may be furnished in shipping-splits as required to meet these requirements. Also, maximum height of transfer switch enclosure shall be 91 inches.
- B. Service-Entrance Rated:** Each combination main circuit breaker/automatic transfer switch/bypass-isolation switch line-up and all associated power connectors shall be Service-Entrance rated in accordance with the National Electrical Code.
- C. Front Access Only:** Each combination main circuit breaker/automatic transfer switch/bypass-isolation switch line-up shall be arranged for front-only access to inner workings of switch for installation and maintenance.
- D. Current Ratings:** Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated
- E. Tested Fault-Current Closing and Withstand Ratings:** Adequate for duty imposed by protective devices at installation locations in Project as indicated below for each switch. Class "L" current-limiting fuses may be employed inside of each line-up in order to meet the fault-current closing withstand rating requirement.
1. **Transfer Switch #1:** 100,000 ampere fault condition, based on testing in accordance with UL 1008.
 2. **Transfer Switch #2:** 100,000 ampere fault condition, based on testing in accordance with UL 1008.
 3. **Transfer Switch #3:** 65,000 ampere fault condition, based on testing in accordance with UL 1008.
- F. Solid-State Controls:** Repetitive accuracy of all settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.

- G. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.41. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.
- H. Electrical Operation: Accomplish by a non-fused, momentarily energized solenoid or electric-motor-operated mechanism, mechanically and electrically interlocked in both directions.
- I. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.
1. **Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are not acceptable and shall not be provided.**
 2. Switch Action: Double throw; mechanically held in both directions.
 3. Contacts: Silver composition or silver alloy for load-current switching. Conventional automatic transfer-switch units, rated 225 A and higher, shall have separate arcing contacts.
- J. **Neutral Terminal: A solid and fully rated copper neutral buss shall be provided in each main circuit breaker section and in each transfer switch section, unless otherwise indicated.**
- K. Annunciation, Control, and Programming Interface Components: Devices at transfer switches for communicating with remote programming devices, annunciators, or annunciator and control panels shall have communication capability matched with remote device (**Note: Transfer Switch #3 shall have a built-in control system that will communicate directly with an existing, USC-owned, 800 kW, 277/480 volt, diesel generator set manufactured by Caterpillar**).
- L. Factory Bussing and Wiring: Train and bundle factory wiring & busway and label, consistent with Shop Drawings, either by color-code or by numbered or lettered buss, wire, and cable tape markers at terminations.
1. **Transfer Switch #1 - Power-Terminal Arrangement: Suitable for top-only busway connections for utility, standby, and load power connections. Line-Up shall be provided with busway and busway splice connectors protruding from the top of its enclosure for field connection to utility, standby, and load busways which will be furnished and installed under a future contract. Shop drawings shall indicate the busway and busway splice connector manufacturer and model numbers, all associated busway and busway splice connector dimensions, and the physical arrangement of each busway splice connector. Busway splice connectors shall be engineered and installed such that only the minimum amount of busway protrudes from the top of each enclosure in order to minimize required headroom needed to connect future busways. Each busway and busway splice connector shall be provided with busbars as follows:**

Utility Power Busway and Busway Splice Connector (Main Breaker Section): Three copper phase busbars (A,B,C) and one copper neutral busbar, each rated 2,000 amperes at 480 volts A.C. Busway and busway splice connector shall be NEMA-3R (IEC IP-65/66) rated.

Standby Power Busway and Busway Splice Connector (Transfer Switch Section): Three copper phase busbars (A,B,C) and one copper neutral busbar, each rated 2,000 amperes at 480 volts A.C. Busway and busway splice connector shall be NEMA-3R (IEC IP-65/66) rated.

Load Power Busway and Busway Splice Connector (Transfer Switch Section): Three copper phase busbars (A,B,C), one copper neutral busbar, each rated 2,000 amperes at 480 volts A.C. An internal busway copper ground buss-bar shall also be provided with a minimum rating of 255 amperes. Busway and busway splice connector shall be NEMA-3R (IEC IP-65/66) rated.

Arrange busway and busway splice connectors as indicated in plan-view and elevation drawings shown at the end of this specification section.

2. **Transfer Switch #2 - Power-Terminal Arrangement:** Suitable for top-only busway connections for utility and load power connections, and for top conduit/wire connections for standby power connections. Line-Up shall be provided with busway and busway splice connectors protruding from the top of its enclosure for field connection to utility and load busways which will be furnished and installed under a future contract. Shop drawings shall indicate the busway and busway splice connector manufacturer and model numbers, all associated busway and busway splice connector dimensions, and the physical arrangement of each busway splice connector. Busway splice connectors shall be engineered and installed such that only the minimum amount of busway protrudes from the top of each enclosure in order to minimize required headroom needed to connect future busways. Each splice connector shall be provided with busbars as follows:

Utility Power Busway and Busway Splice Connector (Main Breaker Section): Three copper phase busbars (A,B,C) and one copper neutral busbar, each rated 2,000 amperes at 480 volts A.C. Busway and busway splice connector shall be NEMA-3R (IEC IP-65/66) rated.

Load Power Busway and Busway Splice Connector (Transfer Switch Section): Three copper phase busbars (A,B,C), one copper neutral busbar, each rated 2,000 amperes at 480 volts A.C. An internal busway copper ground busbar shall also be provided with a minimum rating of 255 amperes. Busway and busway splice connector shall be NEMA-3R (IEC IP-65/66) rated.

Arrange busway and busway splice connectors as indicated in plan-view and elevation drawings shown at the end of this specification section.

Standby Power Connections (Transfer Switch Section): Transfer Switch #2 shall be provided with mechanical lugs for field connection to standby feeder conductors furnished and installed under a future contract.

Mechanical lugs shall accommodate three parallel sets of 600 MCM copper conductors, minimum.

3. **Transfer Switch #3 - Power-Terminal Arrangement:** Suitable for enclosure bottom connection of utility power raceways and conductors, enclosure top connection of standby power raceway and conductors, and for enclosure side connection of load power raceway and conductors. **Mechanical lugs shall be provided for each power terminal as follows:**

Utility Power Connections (Main Breaker Section): Transfer Switch #3 shall be provided with mechanical lugs for field connection to utility feeder conductors furnished and installed under a future contract. **Mechanical lugs shall accommodate eight parallel sets of 500 MCM copper conductors, minimum.**

Standby Power Connections (Transfer Switch Section): Transfer Switch #3 shall be provided with mechanical lugs for field connection to standby feeder conductors furnished and installed under a future contract. **Mechanical lugs shall accommodate three parallel sets of 600 MCM copper conductors, minimum.**

Load Power Connections (Transfer Switch Section): Transfer Switch #3 shall be provided with mechanical lugs for field connection to load feeder conductors furnished and installed under a future contract. **Mechanical lugs shall accommodate eight parallel sets of 500 MCM copper conductors, minimum.**

4. **Control Wiring:** Equipped with lugs suitable for connection to terminal strips.

- M. **Enclosures:** General-purpose **NEMA 250, Type 3R** for all combination main circuit breaker/automatic transfer switch/bypass isolation switch line-ups complying with NEMA ICS 6 and UL 508, unless otherwise indicated.

2.3 AUTOMATIC TRANSFER SWITCHES

- A. Comply with Level 1 equipment according to NFPA 110.
- B. **Switching Arrangement:** Double-throw type with intermediate/neutral position stop during normal functioning.
- C. **Transfer Switch #1: Ratings:** 2,000 amps, 277/480 volts, 4-pole (switched neutral). **Line-Up shall be Service-Entrance rated and shall include a 100% rated 2,000 amp, 3-pole molded-case, electronic-trip type main circuit breaker suitable for a 277/480 volt, 3-phase, 4-wire, wye service. Circuit breaker shall include Long-Time (LT), Short-Time (ST), Instantaneous (IT), and Ground-Fault (GF) electronic trip actuators and associated dial-type adjustable settings.**
- D. **Transfer Switch #2: Ratings:** 2,000 amps, 277/480 volts, 4-pole (switched neutral). **Lin-Up shall be Service-Entrance rated and shall include an 80% rated 2,000 amp, 3-pole molded-case, electronic-trip type main circuit breaker suitable for a 277/480 volt, 3-phase, 4-wire, wye service. Circuit breaker shall include**

Long-Time (LT), Short-Time (ST), Instantaneous (IT), and Ground-Fault (GF) electronic trip actuators and associated dial-type adjustable settings.

- E. **Transfer Switch #3: Ratings: 3,000 amps, 277/480 volts, 3-pole with a NEMA 3R enclosure. Line-Up shall be Service-Entrance rated and shall include an 80% rated 3,000 amp, 3-pole molded-case, electronic-trip type main circuit breaker suitable for a 277/480 volt, 3-phase, 4-wire, wye service. Circuit breaker shall include Long-Time (LT), Short-Time (ST), Instantaneous (IT), and Ground-Fault (GF) electronic trip actuators and associated dial-type adjustable settings.**
- F. **Manual Switch Operation:** Under load, with door closed and with either or both sources energized. Transfer time shall be same as for electrical operation. Control circuit shall automatically disconnect from electrical operator during manual operation.
- G. **Signal-Before-Transfer Contacts:** A set of normally open/normally closed dry contacts shall operate in advance of retransfer to normal source. Interval shall be adjustable from 1 to 30 seconds.
- H. **Load-Shed Relay Contacts:** A set of normally open/normally closed dry relay contacts shall operate in conjunction with generator set load-shed controller to remove the automatic transfer switch's load from the generator set when signaled by the controller.
- I. **Digital Communication Interface:** Matched to capability of generator remote annunciator panels.
- J. **Motor Disconnect and Timing Relays:** Controls shall be provided to signal an existing Johnson Controls HVAC control panel so that HVAC equipment motors are shut-down and brought back online in stages when transferring from utility to standby power and when switching from standby to utility power.
- K. **Programmed Neutral Switch Position:** Switch operator shall have a programmed neutral position arranged to provide a midpoint between the two working switch positions, with an intentional, time-controlled pause at midpoint during transfer. Pause shall be adjustable from 0.5 to 30 seconds minimum and factory set for **5 seconds**, unless otherwise indicated. Time delay shall occur for both transfer directions.
- L. **Automatic Transfer-Switch Features:**
 - 1. **Undervoltage Sensing for Each Phase of Normal Source:** Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage is adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
 - 2. **Adjustable Time Delay:** For override of normal-source voltage sensing to delay transfer and engine start signals. Adjustable from zero to six seconds, and factory set for one second.
 - 3. **Voltage/Frequency Lockout Relay:** Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.

4. Time Delay for Retransfer to Normal Source: Adjustable from 0 to 30 minutes, and factory set for **10 minutes** to automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
5. Test Switch: Simulate normal-source failure.
6. Switch-Position Pilot Lights: Indicate source to which load is connected.
7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.
 - a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
 - b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."
8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
9. Elevator Auxiliary Contacts: Two normally open, single-pole, double-throw contacts to indicate to elevator controllers that the generator is supplying load, rated 10 A at 240-V ac.
10. Transfer Override Switch: Overrides automatic retransfer control so automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
11. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
12. Engine Shutdown Contacts: Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.
13. Engine-Generator Exerciser: Solid-state, programmable-time switch shall start engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods shall be adjustable from 10 to 30 minutes. Factory settings are for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:
 - a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
 - b. Push-button programming control with digital display of settings.
 - c. Integral battery operation of time switch when normal control power is not available.

Note: Exerciser will not be used at this time and shall be programmed out of the control system.

2.4 BYPASS/ISOLATION SWITCHES

- A. Comply with requirements for Level 1 equipment according to NFPA 110.
- B. Description: Manual type, arranged to select and connect either source of power directly to load, isolating transfer switch from load and from both power sources for each automatic transfer switch described above. Include the following features for each combined automatic transfer switch and bypass/isolation switch:
 - 1. Means to lock bypass/isolation switch in the position that isolates transfer switch with an arrangement that permits complete electrical testing of transfer switch while isolated. While isolated, interlocks prevent transfer-switch operation, except for testing or maintenance.
 - 2. Drawout Arrangement for Transfer Switch: Provide physical separation from live parts and accessibility for testing and maintenance operations (provide automatic shutters for bus isolation when transfer switch is withdrawn).
 - 3. Bypass/Isolation Switch Current, Voltage, Closing, and Short-Circuit Withstand Ratings: Equal to or greater than those of associated automatic transfer switch, and with same phase arrangement and number of poles.
 - 4. Contact temperatures of bypass/isolation switches shall not exceed those of automatic transfer-switch contacts when they are carrying rated load.
 - 5. Operability: Constructed so load bypass and transfer-switch isolation can be performed by 1 person in no more than 2 operations in 15 seconds or less.
 - 6. Legend: Manufacturer's standard legend for control labels and instruction signs shall describe operating instructions.
 - 7. Maintainability: Fabricate to allow convenient removal of major components from front without removing other parts or main power conductors.
 - 8. Auxiliary contact to close in "Bypass to Normal" position.
 - 9. Auxiliary contact to close in "Bypass to Emergency" position.
 - 10. Auxiliary contact to close when transfer switch is in "Automatic" position.
 - 11. Auxiliary contact to close when transfer switch is in "Isolate" position.
 - 12. Auxiliary contact to close when transfer switch is in "Test" position.
 - 13. Lifting yoke for transition switch removal.
- C. Interconnection of Bypass/Isolation Switches with Automatic Transfer Switches: Factory-installed copper bus bars; plated at connection points and braced for the indicated available short-circuit current.

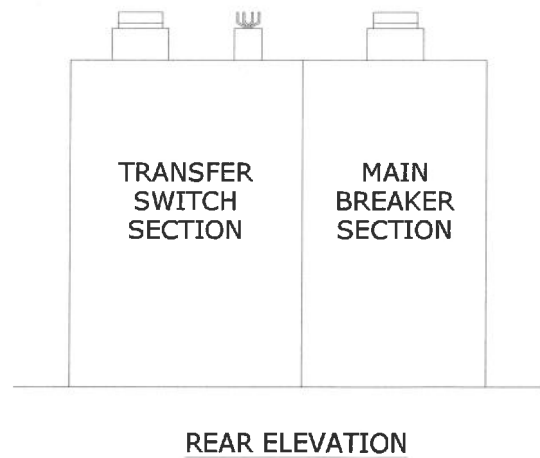
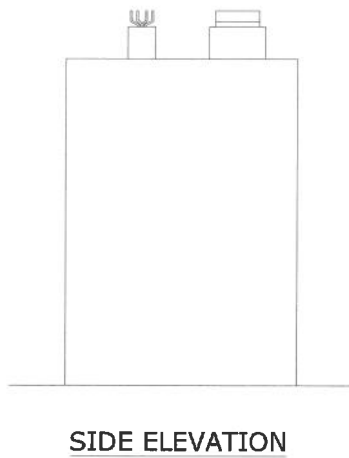
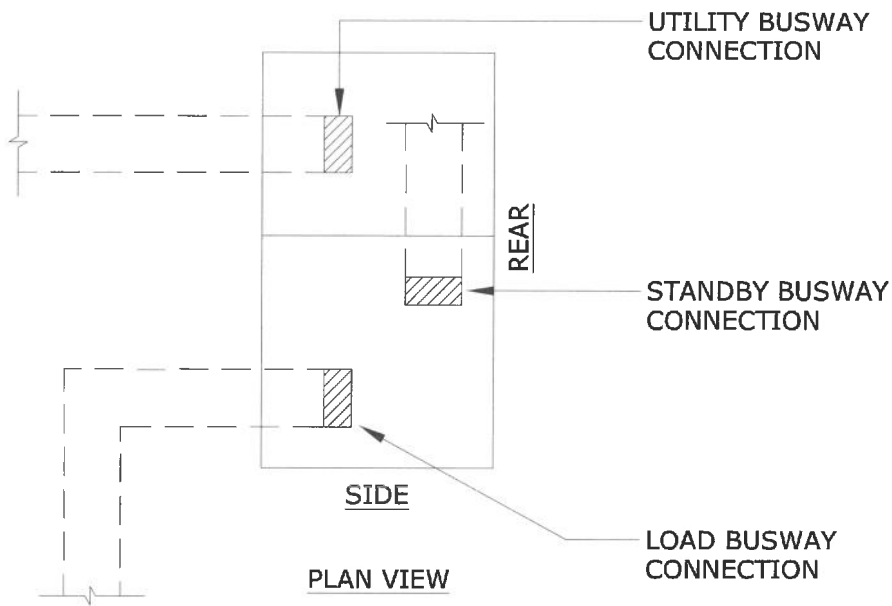
2.5 SOURCE QUALITY CONTROL

- A. Factory test and inspect components, assembled switches, and associated equipment. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

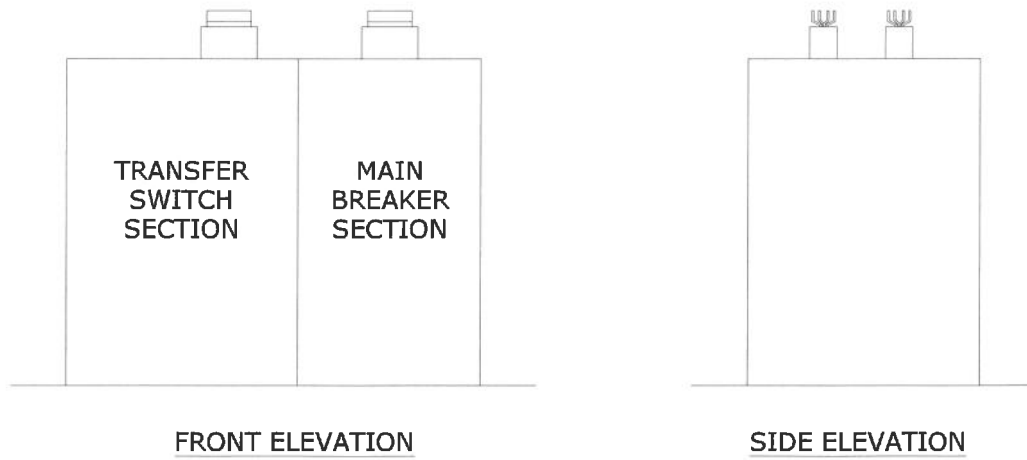
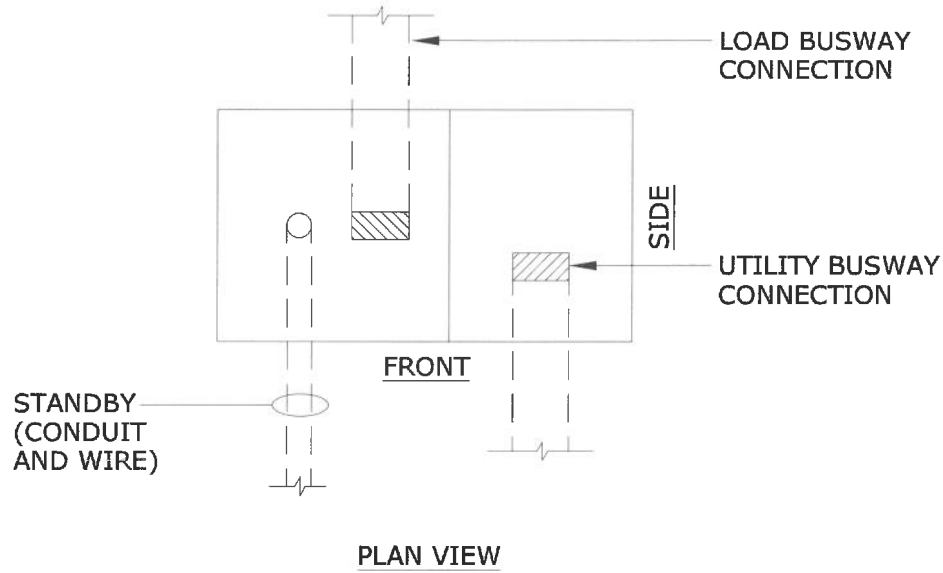
PART 3 - EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

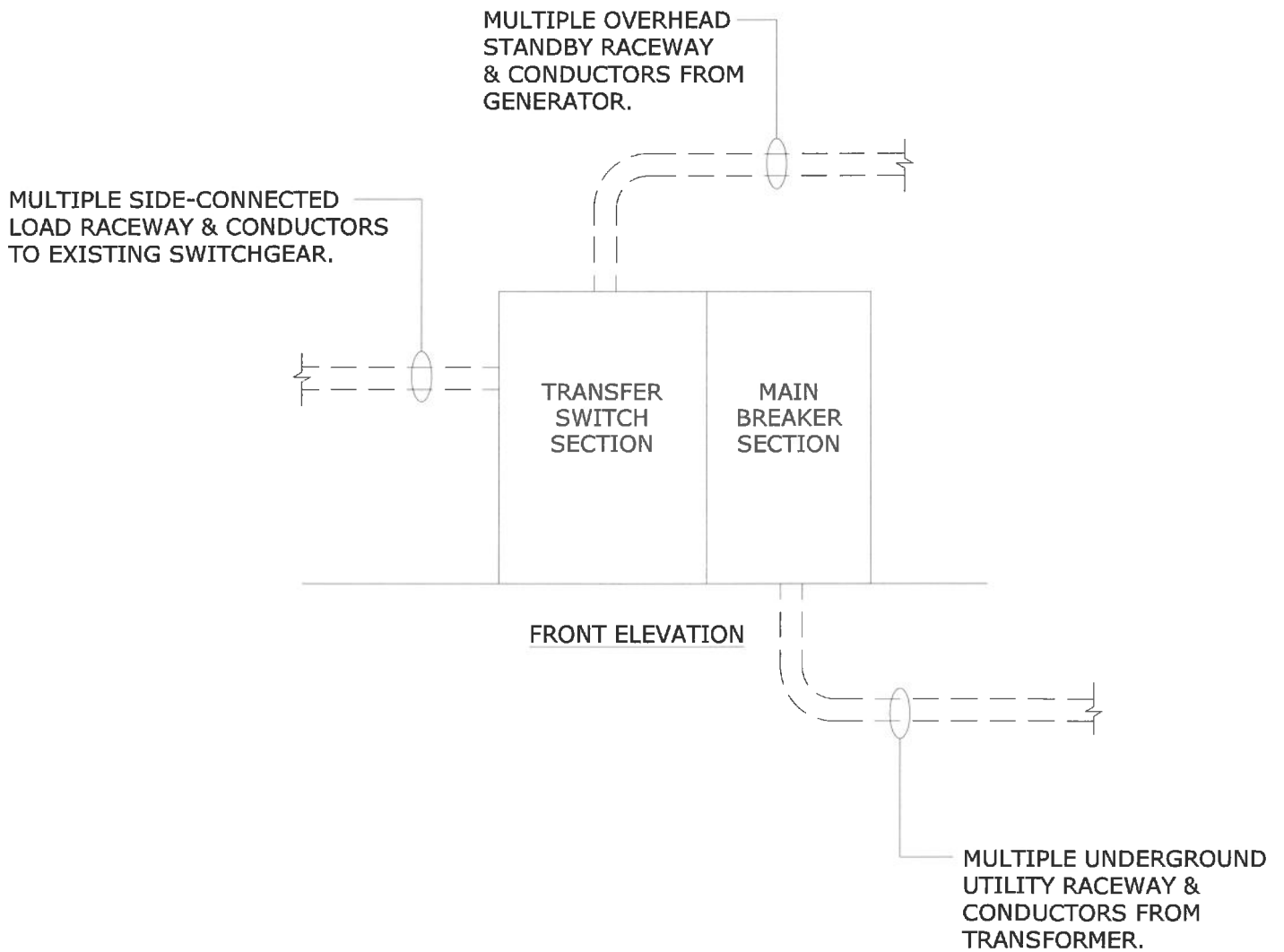
- A. Provide heat-shrunk, plastic, weatherproof wrapping over/around each combined circuit breaker/automatic transfer switch/bypass-isolation switch line-up enclosure.
- B. Deliver and off-load each combined main circuit breaker/automatic transfer switch/bypass/isolation switch line-ups and associated system components to the University of South Carolina's Columbia Campus, at a location directed by the Owner. Manufacturer shall protect wrappings, containers, and other protection that will exclude dirt and moisture from the equipment and prevent damage from weather during delivery and offloading processes. **The combined main circuit breaker/automatic transfer switch/bypass/isolation line-ups will be installed under a future contract.**



TRANSFER SWITCH #1



TRANSFER SWITCH #2



TRANSFER SWITCH #3

END OF SECTION 16415