

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

705 Elmwood Avenue
Providence, RI 02907

GENERAL GUIDELINES FOR COMPLETING INVITATION FOR BIDS PACKAGE

This document is intended as a guideline to assist prospective Bidders in successfully completing the necessary Bid paperwork. You are strongly encouraged to read the Instructions for Bidders Sections very carefully. This document is NOT intended to replace the more-detailed instructions that are included in the attached Bid Package.

- It is **EXTREMELY IMPORTANT** that all required forms be filled out completely. Federal and State Regulations mandate that these forms be filled out properly. Failure to fill out these forms may result in your Bid being ruled non-responsive. Non Responsive Bids **will not** be awarded the contract.
- **REMEMBER to completely fill out** all REQUIRED FORMS (see REQUIRED FORMS Checklist). The **forms that are checked off are the only ones that apply to this Bid.**
- If a form does not apply to your business or Bid please mark the form Not Applicable or some other similar wording at your discretion.
- DBE (Disadvantaged Business Enterprise) Obligation. RIPTA agrees to ensure that DBES as outlined in 49 CFR Part 26, as amended, have the maximum opportunity to participate in the performance of contracts. Therefore it is imperative that you read the DBE Section and complete the necessary Paperwork. All DBEs submitted must be certified by the State of Rhode Island at the time of Bid submittal.
- Make Sure the Bid Response is received by the RIPTA Purchasing Department by the designated date and time. Late Bids will not be accepted
- It shall be the responsibility of prospective Bidders to check the State of Rhode Island, Department of Administration Division of Purchases Website for any addenda.
- Make Sure that the Bid is returned in an Envelope or Box **CLEARLY LABELED** with the following Information: **Bid Number and what the Bid is for. This information should be in the lower left hand corner.** The envelope should also be labeled **Bid DOCUMENTS ENCLOSED**
- When in doubt, contact RIPTA Contracts Manager (401) 784-9500 extension 214 for assistance.
- **Bid must be submitted pre-punched for standard three ring binders. Spiral bound Bid submittals will not be allowed. Please note that United Parcel Service will not deliver to our address.**

Please refer to Page 75 for Technical Specifications

The following label shall be affixed to the envelope or package containing the Bid response documents. It is imperative that his label be affixed to insure the Bid documents are received and routed in the proper manner:

Return Address

BID DOCUMENTS ENCLOSED

CONTRACTS MANAGER
Rhode Island Public Transit Authority
Purchasing Department
Room 217
705 Elmwood Avenue
Providence, RI 02907

BID NUMBER: 16-15

BID FOR: Generator: 269 Melrose Street

DUE: April 8, 2016

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

705 Elmwood Avenue
Providence, RI 02907

REQUIRED COMPANY INFORMATION FORM

The following information is mandatory; Failure to complete this section may jeopardize your eligibility to be awarded the contract. **ALL SECTIONS OF THIS FORM MUST BE FILLED OUT COMPLETELY**

THIS INFORMATION IS REQUIRED IN ACCORDANCE WITH 49CFR 26.11

THIS FORM IS REQUIRED FOR ALL BIDDERS, PRIME CONTRACTORS, POTENTIAL SUBCONTRACTORS AND SUBCONTRACTORS

PLEASE PRINT OR TYPE YOUR INFORMATION

COMPANY NAME _____

COMPANY STREET ADDRESS: _____

COMPANY MAILING ADDRESS: _____

COMPANY REMIT TO ADDRESS: _____

COMPANY CONTACT PERSON: _____

COMPANY TELEPHONE NUMBER: _____

EMERGENCY 24 HOUR TELEPHONE NUMBER(S) (IF APPLICABLE): _____

COMPANY TELEFAX NUMBER: _____

COMPANY CONTACT EMAIL: _____

AGE OF THE FIRM (YEARS): _____

ANNUAL GROSS RECEIPTS (DOLLARS): _____

IS YOUR FIRM CERTIFIED BY THE STATE
OF RHODE ISLAND AS A DISADVANTAGED
BUSINESS ENTERPRISE ? _____

DUNN AND BRADSTREET NUMBER: _____

NAICS CODE: _____ INDUSTRY _____

NAICS Code can be found at the following website: www.naics.com

COMPANY STATUS: _____ PRIME CONTRACTOR _____ SUBCONTRACTOR

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Invitation for Bids Number 16-15

INVITATION FOR BIDS

BID NO: 16-15

DATE OF INVITATION: March 8, 2016

PRE-BID MEETING: March 29, 2016

BID RECEIPT DATE: April 8, 2016

FURNISHING OF: Generator: 269 Melrose Street

FEDERAL TRANSIT ADMINISTRATION PROJECT NO. RI90X062

The participant shall specify the official name of his/her company in the upper left-hand corner of the Bid Response Envelope and show **BID NO: and Bid Description in the lower left-hand corner and send or deliver to:**

**Purchasing Department
Room 217
705 Elmwood Avenue
Providence, RI 02907**

The participant shall execute the offer form enclosed herewith.

Bids will be reviewed and evaluated; all participants will be notified as soon as approval of award is made.

The Bidder shall execute the offer form enclosed herewith. The Bidder shall return **Two copy(ies)** with the **original** Bid.

RIPTA RESERVES THE RIGHT TO REJECT BIDS FROM PARTICIPANTS WHO HAVE NOT USED THE FORM AND PROPER BID RESPONSE ENVELOPE FORMAT.

RIPTA RESERVES THE RIGHT TO CANCEL ANY PARTICULAR SOLICITATION, AND/OR REJECT ANY OR ALL BIDS.

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I. CALENDAR

A. Date of Invitation:

March 8, 2016

B. Pre-Bid Conference:

1. **Date:** **March 29, 2016**

2. **Time:** **1:00 p.m. Eastern Time**

3. **Place:** **RIPTA Board Conference Room**
269 Melrose Street, Providence, RI

Any and all appeals must be submitted in writing prior to the time and date set for the Pre-Bid Meeting.

C. Request for Approved equals and Questions

must be submitted **ELECTRONICALLY IN MICROSOFT WORD FORMAT** to RIPTA Contracts Manager by:

1. **Date:** **March 29,2016**

2. **Time:** **1:00 p.m. Eastern Time**

3. **Response to approved equals: 10 - 14 days prior to Bid opening.**

D. Bid Receipt:

1. **Date:** **April 8, 2016**

2. **Time:** **1:00 p.m. Eastern Time**

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Invitation for Bids Number 16-15

II. NOTICE TO OFFERORS

A. DATE: March 8, 2016

The Rhode Island Public Transit Authority (RIPTA) is requesting Bids for the following:

Generator: 269 Melrose Street

All Bids shall be submitted in the required format and quantity as set forth in the RFP. This Bid must be received by April 8, 2016 at 1:00 p.m. Eastern Time by the Purchasing Department, Room 217, 705 Elmwood Avenue Providence, Rhode Island 02907. **Please be advised that United Parcel Service does not deliver to this address.**

Award of contract is subject to financial assistance of 80% from the U.S. Department of Transportation (FTA Project RI90X062) and 20% from RIPTA. The successful Bidder shall comply with the conditions and terms applicable thereunder.

A Pre-Bid Meeting will be held at the RIPTA Transportation Building Conference Room, 269 Melrose Street Providence, RI at 1:00 pm Eastern Time on March 29, 2016.. Bidders are expected to download and review the Bid Technical Specifications prior to the pre-Bid meeting.

The successful Bidder shall be required to comply with all applicable Equal Opportunity and Disadvantaged Business Enterprise regulations. Bidders are encouraged to view the Rhode Island Minority Business Enterprise (RIMBE) website for a list of Disadvantaged Business Enterprise vendors that may be interested in working with your company on this Bid. All DBEs submitted must be certified by the State of Rhode Island at the time of Bid submittal.

The RIMBE Website address is: <http://www.mbe.ri.gov/search.php>.

The Disadvantaged Business Enterprise goal for this project is: 15%.

The successful Bidder shall be required to certify that he is not on the Comptroller General's List of Ineligible Contractors.

An electronic copy of the RFP is available on the State of Rhode Island, Department of Administration, Division of Purchases Website.

The website address is: www.purchasing.ri.gov/RIVIP/ExternalBidSearch.asp.

RIPTA Requests for Bids can be Public Bid Opportunities, Quasi Public Sector, listed under the Rhode Island Public Transit Authority. ***Bidders must download the Bid documents and complete the required forms.***

If you are unable to access the Internet; a printed copy of the Bid may be obtained from RIPTA's Purchasing Department by calling Michael J. McGrane at (401) 784-9500, ext. 214.

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III. CONTACT LIST

Please contact RIPTA's Contracts Manager with any questions you may have regarding this Procurement

A. Contracts Manager

Mr. Michael J. McGrane

Phone: (401) 784-9500 extension 214

mmcgrane@ripta.com

All contacts with the Authority regarding this Procurement Action shall be directed to the RIPTA Contracts Manager. The Contracts Manager will contact the appropriate RIPTA Staff as needed. The Authority does not assume responsibility for the accuracy of information obtained from other RIPTA Staff.

Failure to adhere to this procedure may result in rejection of your Bid.

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IV. INSTRUCTIONS FOR BIDDERS

A. Definition of Terms.

Whenever herein or in the Bid contract documents the following terms, pronouns or abbreviations are used, the intent and meaning shall be interpreted as follows:

1. **Procuring agency**
Procuring Agency is defined as the Rhode Island Public Transit Authority.
2. **RIPTA**
RIPTA shall refer to the Rhode Island Public Transit Authority.
3. **Contractor**
Contractor shall mean the successful Bidder to whom a contract is awarded.
4. **Invitation for Bids (RFP)**
Invitation for Bids shall mean the complete assembly of related documents, whether attached or incorporated by reference, furnished by RIPTA for the purpose of proposing, including the Invitation for Bids, the Instructions for Bidders, Supplemental Conditions, Specifications, Bid Form, Bid Attachments, and Addenda, if any. Bids shall be in strict accordance with the Terms of the RFP.
5. **Authorized Signature.**
The person who is executing this contract on behalf of the Bidder and who is authorized to bind the Bidder.
6. **Invitation for Bids.**
The advertisement of the issuance by RIPTA of a Invitation for Bids, which is published, posted and sent to prospective Bidders informing interested persons of the proposed procurement.
7. **Bid Evaluation Factors/Criteria**
Evaluation Factors/Criteria given in the Technical Specifications are not listed in order of priority. The order of the listing has no relationship to the relative importance of the factors.
8. **Basis of Award**
The Contract will be awarded to the vendor that submits the Bid that is rated the overall best value to the Authority.
9. **Notice of Award.**
The receipt of a Purchase Order or Letter of Contract issued by RIPTA shall serve as notice of the award of contract.
10. **Specifications.**
The written description and statement of necessary requirements of the equipment/construction, supplies and/or service to be provided.
11. **Tender**
The Bidder's documents and all attachments tendered in response to the Bid requests.

B. Form of Bid and Signature.

The Bid shall be presented with an original and Two copies on the forms provided herewith by RIPTA and shall be enclosed in a sealed envelope marked and addressed as required on the Bid form.

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

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Depending upon whom the Bid is made by, the following signature and instructions must be followed:

1. **Sole Owner.**
Bid shall be signed with his full name, and his address shall be given.
2. **General Partnership.**
Bid shall be signed with the partnership name by a partner who shall also sign his/her own name, and the name and address of each partner shall be given.
3. **Limited Partnership**
Bid shall be signed with the partnership name by a general partner who has authorization to do so who shall also sign his/her own name.
4. **Corporation.**
Bid shall be signed by an officer or other individual who has the full and proper authorization to do so, and the corporate seal shall be affixed to the contract, or if the corporate seal is not affixed to the contract and it is signed by a person other than an officer, there must be attached to the contract a certified copy of a resolution of the corporation authorizing such officer or person to sign written contracts for and on behalf of the corporation.

C. Bid.

The terms of the Bid must not be changed. All blank spaces in said form shall be properly filled. Alterations by erasure or interlineation must be explained or noted in the Bid over the signature of the Bidder. If the unit price and the total amount named by a Bidder for any item, do not agree, **the unit price** alone will be considered as representing the Bidder's intention.

D. Unauthorized Conditions.

Unauthorized conditions, limitations or provisions attached to a Bid will render it informal and may cause its rejection.

E. Submission of Bid.

Prior to the hour specified in the Invitation for Bids inviting sealed Bids, all Bids shall be delivered to the Contracts Manager at the address shown in the Invitation for Bids. All costs associated with preparation and submission of a Bid shall be borne by the Bidder. The Authority assumes no responsibility for these costs

Each Bid shall be in a sealed envelope properly labeled on the outside with the Bid number and description. No Bids received after said time or at any place other than the time and place as stated in the Invitation for Bids will be considered. No Bid electronically transmitted , e.g. email and fax will be considered.

F. Modification or Withdrawal of Bid.

A Bid may be modified or withdrawn by written or telegraphic notice received in the office designated in the Invitation for Bids not later than the exact time set for receiving of Bids. A telegraphic notice of modification or withdrawal of a Bid telephoned by the receiving telegraphic office no later than the set for opening of Bids will be considered if the message is confirmed by the telegraph company by sending a copy of a written telegram which formed the basis of the telephone call. A Bid may be withdrawn in person by a Bidder or his/her authorized representative provided his/her identity is made known and he signs a receipt for the Bid if the withdrawal is prior to the exact time set for receiving the Bids. Modifications of Bids and requests for withdrawal of Bids

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which are received in the office designated in the Invitation for Bids after the exact time set for opening are "late modifications" and "late withdrawals" respectively. A late modification or late withdrawal will be subject to the rules and procedures applicable to late Bids. A late modification of an otherwise successful Bid will be opened at any time it is received. If, in the judgment of the Director of Procurement, it makes the terms of the Bid more favorable to RIPTA, it will be presented to the Contract Manager and Director of Procurement for consideration.

G. Bidder Interviews or Presentations

The Authority reserves the right, at its sole discretion, to request Bid respondents to make presentations or interviews. This may be done in person, or through electronic means (i.e. telephone or via the internet). The purpose of this presentation is to enhance the presentation, not to amend it. Bidders should prepare their Bid responses based upon the assumption that there will not be interviews, unless specifically stated in the Technical Specifications. The Written Bid should reflect their best effort.

H. Samples

Samples, when required, must be submitted within the time specified, at no expense to RIPTA. If not, destroyed or used up during testing, samples will be returned upon request at the Bidder's expense.

I. Canvass of Bids.

At the hour specified in the Invitation for Bids, a designee will receive the Bids. An award will be made or Bids rejected by RIPTA within the time specified in the specifications or Bid forms, or if not specified, within a reasonable time after Bids have been opened.

J. Rejection of Bids.

RIPTA reserves the right to reject any and all Bids. The right is reserved to reject any or all Bids, and to waive technical defects as the interest of RIPTA may require. Each Bidder shall be notified if all Bids are rejected.

K. Sales Tax Exemption.

RIPTA confirms there are no state, local or federal taxes applicable to this purchase.

L. Delivery Charges.

Unless otherwise stated in the RFP, Bidders shall include freight and/or delivery charges in the total price of their Bids.

M. Alternative Bid

Submissions of an alternative Bid or Bids, except as specifically called for in the Specifications or RFP, will render the Bid informal and may cause its rejection.

N. Non-Collusive Affidavit.

The Bidder represents and warrants that its Bid is genuine and not sham or collusive or made in the interest or in behalf of any person not therein named, and that the Bidder has not, directly or indirectly, induced or solicited any other Bidder to submit a sham Bid or any other person, firm or corporation to refrain from proposing, and that the Bidder has not in any manner sought by collusion to secure itself an advantage over any other Bidder.

O. Interest of RIPTA Personnel.

The Bidder represents and warrants that neither the General Manager, nor any Board Member, nor any employee of RIPTA, is in any manner interested directly or indirectly in the Bid or in the contract, which may be made under it, or in any expected profits to arise therefrom.

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P. Penalty for Collusion.

If at any time it shall be found that the person, firm or corporation to whom a contract has been awarded has, in presenting any Bid or Bids, colluded with any other party or parties, then the contract so awarded shall be **voidable** by RIPTA and the Contractor and his bondsmen shall be liable to RIPTA for all loss or damage which RIPTA may suffer thereby and the RIPTA Board may advertise for a new contract for said labor, supplies, materials, equipment or service.

Q. Bid Acceptance Period

All Bids shall remain in effect one hundred twenty (120) calendar days from the date of Bid opening. Bids offering less than one hundred twenty (120) calendar days for acceptance by RIPTA from the date set for opening will be considered non-responsive and will be rejected.

R. Postponement.

RIPTA reserves the right to postpone, for its own convenience, the date the Bid is to be received, but any Bidder whose Bid has already been submitted to RIPTA when the decision to postpone is made shall be afforded the opportunity to revise or withdraw its Bid.

S. Amendment and/or Postponement.

RIPTA reserves the right to revise or amend the specifications up to the time set for the receiving of Bids. Such revisions and addenda, if any, shall be announced by addenda to this solicitation. It shall be the responsibility of prospective Bidders to check the State of Rhode Island, Department of Administration Division of Purchases Website for any addenda. If the revisions and addenda require changes in quantities or price Bid, or both, the date set for receiving Bids may be postponed by such number of days as in the opinion of RIPTA shall enable Bidders to revise their Bids. In any case, Bid openings shall be at least seven (7) working days after the last addendum, and the addenda shall include an announcement of the new date, if applicable.

T. Single Bid.

1. In the event a single Bid is received, RIPTA will, at its option, either conduct a price and/or cost analysis of the Bid and make the award by negotiation or reject the Bid and re-advertise. A price analysis is the process of examining the Bid and evaluating a prospective price without evaluating the separate cost elements. Price analysis shall be performed by comparison of the price quotations submitted on other current quotations, with published price lists, or other established or competitive prices. The comparison shall be made to a purchase of similar quantity and involving similar specifications. Where a difference exists, a detailed analysis must be made of this difference and costs attached thereto.
2. Where it is impossible to obtain a valid price analysis, it may be necessary for RIPTA to conduct a cost analysis of the Bid price. Cost analysis is the review and evaluation of a contractor's cost or pricing data and of the factors applied in projecting from such data the estimated costs of performing the contract, assuming reasonable economy and efficiency.
3. The price and/or cost analysis shall be made by RIPTA's Procurement Department.

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U. Qualifications for Award.

The Bidder must be a person, firm or corporation that:

1. Has in operation, or has the capability to have in operation, a manufacturing plant adequate to assure delivery of all equipment within the time specified under this contract.
2. Has adequate service personnel, or has the capability to have such personnel, to satisfy any service problems that may arise during the warranty period.
3. Has the necessary facilities and financial resources or has the capability to obtain such facilities and resources to complete the contract in a satisfactory manner within the required time.
4. The Procuring agency shall have the right to conduct a pre-award survey on each Bidder. Doubt as to the capability or technical ability, productive capacity or financial strength, which cannot be resolved affirmatively, shall require a determination of non-responsibility by RIPTA.

V. Ineligible Bidders.

The Bidder shall be required to certify, upon request, that it is not on the U.S. Comptroller General's Consolidated List of Persons or Firms currently Debarred for Violations of Various Public Contracts Incorporating Labor Standards Provisions.

W. Disadvantaged Business Enterprise

The Rhode Island Public Transit Authority will not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT assisted contract or in the administration of its DBE Program or the requirements of 49 CFR part 26. RIPTA will take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT assisted contracts. The recipient's DBE Program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the Rhode Island Public Transit Authority of its failure to carry out its approved program the Department may impose sanctions as provided for under part 26 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Action of 1986 (31 U.S.C. 3801 et. Seq).

X. Addenda.

RIPTA may issue addenda containing amendments to its Bid solicitation documents. Any addendum issued less than seven (7) days prior to the receipt of Bid shall, if necessary, contain a provision postponing the date of the receipt of Bid to a date that will provide Bidders adequate time to respond to the addenda. Addenda shall be numbered sequentially.

Y. Bidder's Requests and Appeals.

1. Appointments.

Bidders and suppliers may make appointments with the contact person listed in the specifications to discuss the specifications.

2. Amending Materials.

Any amending material issued by RIPTA pertaining to the Bid solicitation documents (including, without limitation: clarifications, approved equals, and corrections) shall be set forth in an addendum

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and sent to all parties who are on record as having obtained a copy of the Bid solicitation documents.

3. Appeal.

Should any Bidder or supplier choose to appeal RIPTA's decision, such appeal must be in writing and received by RIPTA not less than seven (7) calendar days before the date of receipt of Bid. RIPTA has no obligation to consider appeals received less than seven (7) calendar days before the date of the receipt of Bid.

4. Withdrawal.

The Bidder or supplier may withdraw its appeal at any time before RIPTA issues a final decision. There shall be no further review of the appeal after the final decision is issued.

5. Notification.

Should RIPTA postpone the date of the receipt of Bid owing to the appeal, RIPTA shall notify all parties who are on record as having obtained a copy of the Bid solicitation documents that an appeal has been filed and that the date of the receipt of Bid shall be postponed until RIPTA has issued its final decision. RIPTA shall issue appropriate amendments postponing the re-scheduling date of the receipt of Bid.

Z. Equal Employment Opportunity.

In connection with the execution of this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, handicap or national origin. The contractor shall take affirmative action to insure that applicants are employed and that employees are treated during their employment, without regard to their race, religion, color, sex, age, handicap or national origin. Such actions shall include, but not limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff, or termination, rates of pay, or other forms of compensation, and selection for training, including apprenticeship.

AA. Prohibited Interest.

No member, officer, or employee of RIPTA or of a local public body during his tenure or for one year thereafter shall have any interest, directly or indirectly, in this contract or the proceeds thereof.

BB. Interest of Members of Congress.

No member or delegate to the Congress of the United States shall be admitted to any share or part of this contract or to any benefit arising therefrom.

CC. Contract Commencement Date.

The contract commencement date shall be the date of the signing of the Purchase Order or by Letter of Contract signed by an authorized RIPTA employee.

DD. Notice, Waiver and Applicable Law.

Notice given to Contractor and RIPTA shall be given to the parties in writing by certified mail at the respective addresses set forth herein. Waiver by RIPTA of a breach by Contractor of any provision of this contract shall not be deemed a waiver of future compliance therewith, and such provision as well of future provisions hereunder, shall remain in full force and effect. The rights and duties of the parties hereto shall be determined by the laws of the State of Rhode Island, and to that end this agreement shall be considered and

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construed as a contract made an to be performed in the State of Rhode Island.

EE. Protest.

1. General.

Protests will be accepted from prospective Bidders or Offerors whose direct economic interest would be affected by the award of a Contract or by failure to award a contract. The RIPTA Director of Purchasing will consider all protests or objections filed in a timely manner regarding the award of a contract, whether submitted before or after award. If the protest is oral and the matter cannot be otherwise resolved, written confirmation of the protest will be requested. Protest submissions should be concise, logically arranged, and clearly state the grounds for the protest. Protests must include at least the following information:

- a. Name, address and telephone number of protester.
- b. Identification of the solicitation or Contract number.
- c. A detailed statement of the legal and factual grounds of protest, including copies of relevant documents
- d. A statement as to what relief is requested.
- e. Protest should be sent to:
Director of Procurement
RI Public Transit Authority
Room 217
705 Elmwood Avenue
Providence, RI 02907
- f. Protests must be filed with the RIPTA in accordance with our procedures and time requirements. The protest to RIPTA must be complete and contain all the issues that the protester believes relevant. RIPTA will respond to each substantive issue raised in the protest. Failure to include an issue in the protest eliminates that issue from further consideration. All protest decisions entered by RIPTA are final in accordance with FTA "Third Party Contract" Regulation.
- g. On occasion, when considered appropriate, an informal conference on the merits of the protest with all interested parties may be held.

FF. Protests Before Award

1. Solicitation Phase.

Protests concerning the solicitation must be submitted in writing five (5) working days prior to Bid opening or closing date for receipt of Bids. If the written protest is not received by the time specified, award may be made in the normal manner unless the Director of Purchasing, upon investigation, finds that remedial action is required. Oral protests not followed up by a written protest will be disregarded.

Notice of a protest and the basis therefore will be given to all potential Bidders or Offerors.

2. Pre-Award Phase.

When a protest against the making of an award is received after receipt of Bids but prior to award, the Director of Purchasing may determine to withhold the award pending disposition of the protest. The Bidders or Bidders whose Bids might become eligible for award should be requested, before expiration of the time for acceptance of

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their Bids, to extend the time for acceptance (with consent of sureties, if any) to avoid the need for readvertising. RIPTA will provide a written response to each material issue raised in the written protest.

Where a written protest against the making of an award is received in the time specified, award will not be made prior to five (5) working days after resolution of the protest or, if a protest has been filed with FTA during the pendency of that protest, unless RIPTA determines that:

- a. The items to be procured are urgently required;
- b. Delivery or performance will be unduly delayed by failure to make award promptly; or,
- c. Failure to make award will otherwise cause undue harm to RIPTA or the Federal Government.

If award is made, the Director of Procurement will document the file to explain the need for an award, and will give written notice of the decision to proceed with the award to the protester and, as appropriate, to others concerned.

GG. Protests After Award.

A protest received not later than 10 (ten) working days after award shall be reviewed by the Director of Purchasing. The Contractor will, in any event, be furnished with the notice of protest and the basis therefore. When it appears likely that an award may be invalidated and a delay in receiving the supplies or services is not prejudicial to the Authority's interest, the Director of Purchasing should consider a mutual agreement with the Contractor to suspend performance on a no-cost basis.

HH. Source Selection and Contract Award

The contract shall be awarded with reasonable promptness by written notice to the responsive and responsible Bidder whose Bid will be evaluated using a best value approach. The ultimate selection of an offeror will be on the basis of overall best value to the Authority.

II. Title VI Assurances

Contractors and subcontractors will be required to comply with all requirements imposed by Title VI of the Civil Rights Act of 1964 (49 U.S.C. 2000d), and the Assurances by RIPTA pursuant thereto.

JJ. Energy Conservation Requirements:

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency, which are contained in the State of Rhode Island Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act.

KK. Program Fraud

1. The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et. seq. and U. S. Department of Transportation regulations. "Program Fraud Civil Remedies" 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the Federal Transit Administration assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it make, or causes to be made, a false, fictitious or fraudulent claim, statement, submission, or certification, the Federal

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Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

2. The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by the FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 5307 (n) (1) on the Contractor, to the extent the Federal Government deems appropriate.
3. The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

LL. No Government Obligation to Third Parties:

1. The Purchaser and the Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Purchaser, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.
2. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

MM. Veteran's Employment

The Contractor shall ensure that contractors working this project shall give a hiring preference, to the extent practicable, to veterans (as defined in Section 2108 of title 5) who have the requisite skills and abilities to perform the work required under the contract. This shall not be understood, construed or enforced in any manner that would require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

V. GENERAL PROVISIONS

A. Definitions:

As used throughout this Contract, the following terms shall have the meanings set forth below:

1. **Authority**
Authority means Rhode Island Public Transit Authority (RIPTA).
2. **Contracting Manager**
the person executing this Contract on behalf of the Authority, and his or her successor, and the term includes, except as otherwise provided in this Contract, the authorized representative of a Contracting Officer acting within the limits of his authority.

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3. Directed, Ordered, designated or prescribed

Wherever in the scope of the work the words directed, ordered, designated, prescribed, or words of like importance are used, it shall be understood that the direction, requirement, order, designation, or prescription of the Contracting Manager is intended and similarly the words approved, acceptable, satisfactory, or words of like importance shall mean approved by, or acceptable to, satisfactory to the Contracting Officer, unless expressly stated.

B. Changes:

The Contracting Officer may at any time, by a written order, and without notice to the sureties, make changes within the general scope of this Contract. If any such changes causes an increase or decrease in the cost of, or the time required for, the performance of any part of the work under this Contract, whether changed or not changed by the order, the Contracting officer shall make an equitable adjustment in the Contract price, the delivery schedule, or both, and shall modify the Contract.

The Contractor must assert its right to an adjustment under this article within 30 days from the date of receipt of the written order. Failure to agree to any adjustment shall be a dispute under the Disputes article. However, nothing in this article shall excuse the Contractor from proceeding with the contract as changed.

C. Extras:

Except as otherwise provided in this Contract, no payment for extras shall be made unless such extras and the price therefore have been authorized in writing in advance by the Contracting Officer.

D. Inspection:

All supplies, which term throughout this article includes without limitation raw materials, components, intermediate assemblies, and end products, shall be subject to inspection and test by the Authority, to the extent practicable at all times and places including the period of manufacture, and in any event prior to acceptance.

In case any supplies or lots of supplies are defective in material or workmanship or otherwise not in conformity within the requirements of this Contract, the Authority shall have the right either to reject them or require their correction. If any inspection or test is made by the Authority on the premises of the Contractor or a subcontractor, the Contractor without additional charge shall provide all reasonable facilities and assistance for the safety and convenience of the Authority inspectors in the performance of their duties. All inspections and test by the Authority shall be performed in such a manner as not to unduly delay this work. The Authority reserves the right to charge to the Contractor any additional cost of Authority inspection and test when supplies are not ready at the time such inspection and test is requested by the Contractor or when re-inspection or retest is necessitated by prior rejection. Acceptance or rejection of the supplies shall be made as promptly as practicable after delivery, except as otherwise provided in this Contract; but failure to inspect and accept or reject supplies shall neither relieve the Contractor from responsibility for such supplies as are not in accordance with the contract requirements nor impose liability on the Authority therefore. The inspection and test by the Authority of any supplies or lots thereof does not relieve the Contractor from any responsibility regarding defects or other

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failures to meet the Contract requirements, which may be discovered prior to acceptance. Except as otherwise provided in this Contract, acceptance shall be conclusive except as regard latent defects, fraud, or such gross mistakes as amount to fraud. The Contractor shall provide and maintain an inspection system acceptable to the Authority covering the supplies hereunder. Records of all inspection work by the Contractor shall be kept complete and available to the Authority during the performance of this Contract and for such longer period as may be specified elsewhere in this Contract.

E. Responsible:

Notwithstanding the requirements for any Authority inspection and test contained in Specifications applicable to this Contract, except where specialized inspections or tests are specified for performance solely by the Authority, the Contractor shall perform or have performed the inspections and tests required to substantiate that the supplies and services provided under the contract conform to the Drawing, Specifications and Contract requirements.

F. Title and Risk of Loss

Unless this Contract specifically provides for earlier passage of title, title to supplies covered by this Contract shall pass to the Authority upon formal acceptance. Unless this Contract specifically provides otherwise, risk of loss of or damage to supplies covered by this Contract shall remain with the Contractor, until acceptance by the Authority.

Notwithstanding the above, the risk of loss of or damage to supplies which so fail to conform to the Contract as to give a right of rejection shall remain with the Contractor until cure or acceptance, at which time the above shall apply.

G. Payments

The Contractor shall be paid, upon the submission of proper invoices or vouchers, the prices stipulated herein for supplies delivered and accepted or services rendered and accepted, less deductions, if any, as specified. The failure to perform may result in partial or full suspension of payment and/or process payment. The Authority's payment terms are 60 days after approval of an invoice unless otherwise negotiated.

H. Stop Work Order

The Contracting Manager may, at any time, by written order to the Contractor, require the Contractor to stop all, or part of the work called for by this Contract. Any such order shall be specifically identified as a STOP WORK ORDER issued pursuant to this article. Upon receipt of such an order, the Contractor shall forthwith comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage.

I. Disputes

1. Except as otherwise provided in this Contract, any dispute concerning a question of fact arising under this Contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the General Manager. The decision of the General Manager or his/her duly authorized representative for the determination of such appeals shall

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be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence. In connection with any appeal proceeding under this article, the Contractor shall be awarded an opportunity to be heard and to offer evidence in support of his appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

2. This **DISPUTES** article does not preclude consideration of questions of law in connection with decisions provided for in paragraph a. above. Nothing in this Contract, however, shall be construed as making the final decisions of the General Manger of his/her representative on a question of law.

J. **Default**

1. The Authority may, subject to the provisions of paragraph b. below, by written notice of default to the Contractor, terminate the whole or any part of this Contract in any one of the following circumstances:
 - a. If the Contractor fails to make delivery of the supplies or to satisfactorily perform the services within the time specified herein or any extension thereof; or
 - b. If the Contractor fails to perform any of the other provisions of this Contractor, or so fails to make its terms, and in either of these two circumstances does not cure such failure within a period of 10 days (or such longer period of as the Contracting Officer may authorize in writing) after receipt of notice from the Contracting Officer specifying such failure
2. Default without the fault or negligence of the Contractor. Such causes may include, but are restricted to, acts of God or of the public enemy, acts of the Government in its sovereign capacity or the Authority in its contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor.
3. If the Contractor fails to deliver the supplies or satisfactorily perform the services within the time specified in this Contract, or any extension thereof, the actual damage to the Authority for the delay will be difficult or impossible to determine. Therefore in lieu of actual damages, the Contractor shall pay to the Authority as fixed, agreed and liquidated damages for each calendar day of delay, the amount set forth elsewhere in this Contract. The Contractor shall not be charged with liquidated damages when the delay arises out of causes beyond the control and without the fault or negligence of the Contractor, and in such event, subject to this DISPUTES article, the Contracting Officer shall ascertain the facts and extent of the delay and shall extend the time for performance of the contract when in his judgment the findings of fact justify an extension.
4. The rights and remedies of the Authority provided in this article shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Contract.

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K. Termination for Convenience of the Authority

The performance of work under this Contract may be terminated by the Authority in accordance with this article in whole, or from time to time in part, whenever the Contracting Officer shall determine that such termination is in the best interest of the Authority. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective.

After receipt of a Notice of Termination, the Contractor shall submit to the Contracting Officer his termination claim, in the form and with certification prescribed by the Contracting Officer. Such claims shall be submitted promptly by in no event later than one year from the effective date of termination. Upon failure of the Contractor to submit his termination claim within the time allowed, the Contracting Officer may, subject to any review required by the contracting agency's procedures in effect as of the date of execution of this Contract, determine, on the basis of information available to him, the amount, if any, due the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

In the event of the failure of the Contractor and the Contracting Officer to agree upon the whole amount to be paid the Contractor by reason of the termination of work pursuant to this article, the Contracting Officer shall, subject to any review by the contracting agency's procedures in effect as of the date of execution of this Contract, determine, on the basis of information available to him, the amount if any, due the Contractor by reason of the termination.

Costs claimed, agreed to, or determined pursuant to this paragraph shall be in accordance with the applicable with the applicable contract cost principles and procedures of the Federal Acquisition Regulations (48 CFR 31.1) in effect on the date of this Contract. The Contractor shall have the right to appeal, under the DISPUTES article of this Contract from any determination made by the Contracting Officer, except that, if the Contractor has failed to submit his claim within the time provided above and has failed to request extension of such time, he shall have no such right of appeal. Unless otherwise provided for in this Contract, or by applicable statute, the Contractor, from the effective date of termination and for a period of three years after final settlement under this Contract, shall preserve and make available to the Authority at all reasonable times at the office of the Contractor but without direct charge to the Authority, all his books, records, documents, and other evidence bearing on the costs and expenses of the Contractor under this Contract and relating to the work terminated hereunder, or, to the extent approved by the Contracting Officer, photographs, micro photographs, or other authentic reproductions thereof.

L. Federal, State and Local Taxes

Except as may be otherwise provided in this Contract, the Contract price includes all applicable Federal, State, and Local taxes and duties. The Authority upon the request of the Contractor shall, without further liability, furnish evidence appropriate to establish exemption from any Federal, State, or Local tax.

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M. Walsh-Healey Public Contracts Act

If this contract is for the manufacture or furnishing of materials, supplies articles, or equipment in an amount which exceeds or may exceeds or exceed \$10,000 and is otherwise subject to the Walsh-Healey Public Contract Act, as amended (41 U.S.C. 34-35), there are hereby incorporated by reference all representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations of the Secretary of Labor which are now or may hereafter be in effect.

N. Officials Not to Benefit

No member, officer, or employee of the Authority during his tenure or one year thereafter shall have any interest, direct or indirect, in this Contract or the proceeds thereof.

O. Covenant against Contingent Fees

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the Authority shall have the right to annul this Contract without liability or in its discretion, to full amount of such commission, percentage, brokerage, or contingent fee.

P. Notice to the Authority of Labor Disputes

Whenever the Contractor has knowledge that any or potential labor disputes is delaying or threatens to delay the timely performance of this Contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Contracting Officer. The Contractor agrees to insert the substance of this clause, in any subcontract hereunder as to which a labor dispute may delay the timely performance of this Contract; except that each such subcontract shall provide that in the event its timely performance is delayed or threatened by delay by any actual or potential labor dispute, the subcontractor shall immediately notify his next higher tier subcontractor, or the Contractor, as the case may be, of all relevant information with respect to such dispute.

Q. Patent Indemnity

1. If the amount of this Contract is in excess of \$10,000, the Contractor shall indemnify the Authority and its officers, agents, and employees against liability, including costs, for infringement of any United States letters patent arising out of the manufacture or delivery of supplies under this Contract.
2. In addition, if specifically requested by the Contracting Officer prior to execution of the Contract, a copy of the current license agreement and identification of applicable claims of specific patents shall be furnished.

R. Use of Trade Names

Any trade names used in this document are merely used for a point of reference. The Authority will consider submission of approved equals on any or all products specified. Use of trade names by the Authority bears no actual or implicit approval for the violation of any current or pending patents or copyrights.

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S. Rights in Technical Data

1. The Authority shall have the right to use, duplicate or disclose technical data, which includes computer software, in whole or in part, in any manner and for any purpose whatsoever, and to have or permit others to do so:
 - a. Any manuals, instructional materials prepared for installation, operation, maintenance or training purposes;
 - b. Technical data pertaining to end items, components or processes which were prepared for the purpose of identifying sources, size, configuration, mating and attachment characteristics, functional characteristics and performance requirements ("for, fit and function: data; e/g/ specification control drawing, catalog sheets, outline drawing; except that for computer software it means data identifying source, functional characteristics, and performance requirements but specifically excludes the source code, algorithm, process, formulae, and flow charts of the software);
 - c. Other technical data which has been, or is normally furnished without restriction by the Contractor or subcontractor;
 - d. Other specifically described technical data, which the parties have agreed will be furnished without restriction.
2. The Authority shall have the right to use, duplicate, or disclose technical data other than that defined in paragraph a. in whole or in part, with the express limitation that such technical data shall not, without the written permission of the party furnishing such technical data, be
 - a. released or disclosed in part by the Authority for manufacture, or
 - b. used in whole or in part by the Authority for manufacture, or
 - c. used by a party other than the Authority except for emergency repair or overhaul work only, by or for the Authority where the item or process concerned is not otherwise reasonably available to enable timely performance of the work; provided, that the release or disclosure thereof outside the Authority shall be made subject to a prohibition against further use, release or disclosure.
3. Technical data provided in accordance with the provisions of paragraph b. shall be identified by a legend, which suitably recites the aforesaid limitation. Nothing herein shall impair the right of the Authority to use similar or identical data acquired from other sources.
4. The term technical data as used in this article means technical writing, computer software, sound recording, pictorial reproductions, drawings, or other representations and works of a technical nature, whether or not copyrighted, which are specified to be delivered pursuant to this Contract. The term does not include financial reports, cost analysis, and other information incidental to Contract administration. Computer software as used in this article means computer programs, computer databases, and documentation.
5. Material covered by copyright:
 - a. The Contractor agrees to and does hereby grant to the Authority, and to its officers, agents and employees acting within the scope of their official duties, a royalty-free,

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nonexclusive and irrevocable license throughout the world for Authority purposes to publish, translate, reproduce, deliver, perform, dispose of, and to authorize others to do so, all technical data now or hereafter covered by copyright.

- b. No such copyright matter shall be included in technical data furnished hereunder without the written permission of the copyright owner for the Authority (or higher-tier contractor) promptly and in reasonable written detail each notice or claim of copyright infringement received by the Contractor with respect to any technical data delivered hereunder.
6. Relation to patents: Nothing contained in this article shall imply a license to the Authority under any patent, or be construed as affecting the scope of any license or other right otherwise granted to the Authority under any patent.
7. Any dispute under this article shall be subject to the Disputes article of this contract

T. Audit and Inspection of Records

The Contractor shall maintain records, and the Contracting Officer, the State of Rhode Island, the U.S. Department of Transportation, and the Comptroller General of the United States or any of their duly authorized representatives shall, until the expiration of three years after final payment under this Contract, have access to and the right to examine any directly pertinent books, documents, papers and records of such contractor, involving transactions related to the Contract, for the purpose of making audit, examination, excerpts and transactions.

The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Contracting Officer, the State of Rhode Island, the U.S. Department of Transportation and the Comptroller General of the United States or any of their Duly authorized representatives shall, until the expiration of three years after final payment under the Contract, have access to and the right to examine any directly pertinent books, documents, papers and records of such subcontractor, involving transactions related to the subcontract, for the purpose of making audit, examination, excerpts and transcription.

U. Gratuities

In connection with performance of work required under this Contract, or any changes or modifications relative thereto, the giving of or offering to give gratuities (in the form of entertainment, gifts or otherwise) by the Contractor, or any agent, representative or other person deemed to be acting on behalf of the Contractor, or any supplier or subcontractor furnishing material to or performing work under this Contract, or agent, representative or other person deemed to be acting on behalf of such supplier or subcontractor, to any Director, Officer or employee of the Authority; or to any Director, employee or agent of any of the Authority's agents, consultants, representatives or other persons deemed to be acting for or on behalf of the Authority with a view toward securing a contract or securing favorable treatment with respect to the awarding to the awarding or amending, or the making of any determinations with respect to the performing of such contract is expressly forbidden. The terms of this GRATUITIES article shall be strictly construed and enforced in the event of violations hereto.

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V. Limitation on Withholding Payments

If more than one article or schedule provision of this Contract authorized the temporary withholding of amounts otherwise payable to the Contractor for supplies delivered or services performed, the total of the amounts so withheld at any one time shall not exceed the greatest amount which may be withheld under any one such article or schedule provision at that time; provided, that this limitation shall not apply to:

1. Withholdings pursuant to any clause relating to wages or hours of employees;
2. Withholdings not specifically provided for by this Contract; and
3. The recovery of overpayment.

W. New Material

The Contractor represents that the supplies and components to be provided under this Contract are new (not used or reconditioned, and not of such age or so deteriorated as to impair their usefulness or safety).

X. Order of Precedence

In the event of an inconsistency in the Contract, unless otherwise provided herein, the inconsistency shall be resolved by giving precedence in the following order:

1. The Bid Schedule;
2. Special Conditions;
3. General Provisions;
4. The other provisions of the Contract, whether incorporated by reference or otherwise;
5. The Specifications; and
6. Drawings.

Y. Correction of Deficiencies

1. Definitions:

As used in this article:

- a. Deficiency means any condition or characteristics in any supplies (which term shall include related technical data) or services furnished hereunder, which is not in compliance with the requirements of this Contract.
- b. Correction means any and all actions necessary to eliminate any and all deficiencies.
- c. Supplies mean the end item(s) furnished by the Contractor and related services required under this Contract.

2. General:

- a. The rights and remedies of the Authority shall not be affected in any way by any other provisions under this Contract concerning the conclusiveness of inspection and acceptance.
- b. The Contractor shall not be responsible under this article for the correction of deficiencies caused by the Authority. These shall be no extension in time for performance; no increase in contract price for the correction of deficiencies that are the responsibility of the Contractor, his suppliers, and/or subcontractors.

3. Deficiencies in accepted supplies or services:

If the Contracting Officer determines that a deficiency exists in any of the supplies or services accepted by the Authority under this Contract, he shall promptly notify the Contractor of the deficiency, in writing,

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within 30 days. Upon timely notification of the existence of such a deficiency, or if the Contractor independently discovers a deficiency in accepted supplies or services, the Contractor shall promptly submit to the Contracting Officer his recommendation for corrective actions, together with supporting information in sufficient detail for the Contracting Officer to determine what corrective action, if any, shall be undertaken.

4. **Correction of Deficiencies by Contractor:**

The Contractor shall promptly comply with any timely written direction by the Contracting Officer to correct or partially correct a deficiency, at no increase in the Contract price. The Contractor shall also prepare and furnish to the Authority data and reports applicable to any correction required under this article (including revision and updating of all other affected data called for under this Contract) at no increase in the Contract price.

5. **Deficiencies in supplies or services not yet accepted:**

If the Contractor becomes aware at any time before acceptance by the Authority (whether before or after tender to the Authority) that a deficiency exists in any supplies or services, he shall promptly correct the deficiency or, if he elects to invoke the procedures in paragraph c. above he shall promptly communicate information concerning the deficiency to the Contracting Officer, in writing, together with his detailed recommendation for corrective action.

6. **Extensions or Delays**

In no event shall the Authority be responsible for extension or delays in the scheduled deliveries or periods of performance under this Contract as a result of the Contractor's obligations to correct deficiencies, nor shall there be any adjustment of delivery schedule or period of performance as a result of corrections of deficiencies, except as may be agreed to by the Authority in a supplemental agreement with adequate consideration.

7. **Contract Price**

It is hereby specifically recognized and agreed by the parties hereto that this article shall not be construed as obligating the Authority to increase the Contract price of this Contract.

8. **Failure to correct:**

If the Contractor fails or refuses to promptly rectify the deficiency the Contracting Officer shall give the Contractor written notice specifying the failure or refusal and setting a period after receipt of the notice within which it must be cured. If the failure or refusal is not cured within the specified period, the Contracting Officer may, by contract or otherwise, as required:

- a. Obtain detailed recommendations for corrective action;
- b. Correct the supplies or services, or
- c. Replace the supplies or services; and if the Contractor fails to furnish timely disposition instructions, the Contracting Officer may dispose of nonconforming supplies for the Contractor's account in a reasonable manner, in which case the Authority is entitled to reimbursement from the Contractor or from the proceeds for the reasonable expenses of case and disposition, as well as for excess costs incurred or to be incurred; and

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- d. Obtain applicable data and reports; and charge to the Contractor the cost occasioned the Authority thereby.
- e. Impose Liquidated Damages in accordance the terms of this document
- f. Terminate the contract. Termination of contract by RIPTA does not relieve the contractor of any liquidated damages imposed by the Authority.

Z. **Assignment**

- 1. The Contractor shall not transfer the rights and obligations of the Contract to third parties without the prior written approval of the Authority's Contracting Officer. After review of facts and circumstances without exception the assignment shall not be approved unless the surety, in writing, agrees to that assignment and accepts the assignee as the Contractor and principal on the payment and/or performance bonds.
- 2. If this Contract provides for payments aggregating \$1,000 or more, claims for monies due or to become due the Contractor from the Authority under this Contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, any may thereafter by further assigned and reassigned to any institution. (Notice of such assignment shall be made to the Authority.) Any such assignment or reassignment shall cover all amounts payable under this Contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment or reassignment may be made to one party as agent or trustee for two or more parties participating in such financing. It is the Authority's intent to recognize only bona fide lending institutions, therefore, assignment to any private corporation, business or individual, which does not qualify as such, is specifically prohibited.
- 3. Any attempt to transfer by assignment not authorized by this article shall constitute a breach of the Contract and the Authority may for such cause terminate the right of the Contractor to proceed as provided in the DEFAULT article of these General Provisions, and the Contractor and his sureties shall be liable to the Authority for any excess costs incurred by the Authority.
- 4. The Rhode Island Public Transit Authority may assign some or all of its rights to purchase the items specified in this contract to one or more third parties, provided, however, that nay such assignment shall not relieve RIPTA of its obligations under this contract unless otherwise agreed to by Contractor in writing.

AA. **Certificates of Current Cost or Pricing Data**

The Contractor shall provide a Certificate of Current Cost or Pricing Data as required in Subpart 15.804 of the Federal Acquisition Regulations (48 CFR 15.804) in support of any negotiated contract expected to exceed \$100,000 any modification to a formally advertised or negotiated contract on which the aggregate of the increase and decrease in cost are expected to exceed \$100,000; the Contracting Officer at his discretion may request cost or pricing data for modifications on which cost are \$100,000 or less and an attendant certificate of current cost or pricing data.

BB. **Cargo Preference**
Use of United States Flag Vessels

Pursuant to Pub. L 664 (56 U.S.C. 1241 (b)):

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"Cargo Preference-Use of United States-Flag Vessels

The Contractor agrees

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk cargo liners, and tankers) involved, whenever shipping any equipment, materials, or commodities pursuant to this Contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
2. To furnish within 20 days following the date of loading for shipments originating within the United States, or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (1) above to the Grantee (through the prime Contractor in the care of subcontractor bills-of lading) and to the Division of National Cargo, Officer of Market Development, Maritime Administration, Washington, D.C. 20230, marked with appropriate identification of the Project.
3. To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this Contract.

CC. Buy America Act

The Contractor agrees to comply with 49 U.S.C. §533(j), and its implementing regulations at 49 C.F.R. Part 661, any amendments thereto, and any implementing guidelines issued by FTA.

DD. Equal Opportunity

1. Race, Color, Creed, National Origin, Sex.

In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, " Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 CFR Parts 60 et seq., (which implements Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders regulations, and Federal polices that may in the future affect construction activities undertaken in the course of the Project. The contract agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

2. Age

In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29, U.S.C. § 623 and Federal Transit Law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In

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addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

3. Disabilities

In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

The contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

EE. Nondiscrimination under Federal Grants

In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. §2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. §6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

FF. Rights in Data and Copyrights-FTA (June 1996)

The term "subject data" used in this section means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under this contract. The term includes graphic or pictorial delineation in media such as drawings or photographs; text in specifications or related performance or design-type documents; machine forms such as punched cards, magnetic tape, or computer memory printouts; and information retained in computer memory. Example include, but are not limited to: computer software, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identifications, and related information. The term "subject data" does not include financial reports, cost analyses, and similar information incidental to Project administration.

When the Federal Transit Administration (FTA) provides financial assistance for a planning, research, development, or a demonstration project, it is FTA's general intention to increase mass transportation knowledge, rather than limit the benefits of the Project to participants in the Project. Therefore, unless FTA determines otherwise, the Contractor agrees that FTA may make available to any FTA recipient, subrecipient, third party contractor, or third party subcontractor, either FTA's license in the copyright to the subject data derived under this contract or a copy of the subject data as defined in subsection a. of this clause and shall be delivered as the Government may direct. Unless prohibited by state law, the Contractor agrees to indemnify, save, and hold harmless RIPTA and the Government, their officers, agents, and employees acting within the scope of their official duties against any liability, including costs and expenses, resulting from any willful or intentional violation by the contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use, or disposition of any data

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furnished under this Contract. The Contractor shall not be required to indemnify RIPTA and the Government for any such liability arising out of the wrongful acts of employees or agents of RIPTA and the Government.

GG. Davis-Bacon Act

40 USC &167; 276a -276a-5 (1998) 29 CFR § 5 (1999)

1. Minimum wages

- a. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- b. The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

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- i. Except with respect to helpers as defined as 29 CFR 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - ii. The classification is utilized in the area by the construction industry; and
 - iii. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
 - iv. With respect to helpers as defined in 29 CFR 5.2(n)(4), such a classification prevails in the area in which the work is performed.
- c. If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- d. In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- f. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- g. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or

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program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

- h. The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
 - i. The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - ii. The classification is utilized in the area by the construction industry; and
 - iii. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- i. If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- j. In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination with 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- k. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

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2. Withholding

The Rhode Island Public Transit Authority shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the Rhode Island Public Transit Authority may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

- a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
- b.
 - i. The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Rhode Island Public Transit Authority for

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transmission to the Federal Transit Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

- ii. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR part 5 and that such information is correct and complete;
 - (2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
 - (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- c. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.
- d. The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension

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of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

- a. Apprentices - Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division of the U.S. Department of Labor determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at

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less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- b. Trainees - Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- c. Equal employment opportunity - The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

5. **Compliance with Copeland Act requirements**

The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. **Subcontracts**

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

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7. **Contract termination: debarment**
A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
8. **Compliance with Davis-Bacon and Related Act requirements**
All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
9. **Disputes concerning labor standards**
Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.
10. **Certification of eligibility.**
a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001

HH. Contract Work Hours and Safety Standards Act
40 U.S.C. 327-333 (1995) 29C.F.R. 5 (1995) 29 C.F.R. 1926 (1995)

1. **Overtime requirements**
No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such to work in excess of forty hours in such workweek unless such laborers or mechanics receive compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
2. **Violation; liability unpaid wages; liquidated damages**
In the event of any violation of the clauses set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clauses set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard

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workweek of forty hours without payment of the overtime wages required by the clauses set forth in paragraph (1) of this section.

3. **Withholding for unpaid wages; liquidated damages**

The Rhode Island Public Transit Authority shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clauses set forth in paragraph (2) of this section.

4. **Subcontracts**

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this section. (Section 102 nonconstruction contracts should also have the following provision:)

5. **Payrolls and basic records**

Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the names, address, and social security number of each worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Beacon Act), daily and weekly number of hours worked, deductions. Whenever the made and actual wages paid Secretary of labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic included the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Beacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

6. **Contract Work Hours and Safety Standards Act**

The contractor agrees to comply with section 107 of the Contract Work Hours and Safety Standards Act, 40 U.S.C. section 333, and applicable DOL regulations, "Safety and Health Regulations for

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Construction” 29 C.F.R. Part 1926. Among other things, the Contractor agrees that it will not require any laborer or mechanic to work in unsanitary, hazardous, or dangerous surroundings or working conditions.

7. Subcontracts

The Contractor also agrees to include the requirements of the section in each. The term “subcontract” under this section is considered to refer to a person who agrees to perform any part of the labor or material requirements of a contract for construction, alteration or repair. A person who undertakes to perform a portion of a contract involving the furnishing of supplies or materials will be considered a “subcontractor” under this section if the work in question involves the performance of construction work and is to be performed: (1) directly on or near the construction site, or (2) by the employer for the specific project on a customized basis. Thus, a supplier of materials, which will become an integral part of the construction is a “subcontractor” if the supplier fabricates or assembles the goods or materials in question specifically for the construction project and the work involved may said to be construction activity. If goods or materials in question are ordinarily sold to other customers from regular inventory, the supplier is not a “subcontractor.” The requirements of this section do not apply to contracts or subcontracts for the purchase of supplies or materials or articles normally available on the open market.

II. Seismic Safety Requirements

42 U.S.C. 7701 et seq. 49 CFR Part 41

The contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation Seismic Safety Regulations 49 CFR Part 41 and will certify to compliance to the extent required by the regulation. The contractor also agrees to ensure that all work performed under this contract including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the project.

JJ. Energy Conservation Requirements

42 U.S.C. 6321 et seq. 49 CFR Part 18

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

KK. Clean Air

42 U.S.C. 7401 et Seq 40 CFR 15.61 49 CFR Part 18

- 1 The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et Seq . The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.
2. The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

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LL. Clean Water

- 1 The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et Seq . The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.
- 2 The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

MM. Recovered Materials

The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

NN. Fly America Requirements

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

OO. National Intelligent Transportation Systems Architecture and Standards

The Contractor agrees to conform, to the extent applicable, to the National Intelligent Transportation Systems (ITS) Architecture and Standards as required by section 5206(e) of TEA-21, 23 U.S.C. § 502 note, and comply with FTA Notice, "FTA National ITS Architecture Policy on Transit Projects" 66 Fed. Reg. 1455 *et seq.*, January 8, 2001, and other Federal requirements that may be issued

PP. Federal Changes

Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Agreement (Form FTA MA (9) dated October, 2002) between Purchaser and FTA , as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

QQ. Incorporation of Federal Transit Administration (FTA) Terms

The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1F, dated November 1, 2008 are hereby

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incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any (name of grantee) requests, which would cause (name of grantee) to be in violation of the FTA terms and conditions.

RR. Force Majeure

Neither Party shall be liable to the other Party for failure of or delay in performance of any obligation under this Agreement, directly or indirectly, owing to war, acts of terrorism, acts of God, embargoes, riots, strike and other events beyond its reasonable control, the effect of which, by the exercise of reasonable diligence, the non-performing party could not avoid. In the event that such failure or delay occurs, the affected Party shall notify the other Party of the occurrence thereof as soon as possible and the Parties shall discuss the best way to resolve the event of force majeure.

Neither party shall, however, be excused from performance if nonperformance is due to forces which are preventable, removable, or remediable and which the non-performing party could have, with the exercise of reasonable diligence, prevented, removed, or remedied with reasonable dispatch. The non-performing party shall within a reasonable time of being prevented or delayed from performance by an uncontrollable force, give written notice to the other party describing the circumstances and uncontrollable forces preventing continued performance of the obligations of this Agreement. “

SS. Governing Law

The Contract shall be interpreted under and its performance governed by the laws of the State of Rhode Island.”

TT. Indemnification

Bidders shall indemnify and hold harmless, the State of Rhode Island, all departments and division thereof and the Rhode Island Public Transit Authority from all liability, and said indemnification shall cover and include any and all aspects of liability arising from any lawsuit pertaining to the execution of this contract.

UU. Policy Concerning Federal and Stated False Claim Laws

As required by 42 U.S.C. §1396a(a)(68), the Rhode Island Public Transit Authority (“RIPTA”) publishes the following information to all employees, contractors and agents about federal and state False Claims laws and RIPTA’s policies to detect and prevent fraud, waste and abuse.

1. Prohibitions Against False Claims
Federal False Claims Act

The federal False Claims Act, among other things, applies to the submission of claims for payment by Medicare, Medicaid and other federal and state programs. The False Claims Act is the federal government’s primary civil remedy for improper or fraudulent claims. It applies to all federal programs, including welfare and health care benefits.

2. Prohibitions of the Federal False Claims Act

The False Claims Act prohibits, among other things:

- a knowingly presenting or causing to be presented to the federal government a false or fraudulent claim for payment or approval;

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- b knowingly making or using, or causing to be made or used, a false record or statement in order to have a false or fraudulent claim paid or approved by the government;
- c conspiring to defraud the government by getting a false or fraudulent claim allowed or paid; and
- d knowingly making or using, or causing to be made or used, a false record or statement to conceal, avoid, or decrease an obligation to pay or transmit money or property to the government.

“Knowingly” means that a person, with respect to information: (1) has actual knowledge of the information; (2) acts in deliberate ignorance of the truth or falsity of the information; or (3) acts in reckless disregard of the truth or falsity of the information, and no proof of specific intent to defraud is required.

3. **Enforcement**

The United States Attorney General may bring civil actions for violations of the False Claims Act. As with most other civil actions, the government must establish its case by presenting only a preponderance of the evidence rather than by meeting the higher burden of proof that applies in criminal cases.

The False Claims Act allows private individuals to bring “qui tam” actions for violations of the Act.

VV. American with Disabilities Act

All products, equipment or construction provided in accordance with this contract shall comply with the current version of the Americans with Disabilities Act of 1990 - 42 U.S.C. 12101, et seq. at the time of the solicitation.

WW. Expense Reimbursement Professional Services Contracts

The following methods of Reimbursement of Expenses directly related to the performance of this contract shall be utilized. Any expenses incurred must be approved in writing by the RIPTA Project Manager before they occur. The vendor is responsible to submit sufficient documentation to allow the Authority to verify the expenses.

1. **Automobile mileage**

Travel mileage will be reimbursed at the rate approved by the Internal Revenue Service at the time the travel is incurred.

2. **Per Diem Expenses**

Meals will be reimbursed at the rates established by the General Services administration for the City of Providence or Newport, which is applicable to the RIPTA Project. The applicable Per Diem rates can be found at the following website: www.qsa.gov .

A copy of the print out of the GSA website documenting the applicable per diem rate must be attached to the invoice.

3. **Lodging**

Lodging will be reimbursed at the rates established by the General Services administration for the City of Providence or Newport, which is applicable to the RIPTA Project. The applicable Per Diem rates can be found at the following website: www.qsa.gov .

A copy of the print out of the GSA website documenting the applicable per diem rate must be attached to the invoice

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4. Miscellaneous Expenses

Materials used in conjunctions with this contract shall be provided at cost plus the following (applicable) fee for Overhead, Pickup and Delivery. No additional charges will be acceptable

<u>Material Cost</u>	<u>Overhead Fee</u>
\$0-500	No Fee
\$501-750	\$75.00
\$751-1000	\$100.00
\$1001-1500	\$125.00
\$1501-\$2500	\$180.00
\$2501-5000	\$300.00
\$5001-7500	\$450.00
Over 7501.	\$525.00

Copies of Receipts must be submitted to verify Miscellaneous Expenses

5. Estimated Expenses

Bidders are required to submit an accurate list of projected expenses that may be necessary to properly execute the Scope of Services of this Contract. This must be submitted with the Bid submittal.

XX. Background Check

Employees of the Successful Vendor that in the course of performance of this contract will be on any of RIPTA's Properties may be subject to a Criminal Background Check.

YY. Records Retention

All required records for this contract will be retained for a minimum of three years after grantees or subgrantees make final payments and all other pending matters are closed.

ZZ. Litigation

In the last ten (10) years has any customer to which you provide the same or similar services that are the subject of this procurement initiated a lawsuit or arbitration against you relating to your provision of the services?

If so, provide a copy of the complaint against you and advise as to the status of the proceeding. If the case has been resolved, please describe the resolution of the case.

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VI. REQUEST FOR APPROVED EQUAL FORM

**This form must be submitted electronically IN MICROSOFT WORD
FORMAT TO RIPTA CONTRACTS MANAGER**

REQUEST FOR APPROVAL EQUAL QUALIFICATION OR CLARIFICATION

Page: _____

Ref: RFP NO. 16-15

Project No. _____

To: Rhode Island Public Transit Authority

From: _____

Page & Reference: _____

Request Description

Use Additional Sheet If More Space Is Required

Accepted: _____

Rejected: _____

See Addendum # _____

Explanation: _____

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VII. REQUIRED BID SUBMISSIONS

The following items marked with an "X" must be submitted with Response
Failure to submit forms may result in Bid being deemed non-responsive

Required Company Information Form	<u> X </u>
<u>Must be completed by Prime and All Subcontractors</u>	
Solicitation	<u> X </u>
Offer	<u> X </u>
Statement of Eligibility	<u> X </u>
Affidavit of Non-Collusion	<u> X </u>
Certification of Restrictions on Lobbying	<u> X </u>
Buy America Certificate FORM MUST BE SUBMITTED WITH BID, IF CHECKED, OR BID WILL BE CONSIDERED NON RESPONSIVE	<u> X </u>
Disadvantaged Business Enterprise	<u> X </u>
General Contract Compliance Certificate	<u> X </u>
Agreement (EEO)	
Certification of Primary Participant Debarment	<u> X </u>
Certification of a Subcontractor (Debarment)	<u> X </u>
Each Subcontractor and potential subcontractor must fill in and sign	
Non-Resident Contractor (if applicable)	<u> X </u>
<u>Davis Bacon Act Compliance</u>	<u> X </u>
Applicable Type: (X)Building () Highway	
Wage Determination Number: <u>RI160001 03/04/2016 MOD 15</u>	
Drug & Alcohol Testing	<u> </u>
Bid Guarantee (Surety)	<u> X </u>
Designation of an Independent Contractor Form	<u> X </u>
IRS W-9 Form (Copy Attached)	<u> X </u>

The following items marked with an "X" must be submitted AFTER AWARD of the Contract

Performance and Payment Bonds	<u> X </u>
Certificate of Insurance- (as required in Section XX and the Technical Specifications)	<u> X </u>

NOTE:
ITEMS WITHOUT AN "X" AND THEIR RESPECTIVE TERMS AND CONDITIONS ARE NOT REQUIRED IN THIS BID

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VIII. SOLICITATION FORM

COMPANY NAME _____

BID NO. OR PROJECT NO. 16-15

DESCRIPTION Generator: 269 Melrose Street

A. BID REQUIREMENTS

Sealed Bids in original and Two copy(ies) will be received at the offices of the Rhode Island Public Transit Authority, 705 Elmwood Avenue Providence, Rhode Island 02907, at the Bid date and hour set forth on the Invitation for Bids or anytime prior to the date and hour. Late Bids will not be accepted.

B. CONTRACT DOCUMENTS

By executing the offer form enclosed herewith, the Bidder agrees to provide all services set forth on the specifications attached hereto upon the terms and conditions set forth in paragraphs A, B, C and D.

C. PAYMENT SCHEDULE

Payment will not be made until receipt and installation of merchandise is accepted by the Transit Authority.

D. COST FOR SERVICE

Please complete necessary cost information as outlined in the Bid Technical Specifications.

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IX. OFFER FORM

Bidder understands that any condition other than stated in the specifications, clarification made to the above, or information submitted on or with this form, other than that requested, may render the Bid non-responsive.

By execution below, Bidder hereby offers to furnish services in accordance with the contract documents that are a part of the specifications, and agrees to fully comply with the contract documents.

BID NO 16-15

BIDDER _____

EMPLOYER IDENTIFICATION NO. _____

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

TYPE OF BUSINESS ENTITY: (Please check one)

Sole Proprietor _____

Partnership _____

Corporation _____

BIDDER'S CONTRACTING OFFICER

Name *(Please Print)*

Authorized Signature

Title

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X. STATEMENT OF ELIGIBILITY FORM

The _____ hereby certifies that he/she
(Name of Bidder)

is/is not (underscore one) included on the Comptroller General's Lists of Persons or Firms Currently Barred for Violations of Various Public Contracts Incorporating Labor Standards Provisions.

Name of Firm

Address

City, State, Zip

Signature of Authorized Person

Date Authorized

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XI. AFFIDAVIT OF NON-COLLUSION FORM

I hereby swear (or affirm) under penalty for perjury:

1. that I am the Bidder (if the Bidder is an individual), a partner of the Bidder (if the Bidder is partnership), or an officer or employee of the proposing corporation having authority to sign on its behalf (if the Bidder is a corporation).
2. that the attached Bid has been arrived at by the Bidder independently, and has been submitted without collusion with, and without agreement, understanding, or planned common course of action with, any other vendor of materials, supplies, equipment, services described in Invitation for Bids, designed to limit independent Bidding or competition.
3. that the contents of the Bid has not been communicated by the Bidder or its employees or agents, to any person not an employee or agent of the Bidder or its surety on any bond furnished with the Bid, and will not be communicated to any such person prior to the official opening of the Bid; and
4. that I have fully informed myself regarding the accuracy of the statement made on this affidavit.

Name

Address

City, State, Zip

Signature of Authorized Official

Date Authorized

Subscribed and sworn before me this _____ day of _____, 20____

Notary Public

My commission expires _____

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XII. CERTIFICATION OF RESTRICTIONS ON LOBBYING FORM

I, _____, hereby certify on
(Name/title of Bidder Authorized Official)

behalf of: _____ that:
(Name of Bidder)

- 1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, grant, loan, or cooperative agreement.
- 2) If any funds other than Federal appropriated funds have been paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, or an employee of a member of Congress in connection with this Federal contract, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.
- 3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclosure accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of the certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Executed this _____ day of _____, 20_____.

By _____
(Signature of Authorized Official)

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XIII. BUY AMERICA CERTIFICATION REQUIREMENTS !
FOR PROCUREMENT OF STEEL OR MANUFACTURED PRODUCTS

49 U.S.C. 5323(j) and 49 CFR 661 provide that no Federal funds may not be obligated for mass transportation projects unless steel and manufactured products used in these projects are produced in the United States.

If steel or manufactured products are being procured, the appropriate certificate as set forth below shall be completed and submitted by each Bidder.

Certificate of Compliance-The Bidder hereby certifies that it will comply with the requirements of 49 U.S.C. 5323 (j)(1) and the Applicable regulations on 49 CFR Part 661.

COMPANY NAME _____

SIGNATURE _____

TITLE _____

DATE _____

Certification of Non-Compliance-The Bidder hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323 (j)(1).

COMPANY NAME _____

SIGNATURE _____

TITLE _____

DATE _____

FORM MUST BE SIGNED AND SUBMITTED WITH BID OR BID WILL BE CONSIDERED TO BE NON-RESPONSIVE.

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XIV. BUY AMERICA CERTIFICATION REQUIREMENTS II **OF PROCUREMENT OF BUSES, OTHER ROLLING STOCK AND** **ASSOCIATED EQUIPMENT**

49 U.S.C. 5323 (j) and 49 CFR 661 provide that no Federal funds be obligated for procurement of buses, other rolling stock and associated equipment unless the following conditions are met:

1. The cost of components which are produced in the United States is more than 60 per centum (60%) of the cost of all components of the vehicle or equipment described in this paragraph; and
2. Final assembly of the vehicle or equipment described in this paragraph has taken place in the United States.

If buses or other rolling stock (including train control, communication and traction power equipment) are being procured, the appropriate certificate as set forth below shall be completed and submitted by each Bidder in accordance with the requirements.

Certificate of Compliance-The Bidder hereby certifies that it **will comply** with the requirements of the 49 U.S.C. 5323 (j)(2)(c) and CFR Part 661.

COMPANY NAME _____

SIGNATURE _____

TITLE _____

DATE _____

Certificate of non-Compliance-The Bidder hereby certifies that it **cannot comply** with the requirements of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements.

COMPANY NAME _____

SIGNATURE _____

TITLE _____

DATE _____

FORM MUST BE SIGNED AND SUBMITTED WITH BID OR BID WILL BE
CONSIDERED TO BE NON-RESPONSIVE.

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XV. BUY AMERICA PRE-AWARD AND POST-DELIVERY AUDITS:

A. Prior to Contract award,

The apparent successful offeror shall provide to the Authority's auditors the cost of the components and subcomponents to be used in the manufacturing of the rolling stock, their country of origin, the location of final assembly, the activities that will take place at the location and pertinent supporting documentation for the purpose of RIPTA performing the cited Pre-Award Audit of Buy-America requirements.

B. After delivery and acceptance of the vehicles,

The Contractor shall provide to the Authority's auditors the cost of the components and subcomponents used in the manufacture of the rolling stock, their country of origin, the location of final assembly, the activities that took place at the location and pertinent supporting documentation to enable RIPTA to perform the cited Post-Delivery Audit of Buy America Requirements.

C. Authority Review

The contractor shall facilitate the reviews by the Authority's auditors by providing the supporting documentation for the above information in a timely fashion.

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XVI. DISADVANTAGED BUSINESS ENTERPRISES PROGRAM

Bidders are strongly encouraged to have Disadvantage Business Enterprise Participation/Small Business, regardless of the DBE Goal in this Bid.

Disadvantaged Business Enterprise (DBE) Special Provisions

A firm's DBE Participation and/or demonstration of a "Good Faith Effort" will be considered when reviewing submittals for responsiveness. This will be considered when evaluating Bid Responses

A. Policy

1. It is the policy of Department of Transportation (DOT) that the DBE requirements in 49 CFR Part 26, as amended, shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds under this agreement. Consequently, the DBE requirements of 49 CFR Part 26, as amended apply to this agreement.
2. DBE Obligation – RIPTA or its contractor agrees to ensure that DBE's as designed in 49 CFR Part 26, as amended, have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds provided under this agreement. In this regard, RIPTA or its contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 26, as amended, to ensure that DBE's have the maximum opportunity to compete for and perform contracts. RIPTA and its contractors shall not discriminate on the basis of race, color, religion, national origin, age or sex in the award and performance of DOT assisted contracts.
3. Contractor Obligation – Contractors and subcontractors failing to carry out the requirement set forth in 1 and 2 above, shall constitute a breach of contract and, after the notification to the Department (DOT), may result in termination of the agreement or contract by RIPTA or such remedy as RIPTA deems appropriate.

B. DBE Utilization

1. DBE Utilization

The Contractor agrees to provide for full and fair utilization of Disadvantaged Business Enterprises (DBEs) by complying with the requirements of this clause. Included in these requirements is the achievement of the stated goal for the utilization of DBEs in the performance of work under this contract. Nothing in this clause shall be construed to require the utilization of any DBEs, which is either not qualified or unavailable. . **All DBEs submitted must be certified by the State of Rhode Island at the time of Bid submittal. A copy of the DBE Certification Letter from the State of Rhode Island Office of Civil Rights must accompany the Bid submittal**

2. Utilization Goal

For the purpose of this contract, the goal for utilization of DBEs shall be as follows: 15 DBE percent of the Contract Dollar Amount.

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C. Definitions.

The terms used in these special provisions shall be defined as follows:

1. **Joint Venture**

an association of two or more persons to carry out a single business enterprise for profit, for which purpose they combine their property, money, efforts, skills and knowledge.

2. **Disadvantaged Business**

means a small business concern in which is, at least, 51 percent owned by one or more socially and economically disadvantaged individuals, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more socially and economically, disadvantaged individuals who own it.

3. **Small Business Concern**

a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

4. **Socially and Economically Disadvantaged Individuals**

means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and who are women, Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, or Asian-Indian Americans and any other minorities of individuals found to be disadvantaged by the Small Business Administration pursuant to Section 8 (a) of the Small Business Act, RIPTA shall make a rebuttal presumption the individuals in the following groups are socially and economically disadvantaged. RIPTA may also determine, on a case-by-case basis, that individuals who are not a member of one of the following groups are socially and economically disadvantaged:

a. **Black Americans**, which includes persons having origins in any of the Black racial groups of Africa;

b. **Hispanic Americans**, which includes persons of Mexican, Puerto Rican, Cuban, Central or South America, or other Spanish culture or Portuguese culture, regardless of race;

c. **Native Americans**, which includes persons who are American Indian, Eskimo, Aleuts, or Native Hawaiians;

d. **Asian-Pacific Americans**, which includes persons whose origins are Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, and the Northern Marianas; and

e. **Asian-Indian Americans**, which includes persons whose origins are from India, Pakistan, and Bangladesh.

f. **Disadvantaged Business Enterprise (DBE) Liaison Officer** – the individual designated by the Authority to monitor compliance with these Special Provisions and to assist in their implementation.

g. **Bidder** – any individual, partnership, joint venture, corporation or firm submitting a Bid for the contract.

5. **Recognition of DBE Commitment**

Each Bidder shall recognize RIPTA's commitment to insure that DBE's be afforded full opportunity to participate in contracts awarded by RIPTA and will not be discriminated against on the grounds of race, religion, color, national origin, handicap, age or sex.

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6. Submissions

all Bidders shall submit the following information with the Bid by using the Schedule of DBE Participation (Attachment A);

1. The Name and address of each DBE firm that will participate in the contract;
 2. A description of the work each named DBE firm will perform; and
 3. The dollar amount of participation by each named DBE firm.
- The Authority encourages firms located in the United States that are currently certified as DBEs and SBAs by Federal, State and Local agencies to apply for certification in the State of Rhode Island.

If a minority business would like to be certified by the State of Rhode Island contact: Mr. Charles Newton, Department of Administration, 1 Capital Hill, Providence, Rhode Island, 02908, Telephone (401) 222-6253.

If the apparent successful competitor's submissions does not satisfy the goal, RIPTA shall determine whether the apparent successful competitor has made good faith efforts to obtain DBE participation in accordance with the guidelines stated in Paragraph F, Sub-paragraph 1, below.

Unsuccessful efforts in gaining DBE participation must be documented on the "DBE Unavailability Certification" attached hereto as Attachment D. Meeting the DBE contract goals or making good faith efforts to meet the goals is a condition of receiving a Federal Transit Administration assisted contract for which contract goals have been established by RIPTA.

The legitimacy of each DBE or disadvantaged-majority joint venture shall be determined by RIPTA, based on the information submitted in the affidavits attached hereto as Attachments C and D. RIPTA will require all prime contractors to make good faith efforts to replace a DBE subcontractor that is unable to perform successfully with another DBE. RIPTA shall approve all substitutions of subcontractors **before** award of contract and **during** contract performance, in order that substitute firms are eligible DBE's.

7. Procedure Prior to Contact Award

a. **Guidance Concerning Good Faith Efforts to Meet DBE Contract Goals.**

RIPTA may decide that a competitor that has failed to meet DBE contract goals may receive the contract upon determining that the efforts the competitor made to obtain DBE participation were "good faith efforts" to meet the goal. RIPTA shall not consider efforts that are merely pro forma to be good faith efforts to meet the goals, even if they are sincerely motivated, if, given all relevant circumstances, they could not reasonably be expected to produce a level of DBE participation sufficient to meet the goals. In order to award a contract to a competitor that has failed to meet DBE contract goals, RIPTA must determine that the competitor's efforts were those that, given all

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relevant circumstances, a competitor, actively and aggressively seeking to meet the goals would make.

Following is a list of the kinds of efforts RIPTA may consider. The list is not exclusive or exhaustive and in appropriate cases RIPTA shall consider other relevant factors or types of efforts. RIPTA shall consider not only the different kinds of efforts the contractor has made, but also the quantity and intensity of those efforts. All information must be in writing and copies of all ads, written notices, follow-up letters and/or all other correspondence must be presented whenever a waiver is asked for.

RIPTA will consider the following efforts:

- i. whether the contractor attended any pre-solicitation or pre-Bid meetings that were scheduled by RIPTA to inform DBEs of contracting opportunities;
 - ii. whether the contractor advertised in general circulation, trade association, and disadvantaged focus media concerning the sub-contracting opportunities;
 - iii. whether the contractor provided written notice to a reasonable number of specific DBEs that their interest in the contract was being solicited in sufficient time to allow the DBEs to participate effectively;
 - iv. whether the contractor followed up initial solicitation of interest by contracting DBEs to determine with certainty whether the DBEs were interested;
 - v. whether the contractor selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the DBE goals including, where appropriate, breaking down contracts into economically feasible units to facilitate DBE participation;
 - vi. whether the contractor provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;
 - vii. whether the contractor negotiated in good faith with interested DBEs, not rejecting DBEs as unqualified without sound reasons based on a thorough investigation of their capabilities;
 - viii. whether the contractor made efforts to assist interested DBEs in obtaining bonding lines of credit, or insurance required by RIPTA or contractor; and
 - ix. whether the contractor effectively used the services of available disadvantaged community organizations, disadvantaged contractor's groups, Local, State and Federal disadvantaged business assistance offices, and other organizations that provide assistance in the recruitment and place of DBEs.
8. **Bid, Execution & Compliance with Subcontracts**
Prior to the execution of a contract between RIPTA and the successful Bidder, the Bidder shall present, for RIPTA's approval, DBE subcontracts corresponding in all respects to the proposed agreements. Upon approval by RIPTA, the successful Bidder shall enter into each such approved DBE sub-contract and shall thereafter

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neither terminate such DBE nor reduce the scope of the work to be performed by, or decrease the price to be paid to, the DBE and the disadvantaged non-disadvantaged joint venture thereunder without in each instance the prior written approval of RIPTA.

9. Substitution of Subcontractors

RIPTA shall review for its approval all substitutions of subcontractors in order to determine if the percentage goal will be decreased by substitution of a disadvantaged contract/supplier with a non-disadvantaged contractor/supplier.

Where RIPTA has approved termination of a sub-contract held by an DBE or disadvantaged non-disadvantaged joint venture, the successful Bidder shall make every reasonable effort to propose and enter into an alternative sub-contract or subcontracts for the same work to be performed by another qualified DBE for a contract price or prices totaling not less than the contract price of the terminated sub-contract. Satisfactory evidence of reasonable efforts shall be timely furnished by RIPTA.

10. Program Compliance

At all times, discrimination on the basis of race, color, religion, national origin, handicap, age or sex will not be tolerated. RIPTA will monitor the schedule for participation by disadvantaged contractors in an effort to isolate those prime contractors who do not adhere to the non-discriminatory policies of RIPTA. If such contractor fails to respond to counseling with respect to the disposition of subcontracts pertaining to RIPTA funds, RIPTA reserves the right to terminate the contract and to consider future Bids of such contractor to be non-responsive in the absence of written assurance from it of the full opportunity for DBEs to participate in its awards of subcontracts, together with the follow-up to verify such participation.

11. Maintenance of Records

All records relating to the contract shall be maintained by the contractor for a period of three (3) years after project completion.

12. Contract Assurance

The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of the contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.

13. Prompt Payment

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contractor receives from the Rhode Island Public Transit Authority. The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above reference time frame may occur only for good cause following written approval of the Rhode Island Public Transit Authority. This clause applies to both DBE and non-DBE subcontractors. RIPTA reserves the right to hold payments to the Contractor if payments

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verification logs are not submitted within 30 days of payments. Failure to submit payments to DBE subcontractors within 30 days will result in action by RIPTA up to and including disqualification from any future RIPTA Procurements.

14. Monitoring Payments to DBEs

RIPTA requires that prime contractors to maintain records and documents of payments to DBEs following the completion of the contract. These records will be made available for inspection upon request by any authorized representative of RIPTA or United States Department of Transportation. This requirement also extends to any DBE Subcontractor. Reports of payments to DBE Subcontractors shall be provided to the RIPTA DBE Liaison Officer on a monthly basis. Failure to submit these reports on a timely basis may result in delay of payments.

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XVII. DISADVANTAGED BUSINESS ENTERPRISE REQUIRED FORMS

Attachment A: Schedule of DBE Participation

Submitted if DBE firm or firms will be participating in the Bid.

Attachment B: DBE Application Agreement

Submitted if DBE firm or firms will be participating in the Bid.

Attachment C: Letter of Intent to Perform as a Subcontractor

Submitted if DBE firm or firms will be participating in the Bid

Attachment D: DBE Unavailability Summary Sheet

Submitted if DBE firm or firms you have contacted cannot participate. This form is used to document good faith effort. This form only needs to be completed when there is a DBE Participation Goal.

Attachment E: Narrative Explanation for Lack of DBE Participation

Submitted by the Prime Contractor to explain lack of DBE/SBA participation.

Attachment F: Documentation of DBE Utilization

To be filled in by the DBE firm and the prime contractor once the DBE Subcontractor has been paid.

Please Note: Final payment to the Prime Contractor will be held until this form or forms are received for each DBE Subcontractor.

DBE FIRMS PROPOSING AS A PRIME CONTRACTOR: the following forms must be filled in, signed and submitted with the Bid

Attachment A, Attachment B

Please state, on these forms, that you are proposing as a prime contractor.

CERTIFICATION LETTER OR NOTIFICATION MUST BE INCLUDED FOR EACH DBE FROM THE STATE OF RHODE ISLAND.

Please record by letter (using the list below) under the DBE Category Column found on Attachment A: Schedule of DBE Participation Form on the following page

- a. "Black Americans", which includes persons having origins in any of the Black racial groups of Africa;
- b. "Hispanic Americans", which includes persons of Mexicans, Puerto Rican, Cuban, Central or South America, or other Spanish culture or Portuguese or origin, regardless of race;
- c. "Native Americans", which include persons who are American Indian, Eskimos, Aleuts, or Native Hawaiians;
- d. "Asia-Pacific Americans", which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, and the Northern Marianas;
- e. "Asian-Indian Americans", which includes persons whose origins are from India, Pakistan, and Bangladesh; and
- f. any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to Section 8 (a) of the Small Business Act.

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SCHEDULE OF DBE PARTICIPATION

A. Attachment A

Company Name: _____

Project Number: 16-15 Project: Generator: 269 Melrose Street

*Please provide copy of DBE Certification Letter for each DBE firm listed from the Rhode Island Office of Civil Rights. **DBE Vendors must be certified in the State of Rhode Island at the time of Bid Submittal to be considered. A full, up to date list of Rhode Island DBEs can be obtained at the following website: www.mbe.ri.gov/**

DBE Firm Name	DBE Firm Address	DBE Category	Phone Number	Contact Name	Work to be Performed	Estimated Value Dollars	Estimated Value Percent of Bid

The undersigned will enter into a formal agreement with Disadvantaged Business Enterprise firms for work listed in this schedule conditioned upon execution of a contract with the Rhode Island Public Transit Authority.

Authorized Signature of Bidder Official _____

Each DBE Firm listed in the Section must also complete the Required Company Information Form and the Certification of Subcontractor Form (Page 74)*Use additional forms as needed.

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LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR

C. Attachment C

To: _____
(Name of Prime or General Bidder)

The undersigned intends to perform work in connection with the above project as (check one):

___ an individual

___ a corporation

___ a partnership

___ a joint venture

The undersigned is prepared to perform the following described work in connection with the above project (specify in detail particular work items or parts thereof to be performed).

for the following compensation: _____

(Name of DBE Contractor)

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DBE GOOD FAITH EFFORT SUMMARY SHEET

D. Attachment D.

RIPTA requires a listing of DBE firms contacted; but not able to perform work. Use additional pages as needed. The DBE Goal for this project is 15 percent. . **A full, up to date list of Rhode Island DBEs can be obtained at the following website:**
www.mbe.ri.gov/

DBE Firm Name	DBE Firm Address	DBE Category	Phone Number Email Address	Contact Name	Reason Unable to Perform Work

Project Name: **Generator: 269 Melrose Street**

Project Number: 16-15

Form completed by: _____

Date: _____

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XVIII. PERFORMANCE AND PAYMENT BOND INFORMATION

The selected Bidder shall furnish, within twenty (20) calendar days (if required) after the date of notice of award of contract by RIPTA, Performance and Payment Bonds in the amount of 100% of the Bid amount covering the faithful performance of the contract.

The Performance Bond is to be secured through an insurance company or companies which is licensed in the State of Rhode Island or which is approved by the Authority.

The Bond will remain in effect throughout the warranty period.

XIX. BID GUARANTEE (SURETY)

A Bid Guarantee (if required) shall be submitted with the Bid response. This guarantee shall be equivalent to five (5) percent of the Bid price. The "Bid guaranty shall consist of a firm commitment such a Bid bond, certified check, or other negotiable instrument accompanying a Bid as assurance that the Bidder will, upon will, upon acceptance of its Bidder, execute such contractual documents as may be required within twenty (20) calendar days after the date of notice of award of contract by RIPTA.

XX. REQUIRED INSURANCE

The Bidder will be required to secure and maintain the following insurance coverages:

A. Minimum limits

1. Commercial comprehensive general liability insurance, with limits of \$3,000,000.00 per accident and \$5,000,000.00 aggregate.
1. Workers' Compensation Coverage in accordance with RI Statutory requirements.
2. The Rhode Island Public Transit Authority shall be named as additional insured under said policies.
3. Automotive Liability Insurance
 - \$1,000,000.00 per accident and \$3,000,000.00 aggregate: bodily injury.
 - \$1,000,000.00 property damage
4. All insurance coverage must provided under an occurrence policy. Claims made policies are not acceptable.

B. Certificate Requirements

1. Each Bidder must provide RIPTA a Certificate of Insurance upon award of the contract. Coverage indicated on certificate must be kept in effect at all times during the contract period

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1. The General Liability Coverage shall include Contractual Liability and Completed Operations Coverages. The General Liability coverage, certificates must name: RIPTA and its respective directors, officers, employees, and affiliates as additional insureds. Reference should be made to project or job number and location.
2. A Waiver of Subrogation in favor of RIPTA must apply to the General Liability, Employers Liability, and Excess Liability / Umbrella policies.
3. Automobile Liability must cover any owned, rented, hired or borrowed vehicles.
4. The Excess or Umbrella coverage must provide the required Liability limit over the General Liability, Automobile Liability, Employers Liability s, Professional Liability and Environmental Liability policies (if required).
5. If Bidder is to use any subcontractor during the course of the project, the subcontractor must maintain the same limits and terms as the Bidder. Certificates of Insurance for subcontractors must be provided to RIPTA with the Bidder's Submittal after award of the Contract.
6. All certificates of insurance must indicate the carrier policy cancellation terms.
7. All Bidders must utilize insurance companies with a "Best" Rating of no less than A-, Size VIII.

C. Special Coverages

- 1 Contractor must maintain Environmental Pollution coverage with limits no less than \$1,000,000 if contractors work includes the transport, delivery, storage, handling or disposal of any pollutants or other hazardous materials. This insurance is also required for all contracts involving any work on RIPTA's storage tanks, and fluid distribution systems
- 2 Installation Floater Insurance is required for all construction projects equal to the value of the project.
- 3 Professional Liability/Errors and Omission coverage shall be included in all Professional Services Contracts

Bidder shall provide to RIPTA Contracts Manager a Certificate of Insurance upon award of contract. This Certificate shall be kept in effect at all times. Current copies shall be provided to the Contracts Manager

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XXI. GENERAL CONTRACT COMPLIANCE CERTIFICATE AND AGREEMENT

RHODE ISLAND STATE EQUAL OPPORTUNITY OFFICE

The undersigned Contractor agrees and certifies, unless otherwise exempt, that it is in compliance with the applicable requirements of Federal Executive order No. 11246, as amended, Rhode Island General Law 28-5.1-10, and other regulations as issued by the Rhode Island Public Transit Authority, as set forth below, or will take steps to comply with such requirements prior to acceptance of any order from us. This agreement and certificate shall form a part of, and be deemed incorporated in, each order submitted to you for supplies or services exceeding \$10,000. Failure to comply will be considered a substantial breach of the contract.

A. Equal Opportunity Clause

During the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or natural origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the non-discrimination clause.
2. The Contractor will, in all solicitations or advertisements for placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The Contractor will send to each labor union or representative of workers with which he/she has collective bargaining agreement or other contract or understanding a notice, advising the labor union or worker's representative of the Contractor's commitments under Section 202 of Federal Executive order No. 11246, as amended, Rhode Island Law 28-5.1-10, and other regulations and relevant orders of the Secretary of Labor.
4. The Contractor will comply with all provisions of Federal Executive Order No. 11246, as amended, Rhode Island General Law 28-5.1-10, and other regulations and relevant orders of the Secretary of Labor.
5. The Contractor will furnish all information and reports required by Executive Order No. 11246, as amended, Rhode Island General Law 28-5.1-10 and other regulations as issued by the State of Rhode Island, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his/her books, records and accounts by the State Equal Opportunity Office and the Secretary of Labor for purposes of

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- investigation to ascertain compliance with such rules, regulations and orders.
6. In the event of the Contractor's non-compliance with the non-compliance with the non-discrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or part, and the Contractor may be declared ineligible for further State contracts in accordance with procedures authorized in Federal Executive Order No. 11246, as amended, Rhode Island General Law 28-5.1-10 , and other regulations as issued by the State of Rhode Island, and such other sanctions may be imposed and remedies invoked as provided in Federal Executive Order No. 11246, as amended; Rhode Island Public Transit Authority, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law, or the State of Rhode Island and Providence Plantations.
 7. The Contractor will include the provisions of paragraphs (1) through (7) in every sub-contract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Federal Executive Order No. 11246, as amended, Rhode Island General Law 28-5.1-10, and other regulations as issued by the Rhode Island Public Transit Authority, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any sub-contract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for non-compliance; provided, however, that in the event the Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States and the State of Rhode Island to enter into such litigation to protect the interest of the United States and the State of Rhode Island.

B. Age Discrimination

Pursuant to Federal Executive Order No. 11246, as amended, the Contractor will not, in connection with the employment, advancement or discharge of employees, or in connection with the terms, conditions, or privileges of their employment, discriminate against persons because of their age except upon the basis of a bona fide occupational qualification, retirement plan or statutory requirement, nor will the Contractor specify, in solicitations or advertisements for employees, a maximum age limit for employment unless the specified maximum age limit is based upon a bona fide occupational qualification, retirement plan or statutory requirement.

C. Employment of the Handicapped

1. Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as at the following employment, upgrading, demotion

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- or transfer, recruitment or recruitment advertising; layoff or termination, rates of selection for training, including apprenticeship.
2. Contractor agrees that if a handicapped individual files a complaint with him/her that he/she is not complying with the requirements of the Rehabilitation Act of 1973, he/she will (1) investigate the complaint and take appropriate action consistent with requirements of 41 CFR Part 60-741.29 and (2) maintain on file for three years, the record regarding the complaint and the actions taken.
 3. Contractor agrees that if a handicapped individual files a complaint with the Department of Labor that he/she has not complied with the requirements of the act, (1) he/she will cooperate with the Department in its investigation of the complaint, and (2) he/she will provide all pertinent information regarding his/her employment practices with respect to the handicapped.
 4. Contractor agrees to comply with the rules and regulations of Section 503 of the Rehabilitation Act of 1973 as interpreted in 41 CFR Part 60-741.29.
 5. in the event of Contractor's noncompliance with the requirements of this clause contract may be terminated or suspended in whole or in part.
 6. This clause shall be included in all subcontracts. In the event that this contract exceeds \$10,000 but is less than \$500,000 and provides for performance in 90 days or more, Contractor further agrees as follows:
 7. Contractor agrees (1) to establish an affirmative action program, appropriate procedures consistent with the guidelines and the rules of the Secretary of Labor, will provide the affirmative action regarding employment and advancement of the handicapped required by P.L. 93-516, (2) to publish the program in the employees or personnel handbook or otherwise distribute a copy to all personnel, (3) to review the program each year and to make such changes as may be appropriate, and (4) to designate one of the principal officials to be responsible for the establishment and operation of the program.
 8. Contractor agrees to permit the examination by appropriate contracting agency officials or the Assistant Secretary for Employment Standards or the designee, of pertinent books, documents, papers and records concerning employment and advancement of the handicapped.
 9. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Assistant Secretary for Employment Standards, provided by the contracting officer, stating Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified handicapped employees and applicants for employment and the rights and remedies available.
 10. Contractor will notify each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract understanding, that he/she is bound by the terms of

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

Invitation for Bids Number 16-15

Section 503 of the Rehabilitation Act, and is committed to take affirmative action to employ and advance in employment, physically and mentally handicapped individuals.

In the event this contract exceeds \$100,000 and provides for performance in 90 days or more, Contractor further agrees as follows:

11. Contractor agrees to submit a copy of his/her affirmative action program to the State Equal Opportunity Office within 30 days after the award of a contract or sub-contract.
12. Contractor agrees to submit a summary report to the State of Rhode Island and Providence Plantations Equal Opportunity Office by March 31 of each year during performance of the contract and by March 31 of the year following completion of the contract, in the form prescribed by State Equal Opportunity Office covering employment and complaint experience accommodations made and all steps taken to effectuate and carry out the commitments set forth in the affirmative action program.

XXII. CERTIFICATE OF NON-SEGREGATED FACILITIES

Contractor certifies that he/she does not maintain or provide for his/her Employees any segregated facilities at any of his/her establishments, and that he/she does not permit his/her employees to perform their services at any such location, under his/her control, where segregated facilities are maintained. He/she certifies further that he/she will not permit his/her employees to perform their services at any location, under his/her control, where segregated facilities are maintained. Contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract. As used in this certification, the term "Segregated Facilities" means any waiting room, work areas, rest rooms, and wash rooms, restaurants and other eating areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are, in fact, segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. He/she further agrees that (except where he/she has obtained identical certifications from proposed subcontractors for specific time periods), he/she will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000, which are not exempt from the provisions of the Equal Opportunity Clause; that he/she will forward the following notice to proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods).

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
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XXIII. NOTICE OF PROSPECTIVE SUBCONTRACTORS
OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED
FACILITIES

A Certificate of Nonsegregated Facilities must be submitted prior to the award of a sub-contract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause. The certification may be submitted either for each sub-contract or for all subcontracts during a period (i.e. quarterly, semi-annually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 USA 1001.

A. Affirmative Action Compliance Program

Contractor agrees to develop a written Affirmative Action Compliance Program for each of its establishments as required by Section 60-1.40 of Title 41 of the Code of Federal Regulations.

B. Employer's Information Report (EE)-1 Form 100

Contractor agrees to file in duplicate, Standard Form 100, entitled, "Equal Employment Opportunity Employer Information Report EEO-1" as required by Section 60-1.7 of Title 41 of the Code of Federal Regulations.

Send original copy to Federal authorities, duplicate copy to the State Equal Opportunity Office, 1 Capitol Hill, Providence, Rhode Island 02908-5865.

C. Notice to All Vendors

If it should be determined by the State Equal Opportunity Office that any company doing business with the State is guilty of non-compliance with the provisions of this document, said company will be given two (2) written warnings. If the said company does not comply immediately after the second written notice, then the State Equal Opportunity Office will notify the Rhode Island Public Transit Authority, who shall have the authority to have the contract **revoked** and all contractual obligations of the State dealing with the contract in question will be **null and void**.

D. Post Award Conference

Post Award Conference for the Implementation of Affirmative Action prior to Signing of Contract.

C. Signature Required

Failure to provide a signature prior to Award to successful Bidder shall be cause for Rejection of Bid.

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

Invitation for Bids Number 16-15

**XXIV. GENERAL CONTRACT COMPLIANCE CERTIFICATE
& AGREEMENT FORM**

(Equal Employment Opportunity)

Authorized Signature: _____

Print Name: _____

Title: _____

Company Name: _____

Date: _____

Indicate Job Location Address: _____

BID NO. 16-15

XXV. DAVIS BACON ACT COMPLIANCE

I certify that I will comply with the Provisions of the Davis-Bacon Act for this project. I certify that I will pay the applicable Prevailing Wages as listed at the following web address:

<http://www.access.gpo.gov/davisbacon/ri.html>

Authorized Signature: _____

Print Name: _____

Title: _____

Company Name: _____

Date: _____

Indicate Job Location Address: _____

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

Invitation for Bids Number 16-15

XXVI. CERTIFICATION OF PRIMARY PARTICIPANT FORM

Invitation for Bids Number: 16-15
Project Generator: 269 Melrose Street

The primary participant _____, certifies to the best of its knowledge and belief, that it and its principals:

- 1) Are not presently debarred, suspended, proposed for debarment, declared eligible, or voluntarily excluded from covered transactions by any Federal Department or Agency;
- 2) Have not within a three-year period preceding this Bid 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) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- 3) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or Local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and
- 4) Have not within a three-year period preceding this application/Bid had one or more public transactions (Federal, State, or Local) terminated for cause or default.
- 5) The Primary Participant also certifies that, if it later becomes aware of any information contradicting the statements of Paragraphs 1-4 above, it will promptly notify RIPTA.

The primary participant _____, certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification and understands that the provisions of 31 U.S.C Sections 3801 **ET SEQ.** are applicable thereto.

Signature/Title of Authorized Official

Date

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

Invitation for Bids Number 16-15

XXVII. DEBARMENT CERTIFICATION

**CERTIFICATION REQUIREMENTS FOR RECIPIENTS OF GRANTS
AND
COOPERATIVE AGREEMENTS
REGARDING DEBARMENT AND SUSPENSIONS**

The purpose of the attached certifications is to exclude entities and individuals that the Federal Government has either debarred or suspended from obtaining Federal assistance funds through grants, cooperative agreements or third party contracts.

To assure that such entities and individuals are not involved in projects financed with Federal Transit Administration (FTA) assistance, FTA requires its applicants to complete the certificates.

The primary participant must sign the "**Certification of Primary Participant**" and, if there is a subcontractor, they must sign the "**Certification of a Subcontractor**" (If there is more than one subcontractor, they must all sign one of these forms.).

XXVIII. CERTIFICATION OF A SUBCONTRACTOR FORM

Invitation for Bids Number: 16-15

Project Generator: 269 Melrose Street

The potential Subcontractor, _____
Certifies, by submission of this certification, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal Department or agency.

The Subcontractor, _____ certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification and understands that the provisions of 31 U.S.C. Sections 3801 **ET SEQ.** are applicable thereto.

Signature/Title of Authorized Official

Print Signature

Date

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

Invitation for Bids Number 16-15

XXIX. NON-RESIDENT CONTRACTOR INFORMATION

From: Department of Administration
Division of Taxation
289 Promenade Street
Providence, RI 02908

Notice: "To All Persons Engaging Non-Resident Contractors"
Regulation Re: Contractors and Subcontractors - "Regulation C"
Article III, Non-Resident Contractors

Any individual, partnership, joint venture, corporation, state, municipal government or exempt organization awarding a construction contract in Rhode Island to a non-resident contractor (as hereinafter defined) is required, pursuant to Section 44-1-6 of the General Laws, as last amended, to withhold 3% of the contract price to secure payment of any sales and use tax or income tax withheld, or both, that may be due to the State of Rhode Island in carrying out the contract.

Upon completion of the contract, the non-resident contractor is required to notify the Tax Administration shall, within 30 days after receipt of the request, audit the records and provide by certified mail to the person holding the funds and to the non-resident contractor, either a certificate of no tax due or a notice of taxes due.

The person holding the funds is required to pay to the Tax Administrator the amount set forth in the notice of taxed due, including interest and penalties, but not in excess of 3% of the contract price. Monies withheld in excess of taxes due the Tax Administrator may be paid to the non-resident contractor.

If the Tax Administrator does not furnish a certificate of no tax due or a notice of taxes due within 30 days after receipt of the request for the making of the audit, the person holding the funds may remit the full amount due to the non-resident contractor. The Tax Administrator shall not have any claim against such funds in the hand of the person holding the funds.

DEFINITION OF NON-RESIDENT CONTRACTOR

"A non-resident contractor is one who does not maintain a regular place of business in this state. A regular place of business shall be deemed to mean and include any bona fide office (other than a statutory office), factory, warehouse or other space in this state at which the taxpayer is doing business in its own name in a regular and systematic manner and which is continuously maintained, occupied and used by the taxpayer in carrying on its business through its regular employees regularly in attendance. A temporary office at the site of construction shall not constitute a regular place of business".

In order to effectively implement this legislative change which became effective on passage, non-resident contractors shall forward such notice of completion by certified or registered mail (in duplicate) to the Division of Taxation.

R. Gary Clark
Tax Administrator

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

Invitation for Bids Number 16-15

XXX. DRUG & ALCOHOL TESTING PROGRAM

In accordance with the Federal Transit Administration Rules 49 CFR 40, 653, and 654, pertaining to prohibited drug use and Contract Service Providers who perform safety-sensitive functions as follows:

- Operation of Revenue Service Vehicles In and Out of Service.
- Dispatch or Control Movement of Revenue Service Vehicles.
- Maintain, Repair and Inspect Revenue Service Vehicle.

The standards they must meet are:

1. Provide each employee performing a RIPTA safety-sensitive function a copy of RIPTA's Prohibited Drug Use and Alcohol Misuse Policy and Procedures. Each Employee must sign and return to RIPTA "Confirmation of Receipt" form.
2. Provide RIPTA with documentation that all employees, both full and part-time, participate in a prohibited drug use testing program in compliance with 49 CFR 653 and an alcohol misuse testing program in compliance with 49 CFR 654. Documentation must be provided which insures that all testing is performed in compliance with 49 CFR 40.
3. Provide to RIPTA's, by February 1st, following each calendar year, annual Management Information Systems (MIS) reports for submission to the FTA. The MIS form used must be that which is contained in 49 CFR 653 and 654.
4. Identify a contact person responsible for handling all 49 CFR 40, 653 and 654 regulation compliance.

XXXI. DRUG AND ALCOHOL POLICY ACKNOWLEDGEMENT **CONTRACT SERVICE PROVIDER** **ACKNOWLEDGEMENT AND CONFIRMATION OF RECEIPT**

Employee Name: _____

Company Name: _____

I have received a copy of Rhode Island Public Transit Authority's Prohibited Drug Use and Alcohol Misuse Policy and Procedures.

Employee
Signature: _____

Date: _____

Return To: Drug and Alcohol Test Coordinator
Department of Human Resources
Rhode Island Public Transit Authority
Room 217
705 Elmwood Avenue
Providence, Rhode Island 02907

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Invitation for Bids Number 16-15

State of Rhode Island, Department of Labor and Training, Division of
Workers' Compensation

P.O. Box 20190, Cranston, RI 02920-0942

Phone (401) 462-8100 TDD (401) 462-8084 www.dlt.ri.gov

XXXII. NOTICE OF DESIGNATION AS INDEPENDENT CONTRACTOR

PURSUANT TO RIGL §28-29-17.1

Please read the second page

<p>No one can force you to sign this form. When you sign this form you are stating that you are an independent contractor and in the event of injury, are not entitled to workers' compensation benefits.</p>
--

(Name) _____ Soc. Sec. No. _____

Business Name _____ FEIN: _____

Business License No. _____

Address _____ Date of Birth _____

I declare that I am an independent contractor pursuant to RIGL §28-29-17.1 and, therefore, I am not eligible for nor entitled to Workers' Compensation benefits pursuant to Title 28, Chapters 29-38, of the Workers' Compensation Act of the State of Rhode Island for injuries sustained while working as an independent contractor for the hiring entity named below. This designation will remain in effect while performing services for the named hiring entity or until a withdrawal of designation as independent contractor form is filed with the Department of Labor and Training.

Hiring Entity Name _____ Soc. Sec. No. _____

Address _____ Business License No. _____

Warning! This form is for purposes of Workers' Compensation only and completion of this form does not mean that you are an Independent Contractor under the rules, regulations or statutes of the Internal Revenue Service or the RI Division of Taxation. Information on this form will be shared within the Dept. of Labor and Training, the RI Division of Taxation and the Internal Revenue Service.

Independent Contractor:

Signature

Date

A hiring entity that knowingly assists, aids and abets, solicits, conspires with or coerces an employee to misrepresent the employee's status as an independent contractor may be subject to criminal prosecution under RIGL §28-33-17.3.

*** This information is available to the public including the Hiring Entity's Workers' Compensation Insurance Carrier.**

The Department will mail a confirmation of this filing to the independent contractor within five business days. If you have any questions, call 462-8100, option 5.

DWC-11-IC (3/2006)

RHODE ISLAND PUBLIC TRANSIT AUTHORITY

Invitation for Bids Number 16-15

DWC-11-IC Reverse Side

This is a form DWC11-IC, Designation of Independent Contractor. This means that you have stated that you are an independent contractor NOT an employee and are NOT eligible for Workers' Compensation benefits.

Many factors are considered when determining whether someone is an employee or an independent contractor. Some of those factors are: independent contractors set their own work hours, have their own tools and work when and for whom they choose.

An employer generally does not have to withhold or pay any taxes on payment to independent contractors, such as social security, Medicare, unemployment and Temporary Disability Insurance (TDI).

This form is for purposes of Workers' Compensation, and completion of this form does not mean that you are considered an Independent Contractor under the rules, regulations or statutes of the Internal Revenue Service or the R.I. Division of Taxation.

SHOULD YOU HAVE ANY QUESTIONS ABOUT WHETHER YOU ARE AN INDEPENDENT CONTRACTOR OR AN EMPLOYEE, PLEASE CONTACT THE RI DIVISION OF TAXATION AT (401) 222-3682, OR THE US GOVERNMENT INTERNAL REVENUE SERVICE AT 800-829-1040.

IF YOU FEEL YOU HAVE BEEN COERCED OR FORCED TO SIGN THE INDEPENDENT CONTRACTOR FORM, REPORT THIS TO THE WORKERS' COMPENSATION FRAUD AND COMPLIANCE UNIT AT (401) 462-8100, option 7.

When your work as an independent contractor ends with this employer, complete and return the form titled Notice of Withdrawal of Designation as Independent Contractor, DWC-11-ICR, to the Dept. of Labor and Training, Division of Workers' Compensation.

If you have a question, contact the Division of Workers' Compensation at (401) 462-8100, option 5. For further information, contact the Workers' Compensation Information Line at (401) 462-8100, option 1.

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Invitation for Bids Number 16-15
Bid Price Submittal Worksheet

XXXIII. BIDDER QUALIFICATIONS

All Bidders must submit three (3) reference projects of similar size and scope that have been completed within the last 5 years for review by the Owner. Submitted information must include current contact information for project references for verification. Bids received without project references will be considered incomplete and will be disqualified.

XXXIV. TECHNICAL SPECIFICATIONS ARE ATTACHED

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Invitation for Bids Number 16-15
Bid Price Submittal Worksheet

XXXV.BID FORM

To: Contracts Manager
Rhode Island Public Transit Authority
Purchasing Department, Room 217
705 Elmwood Avenue, RI 02907

Project: New Back-up Generator Project
Rhode Island Public Transit Authority
Melrose Street Transportation Building

Bidder:

Legal name of entity

Address

Contact name

Contact email

Contact telephone

Contact fax

XXXVI. BASE BID PRICE

The Bidder submits this bid proposal to perform all of the work (including labor and materials) as described in the solicitation for this Base Bid Price, (including the costs for all Allowances, Bonds, and Addenda):

(Base Bid Price *in figures* printed electronically, typed, or handwritten legibly in ink)

Base Bid Price *in words* electronically, typed, or handwritten legibly in ink)

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
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Bid Price Submittal Worksheet

XXXVII. ALLOWANCES

The Base Bid Price ***includes*** the costs for the following Allowances: (as defined in Section 01 2100)

None

XXXVIII. BONDS

The Base Bid Price ***includes*** the costs for all Bid and Payment and Performance Bonds required by the solicitation.

XXXIX. ADDENDA

The Bidder has examined the entire solicitation (including the following Addenda), and the Base Bid Price ***includes*** the costs of any modifications required by the Addenda.

All Addenda must be acknowledged.

Addendum No. 1, dated

Addendum No. 2, dated

Addendum No. 3, dated

XL. ALTERNATES

(Additions to Base Bid Price as defined in Section 01 2300)

The Bidder offers to: (i) perform the work described in these Alternates as selected by the State in the order of priority specified below, based on the availability of funds and the best interest of the State; and (ii) increase the Base Bid Price by the amount set forth below for each Alternate selected.

- 1. Provide and install diesel powered generator in lieu of natural gas powered generator.**

Add / Deduct: _____

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Invitation for Bids Number 16-15
Bid Price Submittal Worksheet

XLII. UNIT PRICES (AS IDENTIFIED IN SECTION 01 2700)

The Bidder submits these predetermined Unit Prices as the Basis for any change orders approved in advance by the State. These Unit Prices include ***all*** costs, including labor, materials, installation, services, regulatory compliance, overhead, and profit.

1. **Labor Unit Prices: (provide attachment per Section 01 2700)**

XLIII. CONTRACT TIME

The Bidder offers to perform the work in accordance with the timeline specified below:

- Start of Construction 7 days after issuance of P.O.
- Substantial Completion Sixteen weeks after issuance of a P. O.

- Final Completion.....Two Weeks after Substantial Completion

XLIV. LIQUIDATED DAMAGES

The successful bidder awarded a contract pursuant to this solicitation shall be liable for and pay the State, as liquidated damages and not as a penalty, the following amount for ***each*** calendar day of delay beyond the date for substantial completion, as determined in the sole discretion of the State:

Five Hundred Dollars (\$500.00) per day.

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Invitation for Bids Number 16-15
Bid Price Submittal Worksheet

XLIV. BID FORM SIGNATURE(S)

This bid proposal is irrevocable for 120 days from the bid proposal submission deadline.

If the Bidder is determined to be the successful bidder pursuant to this solicitation, the bidder will promptly: (i) comply with each of the requirements of the Tentative Letter of Award; and (ii) commence and diligently pursue the work upon issuance and receipt of the purchase order from the State and authorization from the user agency.

The person signing below certifies that he or she has been duly authorized to execute and submit this bid proposal on behalf of the Bidder.

BIDDER

Date: _____

Name of Bidder

Signature in ink

Printed name and title of person signing on behalf of Bidder

Bidder's Contractor Registration Number



PROJECT MANUAL

**Back-up Generator
Installation –
Melrose Street, Providence**

**Rhode Island Public Transit Authority
Project 16-15**

February 1, 2016

BTGA #1440B

DOCUMENT 00 0010 - TABLE OF CONTENTS

INTRODUCTORY INFORMATION

- 00 0001 Cover
- 00 0010 Table of Contents
- 00 0015 List of Drawings

BIDDING AND CONTRACT REQUIREMENTS

See State Purchasing web site for this information.

TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

- 01 1000 Summary
- 01 2000 Price and Payment Procedures
- 01 2100 Allowances
- 01 2300 Alternates
- 01 2700 Unit Prices
- 01 3000 Administrative Requirements
- 01 3250 Construction Progress Schedule
- 01 4000 Quality Requirements
- 01 5000 Temporary Facilities and Controls
- 01 6000 Product Requirements
- 01 7000 Execution Requirements
- 01 7320 Waste Management
- 01 7800 Closeout Submittals

DIVISION 22 – PLUMBING

- 22 0000 Plumbing

DIVISION 26 – ELECTRICAL

- 26 0000 General
- 26 0519 Conductors and Cables
- 26 0526 Grounding and Bonding
- 26 0529 Hangers and Supports for Electrical Systems
- 26 0533 Raceways and Boxes
- 26 0553 Electrical Identification
- 26 1216 Low-Voltage Transformers
- 26 2416 Panelboards
- 26 3213 Engine Generators
- 26 3214 Diesel Engine Generators
- 26 3600 Transfer Switches

DIVISION 32 – EXTERIOR IMPROVEMENTS

- 32 1216 Asphalt Paving

END OF DOCUMENT

DOCUMENT 00 0015 - LIST OF DRAWINGS

Dwg. No.	Drawing Title	Date
	Cover	1/28/16
E1.1	Electrical Floor Plans, Notes, Details and Legend	1/28/16
E1.2	Generator Schematic, Details and Schedules	1/28/16
P-1	Partial Plumbing Floor Plan – Gas & Details	1/28/16

END OF DOCUMENT

SECTION 01 1000

SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Back-up Generator Installation - Providence
- B. Owner's Name: Rhode Island Public Transit Authority (RIPTA)
- C. Architect's Name: Brewster Thornton Group Architects, LLP (BTGA).
- D. Engineer's Name: Creative Environment Corp. (CEC)
- E. The Project consists of the installation of a new natural gas powered back-up generator at RIPTA's transportation building on Melrose St., Providence, RI as indicated on the Drawings and/or in the Specifications.

1.02 DESCRIPTION OF ALTERATIONS WORK

- A. Demolition includes but is not limited to prep for new back-up generator.
- B. Electrical Power: Alter existing system; connect new back-up generator to existing circuit panel and make necessary modifications.
- C. Fire Alarm: Alter existing system as needed for new work. Protect during work and arrange for any outages required with local officials.
- D. Either a General Contractor or Electrical Contractor may be prime.
- E. No deposits will be paid - materials may only be invoiced upon delivery.
- F. This work is more fully described in the full set of Contract Documents: drawings and/or specifications.

1.03 FUTURE WORK

- A. N/A

1.04 OWNER OCCUPANCY

- A. Owner intends to continue to occupy the existing buildings during the entire construction period. Buses will continue to operate on their normal schedules.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings. Garage drive lane closures if required are to be coordinated with the Owner during construction.
- B. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Work laydown areas to be coordinated with the Owner, submit a site utilization plan for approval

by the Owner.

E. Time Restrictions:

1. Limit conduct of exterior work to the hours of 7 AM until 10 PM unless specially arranged.
2. Especially noisy interior work to be coordinated with the Owner so as to reduce disruption of occupants.

F. Utility Outages and Shutdown:

1. Limit disruption of utility services to hours the building is unoccupied.
2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
3. Prevent accidental disruption of utility services to other facilities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2000**PRICE AND PAYMENT PROCEDURES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress and final payments.
- B. Modification procedures.

1.02 SCHEDULE OF VALUES

- A. Form to be used: AIA Form G703 in preparation for submitting Applications for Payment.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.
- F. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- G. Include within each line item, a direct proportional amount of Contractor's overhead and profit.
- H. Revise schedule to list approved Change Orders, with each Application For Payment.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Form to be used: AIA Form G702 with 703 continuation sheets.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- H. Submit three copies of each Application for Payment.
- I. Include the following with the application, in addition to items noted in the Agreement:
 - 1. Transmittal letter as specified for Submittals in Section 01 3000.
 - 2. Project record documents as specified in Section 01 7800, for review by Owner which will be returned to the Contractor.
 - 3. Affidavits attesting to off-site stored products, if included on current application.
 - 4. Indication on subcontractor listing as described in the Agreement of which subcontractor payment amounts are being counted toward the DBE/MBE requirements.
- J. When Engineer requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show

application number and date, and line item by number and description.

1.04 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor as an ASI (Architect's Supplemental Instruction).
- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change (Construction Change Directive), for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications (Proposal Request), a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.
- D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- F. Substantiation of Costs: Provide full information required for evaluation and as provided for in the Agreement.
- G. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Agreement and Conditions of the Contract.
- H. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- I. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- J. Promptly enter changes in Project Record Documents.

1.05 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified in the Agreement, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7800.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2100

ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Unit Price allowances.

1.02 RELATED REQUIREMENTS

- A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 UNIT PRICE ALLOWANCE

- A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from Unit Price Allowances.
- B. Funds will be drawn from the Unit Price Allowances only by Change Order.
- C. At closeout of Contract, funds remaining in Unit Price Allowances will be credited to Owner by Change Order.

1.04 ALLOWANCES SCHEDULE

- A. No allowances.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2300

ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of alternates.
- B. Procedures for pricing and accepting alternates.

1.02 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement. They may be accepted in any order.
- B. Include costs to coordinate related work and modify surrounding work to integrate the Work of each alternate in bid Alternate amounts.

1.03 SCHEDULE OF ALTERNATES

- A. Installation of a diesel powered back-up generator in lieu of a natural gas powered back-up generator.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2700**UNIT PRICES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. List of unit prices, for use in preparing Bids and Change Orders.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- C. Defect assessment and non-payment for rejected work.

1.02 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; including overhead and profit.

1.03 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract change purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.04 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Measurement by Area: Measured by square dimension using mean length and width or radius.
- E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- F. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.
- G. Quantities for labor rate change orders will only be approved based on verified time slips showing day and hours worked, submitted with worker name and labor category indicated. Slips for change order work must be initialed and dated on site by the Owner's Project Coordinator.

1.05 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.
- B. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from the transporting vehicle.
 - 4. Products placed beyond the lines and levels of the required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected Products.

1.06 DEFECT ASSESSMENT

- A. Replace Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct one of the following remedies:
 - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Architect.
 - 2. The defective Work will be partially repaired to the instructions of the Architect, and the unit price will be adjusted to a new unit price at the discretion of the Architect.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of Architect to assess the defect and identify payment adjustment is final.

1.07 SCHEDULE OF UNIT PRICES

- A. Item: Labor Unit Prices; Provide attachment to bid listing labor hourly unit prices including overhead, profit, fringes, and all mark-ups for use in billing any Time and Material Change Order Work for all trades to be provided. Include at a minimum: laborer, metal worker, operating engineer, electrician and HV technician, with different rates for apprentice, journeyman, and master levels. Trade names appearing on hourly slips but not listed in this Labor Unit Price attachment to the Bid shall be assigned a comparable rate by the Architect.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 3000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Site mobilization meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution Requirements: Additional coordination requirements.
- B. Section 01 7800 - Closeout Submittals: Project record documents.

1.03 PROJECT COORDINATION

- A. Project Coordinator: For RIPTA, Bernie Harwood, Director of Facilities. If Mr. Harwood is unavailable, contact Christine Johnston.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for delivery access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Architect's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- F. Make the following types of submittals to Architect:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.

2. Architect.
 3. Engineer.
 4. Contractor.
- C. Agenda:
1. Execution of Owner-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 5. Designation of personnel representing the parties to Contract and Architect.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling.
- D. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with copies to the Design Agent, Owner, other participants, and those consultants affected by the decisions made.

3.02 SITE MOBILIZATION MEETING

- A. Contractor will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
1. Contractor.
 2. Owner.
 3. Engineer
 4. Contractor's Superintendent.
 5. Major Subcontractors.
- C. Agenda:
1. Use of premises by Owner and Contractor.
 2. Owner's requirements and occupancy prior to completion.
 3. Construction facilities and controls provided by Owner.
 4. Temporary utilities provided by Owner.
 5. Security and housekeeping procedures.
 6. Schedules.
 7. Application for payment procedures.
 8. Procedures for testing.
 9. Procedures for maintaining record documents.
 10. Requirements for start-up of equipment.
 11. Inspection and acceptance of equipment put into service during construction period.
- D. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with copies to the Design Agent, Owner, other participants, and those consultants affected by the decisions made.

3.03 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work as necessary.
- B. Contractor will make arrangements for meetings, prepare agenda with copies for participants, and will preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, and Engineer as appropriate to agenda topics for each meeting.
- D. Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress.

3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Maintenance of quality and work standards.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to Work.

E. Contractor shall record the minutes and distribute copies within two days after the meeting to the participants, with copies to the Design Agent, Owner, other participants, and those consultants affected by the decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE

- A. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- C. Within 10 days after joint review, submit complete schedule.
- D. Submit updated schedule with each Application for Payment.

3.05 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - CLOSEOUT SUBMITTALS.

3.06 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 1. Design data.
 2. Certificates.
 3. Test reports.
 4. Inspection reports.
 5. Manufacturer's instructions.
 6. Manufacturer's field reports.
 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator for Owner. No action will be taken.

3.07 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
 1. Project record documents.

2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated in Section 01 7800.

B. Submit for Owner's benefit during and after project completion.

3.08 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review:
 1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies that Contractor requires, plus two copies that will be retained by Architect.
 2. Larger Sheets, Not Larger Than 36 x 48 inches: Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Architect.
- B. Documents for Information: Submit two copies.
- C. Extra Copies at Project Closeout: See Section 01780.
- D. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 1. After review, produce duplicates.
 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.09 SUBMITTAL PROCEDURES

- A. Transmit each submittal with approved form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E. Deliver submittals to Architect at business address.
- F. Schedule submittals to expedite the Project, and coordinate submission of related items.
- G. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- H. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- I. Provide space for Contractor and Architect review stamps.
- J. When revised for resubmission, identify all changes made since previous submission.
- K. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- L. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01 3250**CONSTRUCTION PROGRESS SCHEDULE****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.02 SUBMITTALS

- A. Within 10 days after date of Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
- B. Submit updated schedule with each Application for Payment.
- C. Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Architect.
- D. Submit under transmittal letter form specified in Section 01 3000.

1.03 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Diagram Sheet Size: Maximum 22 x 17 inches (560 x 432 mm) or width required.
- C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 PRELIMINARY SCHEDULE**

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Include conferences and meetings in schedule.
- D. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- E. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, Products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- F. Coordinate content with schedule of values specified in Section 01 2000.
- G. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.06 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Control of installation.
- B. Tolerances.
- C. Testing and inspection services.
- D. Manufacturers' field services.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittal procedures.
- B. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

- A. Materials and equipment shall be designed, constructed, installed and tested in accordance with this Specification and the latest editions of the following applicable standards in addition to state and local codes applying. All products shall bear the label of approval from the appropriate agency.

Agencies:

National Environmental System Contractors Assoc.	NESCA
Air Moving and Conditioning Association	AMCA
American Society of Heating, Refrigerating and Air Conditioning Engineers	ASHRAE
American Society of Mechanical Engineers	ASME
Federal Construction Safety Standards (U.S. Dept. of Labor)	FCSS
American Society of Testing Materials	ASTM
National Electric Code	NEC
National Electrical Manufacturers Association	NEMA
National Fire Code	NFC
Occupational Safety and Health Act of '70	OSHA
International Building Code (Latest Edition)	IBC
National Sanitation Foundation	NSF
Air Conditioning and Refrigeration Inst.	ARI
Underwriters Laboratories, Inc.	UL
Building Officials & Code Administrators International, Inc.	BOCA
International Code Council	ICC
National Fire Protection Association	NFPA
Sheet Metal and Air Conditioning Contractors National Association	SMACNA
American National Standards Institute	ANSI
American Welding Society	AWS
Cast Iron Soil Pipe Institute	CISPI
Clean Air Act Amendment of 1990 (Title VI. Section 608)	CAA
Cooling Tower Institute	CTI
International Mechanical Code	IMC

- B. Any materials or workmanship called for in the above-mentioned requirements which are not specified or shown on the Drawings, shall be furnished and installed by the Contractors as though same had been specifically mentioned or indicated.

- C. If these Contractors fail to notify the A/E at this time, and install work in variance with the above-mentioned codes and regulations, they shall assume responsibility and expense to rectify the installation to the satisfaction of the A/E and Owner.
- D. Secure all local, state and federal permits necessary in connection with the installation of the equipment, including licenses and approvals and pay fees required for same.
- E. All work shall be performed in strict accordance with the above-mentioned standards, local and state codes.
- F. File all necessary Plans and Documents with Local Authorities and obtain the necessary Certificates of Inspection for work. Deliver same to A/E prior to request for acceptance and final payment.
- G. Notify A/E of any deviation from codes of work indicated or herein specified before installation of work is affected.

1.04 SUBMITTALS

- A. Testing Agency Qualifications:
 - 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
- B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
 - 2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit report in duplicate within 10 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing conformance with information

given and the design concept expressed in the contract documents.

1.05 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING AND INSPECTION AGENCIES

- A. Contractor shall employ and pay for services of an independent testing agency to perform specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, and ASTM C1093.
 - 2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
 - 3. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.04 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 10 days in advance of required observations.
 - 1. Observer subject to approval of Architect.

2. Observer subject to approval of Owner.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.05 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers, enclosures, and fencing.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Project identification sign.
- I. Field offices.

1.02 RELATED REQUIREMENTS

- A. Section 01 7320 – Waste Management

1.03 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.
 - 3. Take measures to conserve water and power.
- B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TELECOMMUNICATIONS SERVICES

- A. Contractor to provide, maintain, and pay for telecommunications services for superintendent's cell phone at time of project mobilization.
- B. Telecommunications services shall include:
 - 1. Email: Account/address at home office for project use.

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.06 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.07 FENCING

- A. Not required.

1.08 INTERIOR ENCLOSURES

- A. Not required.

1.09 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

1.10 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Designated existing on-site roads may be used for construction traffic.
- F. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.11 WASTE REMOVAL

- A. See Section 01 7320 - Waste Management, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site weekly.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 PROJECT SIGNS - See Section 01 5850

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work, including landscaped areas, paving, and sidewalks if disturbed.
- C. Restore existing facilities used during construction to original condition including landscaped areas, paving, and sidewalks if disturbed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 6000**PRODUCT REQUIREMENTS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements: Product quality monitoring.
- B. Section 01 7320 - Waste Management: Waste disposal requirements potentially affecting packaging and substitutions.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS**2.01 EXISTING PRODUCTS**

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Do not use products having any of the following characteristics:
 - 1. Made outside the United States, its territories, Canada, or Mexico.
 - 2. Made using or containing CFC's or HCFC's.
 - 3. Made of wood from newly cut old growth timber.
- C. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 2. Have longer documented life span under normal use.
 - 3. Result in less construction waste.
- D. Products with Recycled Content:
 - 1. Specific Product Categories: Provide recycled content as specified elsewhere.
 - 2. Calculations: Where information about recycled content is required to be submitted:
 - a. Determine percentage of post-consumer and post-industrial content separately, using the guidelines contained in 16 CFR 260.7(e).
 - b. Previously used, reused, refurbished, and salvaged products are not considered recycled.
 - c. Wood fabricated from timber abandoned in transit to original mill is considered reused, not recycled.
 - d. Determine percentage of recycled content of any item by dividing the weight of recycled content in the item by the total weight of all material in the item.
 - e. Determine value of recycled content of each item separately, by multiplying the content percentage by the value of the item.
- E. Sustainably Harvested Wood:
 - 1. Definition: Wood-based materials include but are not limited to structural framing, dimension lumber, flooring, wood doors, finishes, and furnishings that are permanently installed in the project. Wood and wood-based products not permanently installed in the project are not included in the definition.
 - 2. Overall Project Requirement: Provide a minimum of 50 percent of all wood-based materials made of sustainably harvested wood.
 - 3. Certification: Provide wood certified or labeled by an organization accredited by one of the following:
 - a. The Forest Stewardship Council, The Principles for Natural Forest Management; for Canada visit <http://www.fscscanada.org>, for the USA visit <http://www.fscus.org>.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with performance requirements and a Provision for or-equal Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION**3.01 SUBSTITUTION PROCEDURES**

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section. Utilize form provided

with Bidding Information and submit by deadline of July 18 for consideration of all equal products. The requests will be reviewed and all bidders informed of the products accepted as equal by addendum.

- B. After the bid period, Architect will consider requests for substitutions only when a product becomes unavailable through no fault of the Contractor, or substantial economic benefit to the Owner is offered for such change and all the conditions below are met.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- D. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- G. Post-Bid Substitution Submittal Procedure:
 - 1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7000**EXECUTION REQUIREMENTS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Demonstration and instruction of Owner personnel.
- H. Closeout procedures, except payment procedures.
- I. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures.
- C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.
- D. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.
- E. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.
- F. Section 01 7302 - Waste Management: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- G. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
- H. Section 02 2250 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2009.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- D. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- E. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
 - 2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
 - 3. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.
- F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

- A. See Section 01 1000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution

described in Section 01 6000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. See Section 01 1000 for other limitations on outages and required notifications.
 - c. Provide temporary connections as required to maintain existing systems in service.
 - 4. Verify that abandoned services serve only abandoned facilities.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 - 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and

- make recommendation to Architect.
- 2. Where a change of plane of 1/4 inch (6 mm) or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
 - 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 - 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07840, to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire

- unit.
- 2. Match color, texture, and appearance.
- 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site weekly and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, and drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Architect.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Substantial Completion.
- D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.
- E. Owner will occupy all of the building as specified in Section 01 1000.

- F. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.
- G. Accompany Project Coordinator on preliminary final inspection.
- H. Notify Architect when work is considered finally complete.
- I. Complete items of work determined by Architect's final inspection.

3.14 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 7320**WASTE MANAGEMENT****PART 1 GENERAL****1.01 WASTE MANAGEMENT REQUIREMENTS**

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood: May be used as blocking or furring.
 - 5. Land clearing debris, including brush, branches, logs, and stumps.
 - 6. Concrete: May be crushed and used as riprap, aggregate, sub-base material, or fill for this or another project.
 - 7. Concrete masonry units: May be used on project if whole, or crushed and used as sub-base material or fill for this or another project.
 - 8. Asphalt paving: May be recycled into paving for project or another project.
 - 9. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 10. Glass.
 - 11. Gypsum drywall and plaster.
 - 12. Plastic buckets.
- E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 5000 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- C. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

- D. Section 01 7000 - Execution Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Landfill Alternatives Proposal: Within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner, submit a projection of trash/waste that will require disposal and alternatives to landfilling, with net costs.
1. Submit to Architect for Owner's review and approval.
 2. If Owner wishes to implement any cost alternatives, the Contract Sum will be adjusted as specified elsewhere.
 3. Include an analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.
 4. Describe as many alternatives to landfilling as possible:
 - a. List each material proposed to be salvaged, reused, or recycled.

- b. List the proposed local market for each material.
 - c. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping fees saved due to diversion of materials from the landfill.
- C. Once Owner has determined which of the landfill alternatives addressed in the Proposal above are acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Architect.
- D. Waste Management Plan: Include the following information:
 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
- E. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 2. Submit Report on a form acceptable to Owner.
 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project disposed of in landfills.
 - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 4. Incinerator Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project delivered to incinerators.
 - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 5. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.

- b. Amount, in tons or cubic yards (cubic meters), date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: Include the following information for each:
- a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards (cubic meters).
 - c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

- A. See Section 01 6000 - Product Requirements for substitution submission procedures.
- B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 6000:
 1. Relative amount of waste produced, compared to specified product.
 2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
 3. Proposed disposal method for waste product.
 4. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 3000 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 5000 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 1. Pre-bid meeting.
 2. Pre-construction meeting.
 3. Regular job-site meetings.

- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
 - 3. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
 - 4. Locate enclosures out of the way of construction traffic.
 - 5. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 6. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

SECTION 01 7800**CLOSEOUT SUBMITTALS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 7000 - Execution Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 PROJECT RECORD DOCUMENTS**

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.

- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

- C. Include color coded wiring diagrams as installed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Include test and balancing reports.
- O. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. Prepare data in the form of an instructional manual.
- C. Binders: Commercial quality, 8-1/2 by 11 inch (216 by 280 mm) three D side ring binders with durable plastic covers; 2 inch (50 mm) maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
- I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

- a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
3. Part 3: Project documents and certificates, including the following:
- a. Shop drawings and product data.
 - b. Certificates.
 - c. Photocopies of warranties and bonds.
- J. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.
- K. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

SECTION 22 0000

PLUMBING SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. SECTION INCLUDES

1. Natural Gas piping
 2. Connections to generator and meter
 3. Coordination of new service trenching, etc. with gas company
 4. All supports and hangers unless otherwise indicated.
 5. All specialty and control valves
 6. Coordinate with Section 01300 for coordination drawing requirements.
 7. Temporary connections during construction.
 8. All hoisting and rigging for all piping and equipment installation.
 9. Coordination of all work with Gas Company and owner.
 10. Provide system complete and ready for use.
 11. Inspect, test and approve all piping before burying, covering or concealing. No exceptions will be made.
 12. Other items in the work covered in other sections of the specifications, as shown and specified herein.
 13. Final connections to meter and generator as specified.
- B. Provide all manufactured items and equipment in accordance with manufacturer's recommendations. Provide all necessary specialties and accessories, including anchors and supports.
 - C. Provide all natural gas piping from meter to generator.
 - D. Coordinate all trenching, backfill and patching requirements with Gas Company and general contractor. All to be in accordance with gas company rules and regulations.
 - E. Examine all sections of specification and drawings for requirements affecting the work of this section, as shown and specified herein.
 - F. Include in the bid price all utility company and municipal back charges for all materials furnished and work performed by them in conjunction with this contract.

1.03 DEFINITIONS

- A. The term "capped flush" on existing piping means cap existing lines, concealed, beyond finish wall, ceiling or floor line, so proper finish can be applied.

- B. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- C. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- D. The following are industry abbreviations for plastic materials:
 - 1. ABS: Acrylonitrile-butadiene-styrene plastic.
 - 2. CPVC: Chlorinated polyvinyl chloride plastic.
 - 3. PE: Polyethylene plastic.
 - 4. PVC: Polyvinyl chloride plastic
- E. “Furnish and install” and “Provide” means to supply, erect, install and connect in readiness for regular operation, the particular work referred to, unless otherwise specified.
- F. “Underground” shall mean pipe, conduit or equipment that is buried exterior to or within the building.
- G. “Finished grade” as used herein, means the final grade elevations indicated on the drawings.
- H. Piping shall mean and include pipe, fittings, hangers, and valves.

1.04 EXISTING CONDITIONS

- A. Bidders are advised to visit the site and inform themselves as to the existing conditions under which this work will be performed prior to submitting prices. Failure to do so, will, in no way relieve the successful bidder from the responsibility of furnishing any materials or performing any work in accordance with the true intent and meaning of the drawings and specifications.
- B. No claim for extra compensation will be recognized if difficulties are encountered which an examination of the site conditions and contract documents prior to executing the contract would have revealed.
- C. This Contractor shall be responsible for ordering and furnishing the correct quantity of material required. Routing and equipment arrangements shown on the drawings are approximate only and are not warranted to be accurate.
- D. Arrangements shall be made with the Owner prior to the visit for inspection of the site.
- E. Prior to submitting proposal, visit job site, verify and inspect existing conditions.
- F. Examine building before commencing work and make known any damaged piping which exists.
- G. Field verify pipe routing, and verify pipe length, sizes, locations, etc. at each location, prior to starting work.

1.05 RELATED SECTIONS

- A. Cutting and patching - Division 1.
- B. Coring of holes and saw cutting in concrete - Division 1.

- C. Excavation, including backfill and resurfacing - Division 31.
- D. Earthwork - Division 32.
- E. Backfill material, hand-compacted sand or gravel, to 1'-0" above the main - Division 31.
- F. Concrete work - Division 3.
- G. Masonry work - Division 4.
- H. Field painting of piping, hangers, etc. - Division 9.
- I. Electrical connections and Generator - Division 26.

1.06 CODES, ORDINANCES AND PERMITS

- A. All work performed under this section of the specifications shall be done in accordance with the applicable National, State of Rhode Island Fuel Gas Code and local codes, laws and ordinances.
- B. All materials and work provided shall be in accordance with, but not limited to, the following:
 - 1. American National Standards Institute (ANSI).
 - 2. American Society for Testing and Materials (ASTM)
 - 3. American Society of Mechanical Engineers (ASME)
 - 4. International Code Council (ICC)
 - 5. National and State Electrical Code (NEC)
 - 6. National Electrical Manufacturer's Association (NEMA)
 - 7. National Fire Protection Association Codes and Standards (NFPA)
 - 8. Occupational Safety and Health Act (OSHA)
 - 9. Standards of Underwriters Laboratories (UL)
- C. Where code references are given, the latest issue of that code in effect at the time of bidding shall be used. Code references given to indicate the minimum quality and performance acceptable. Where specifications and/or drawings indicate more stringent requirements, the specification shall govern.
- D. Permits and inspections: Be responsible for filing all documents, payment of all fees and securing of all permits and scheduling of all required inspections and approvals necessary for the installation and operation of all systems furnished under this section.

1.07 PROTECTION

- A. Protect materials and fittings. Temporarily close all pipe openings to prevent obstruction and damage.

1.08 CUTTING AND FITTING

- A. Do the cutting and fitting necessary for the installation of the gas piping work.
- B. Take care to prevent injury, discoloration or defacement of other finish materials; and do no cutting or fitting of finish material.

1.09 CLEANING

- A. Upon completion of the installation, clean and remove all oil and debris. Clean and polish and leave bright all metal work intended to be exposed

1.10 DRAWINGS

- A. The drawings are diagrammatic, and not intended to show every detail of construction or arbitrary location of piping. Where building construction makes it advisable or necessary to change location of piping or fixtures, without increasing the scope of work, perform such work without additional cost, on written order or consent of the Engineer.
- B. Install the work as shown. In case of conflict with building parts, or the work of other trades, immediately request a decision be rendered so that there may be no delay in the building construction.
- C. Submit for written approval, single line diagrams of any proposed changes or modification to the drawings, at least one week before prices are due.

1.11 QUALITY ASSURANCE

- A. Submit catalog cuts and brochures for approval of all proposed materials to be used on the project.
- B. Materials and equipment under the section shall be new and of the best grade.
 - 1. Materials shall conform to the requirement of the State of Rhode Island Fuel Gas Code, local city requirements, and standards listed such as commercial USAS or ASTM and requirements specifically stipulated herein.
- C. Unless otherwise specified, apply and pay for all necessary permits, fees, and inspections required by any public authority having jurisdiction.
- D. Pay all utility company back charges.
- E. If conflicts occur within these specifications or on the drawings, or either between the items of greater quality or higher cost shall be bid and provided.
- F. Where items of equipment and/or materials are specified or materials are specified or identified herein by manufacturer's names, model or catalog numbers, only such specified items may be used.
- G. Keep on file, at job site, a clean set of prints to clearly and accurately note all changes, wherever work is installed other than shown. After completion of work, provide a corrected set of drawings in PDF format on CD labeled "Record Drawings" and (2) sets of prints.
- H. The installation of black steel pipe in natural gas systems shall conform to the requirements of the State of Rhode Island Fuel Gas Code.

1.12 ACCESSIBILITY

- A. Be responsible for sufficiency of shafts and chases, with adequate clearances for the proper installation of the work. Cooperate with all other contractors, whose work is in the same space, and advise the Contractor of all requirements. Keep such spaces and clearances to the minimum size required.
- B. Locate all equipment, which must be operated, serviced or maintained, in fully accessible locations. Equipment includes, but is not limited to: valves and drain points. Make minor deviations to allow for better accessibility, however, review such changes with the Architect/Engineer.

1.13 COORDINATION

- A. Coordinate installation of required supporting devices, coring and other structural components.

1.14 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- A. Refer to General Conditions (and Supplementary Conditions), Shop Drawings, Product Data and Samples and add the following:
 - 1. Within thirty (30) days after the date of notice to proceed and before purchasing any materials or equipment, submit to the Architect for review, a complete list, in six (6) copies, of all materials to be incorporated in the work. This listing shall be arranged by the order of occurrence in the specifications, followed by the items on the drawings not specifically included in the specifications.
 - 2. After the list has been processed by the Architect, submit complete shop drawings and product data of all equipment. These submittals shall be submitted within thirty (30) days after the processing date of the original submittal list.
 - 3. All submittals shall be complete and shall be in three-ring loose-leaf binders. No consideration will be given to partial submittals, except with prior approval of the Architect. Each item shall have a cover page stating project, specification and paragraph reference number, of drawing reference number, and scheduled equipment identification number, if applicable.
 - 4. The review of submittals does not relieve this Contractor from the responsibility of shop drawing errors in details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the specifications, contract drawings, and/or job conditions as they exist.
 - 5. Changes to work already performed made necessary by delays in shop drawing review are the responsibility of this Contractor.
 - 6. Copies of equipment and system guarantees shall be submitted with shop drawing package.
- B. Refer to General Conditions (and Supplementary Conditions) for substitution of equipment.
- C. If apparatus or materials are substituted for those specified under this section, and such substitutions necessitate changes in or additional connects, supports or construction, same shall be provided at no additional cost to the Owner. This Contractor shall assume cost and entire responsibility thereof. Architect's permission to make such substitution shall not relieve this Contractor from full responsibility for work.
- D. If submitted product is different from the manufacturer specified provide in booklet form, all piping, etc. and related accessories and/or equipment different than the manufacturers listed.

Submit catalog cuts of both manufacturers addressing point by point that the submitted product is equal to the specified models, etc.

- E. Provide catalog cuts for both manufacturer's product if the product submitted is not the specified product. Submittal is to provide point by point comparison addressing each of the specified manufacturer's specific requirements vs the submitted manufacturer.

1.15 RECORD DRAWING

- A. The General Contractor shall provide two (2) sets of black line on white record drawings to this Contractor, one set of which shall be maintained at the site and one set of which shall, at all times, be accurate, clear and complete, showing the actual location of all equipment and piping. The record drawings shall be available to the Architect's/Engineer's field representative at all times.
- B. Any addenda sketches, supplementary drawings and change orders issued during the course of construction shall be transferred to the record drawings.
- C. At the completion of this contract, this Contractor shall submit through the General Contractor an accurate checked set of record drawings.
- D. Non-availability of record drawings or inaccuracies therein shall postpone the final inspection until they are available.
- E. After approval of these record drawings, photo reproductions of the original tracings shall be revised to incorporate all the changes on the record drawings. These photo reproductions shall be certified by this Contractor as correct and delivered to the Architect together with two (2) sets of black line prints.
- F. All costs related to the foregoing requirements shall be paid for this Contractor.
- G. All valves shown on these drawings shall be numbered with numbers corresponding to those on the valve charts.

1.16 WARRANTY

- A. Refer to General Conditions and add the following:
 - 1. Standard equipment guarantees offered by the manufacturer for on (1) year or greater shall be in addition to that as required by this contract.
 - 2. Copy of manufacturer's equipment guarantees shall be submitted with this Contractor's written guarantee.
 - 3. All pipe and fittings manufacturer shall warrant that the pipe and fittings are free from defects and conform to the designated standard. The warranty shall only be applicable to pipe and fittings installed in accordance with the manufacturer's installation instructions.

PART 2 - PRODUCTS

2.01 SLEEVES, INSERTS AND ESCUTCHEONS

- A. For all openings required in concrete floors, concrete walls and masonry walls; install sleeves of proper size. Provide wrought iron and steel pipe sleeves for all sleeves through floors or walls, sizes as approved, and packed as required.

2.02 HANGERS AND ANCHORS

- A. Support all piping from structure by means of approved hangers and stainless steel concrete inserts or lag bolts. Support piping to maintain required grading and pitching of lines, to prevent vibration and to secure piping in place, and arrange so as to provide for expansion and contraction. Provide approved anchors.
- B. Provide stainless steel clevis ring type hangers for piping with adjustable device, and machine threaded stainless steel hanger rods.
- C. Size of rods shall follow schedule in NFPA Bulletin No. 13.
 - a. Up to 4" - 3/8" rod
 - b. 5" to 8" - 1/2" rod
 - c. 10" to 12" - 5/8" rod
- D. Provide hangers with double nuts.
 - 1. Submit physical samples for approval.
- E. Provide Grinnell expansion case concrete fasteners #117 for piping 3" and over where drilling of concrete is required. Submit expansion type fasteners.

2.03 NATURAL GAS PIPING

- A. Provide Schedule 40 black steel piping with black malleable fittings, for piping above slab.
- B. Provide welded Schedule 40 piping below ground and above with Extru-cover and fittings. Wrap all welds and fittings with Scotch Mill wrap tape. PE pipe approved by gas company maybe used underground to generator.
- C. Underground Gas Piping: Provide material conforming to local gas company regulations. Prior to backfilling, all materials and methods of installation will be inspected and approved by local gas company.
- D. Pitch piping for drainage; install drip and valve and plug at all low points.
- E. Gas piping 2-1/2" and over is to be welded pipe and with butt welded steel pipe fittings.
- F. Valves 1-1/4" to 3": Bronze body screw type ball valve, full port, Watts #B-6000 YRPV-UL.
- G. Valves 1" and smaller: gas cock tee handle Rockford #141 with check pin.
- H. Valves shall be FM & UL listed for gas service. Metallic Valves, shall comply with ASME B16.33.

- I. Provide flexible connection for generator.
- J. Trace Wire: Magnetic detectable conductor, clear brightly colored plastic covered, imprinted in large letters.
 - 1. Natural Gas Line: "NATURAL GAS SERVICE"
- K. All exterior exposed gas piping above grade is to be painted with two-coats of epoxy paint.

PART 3 - EXECUTION

3.01 JOINTS

- A. Threaded Joints:
 - 1. Provide Blue Magic for all gas piping and Select Whyte for all other piping; as manufactured by Whitlaw.
- B. Ream ends of pipes and tubes and remove burrs. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

3.02 HANGERS AND ANCHORS:

- A. Horizontal Piping: Support the following materials at the following maximum distance intervals:
 - 1. Threaded Pipe: 8 feet.

3.03 VALVES

- A. Provide valves located as follows and as indicated:
 - 1. At both sides of meter.
 - 2. Provide valves at generator as per detail.

3.04 GAS PIPING

- A. Do all work in accordance with the State of Rhode Island Fuel Gas Code, Gas Company and A.G.A. regulations and local ordinances for underground and above ground piping systems.
- B. Coordinate with local gas company for installation of new gas service, meter and pay all costs incurred.
- C. Examine roughing-in for natural-gas piping system to verify actual locations of piping connections before equipment installation. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Close equipment shutoff valves before turning off natural gas to premises or piping section.
- E. Inspect natural-gas piping according to NFPA 54 Fuel Gas Code to determine that natural-gas utilization devices are turned off in piping section affected.
- F. Comply with NFPA 54 Fuel Gas Code requirements for prevention of accidental ignition.

- G. Install piping free from traps and with drain pocket consisting of nipple and cap at low points for inside building and drip pot for underground piping. Install drips at points where condensate may collect, including service-meter outlets. Locate where accessible to permit cleaning and emptying. Do not install where condensate is subject to freezing.
- H. Do not use natural-gas piping as grounding electrode.
- I. Install shut-off valve at connection to each piece of equipment. Provide union of equipment side of individual shut-off valve.
- J. Comply with NFPA 54 Fuel Gas Code for installation and purging of natural-gas piping.
- K. Install underground, natural-gas piping to comply with NFPA-54 and local codes. Install fittings for changes in direction and branch connections.
- L. Locate all valves, etc. for easy access, service and testing. Install piping free of sags and bends. Install fittings for changes in direction and branch connections.
- M. Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with approved fire-stop materials.
- N. Connect to utility's gas main according to utility's procedures and requirements.
- O. Ream ends of pipes and tubes and remove burrs.
- P. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

3.05 TESTING

- A. Pressure test new piping only. Do not test any existing piping. All system leaks which occur due to testing are to be repaired at no additional cost to the Owner.
- B. Test all piping and make water-or-gas-tight before insulation is applied, or before concealment.
 - 1. Test gas piping to 25 psi of air for a period of six (6) hours for above ground installation, and 100 psi for all underground work.

END OF SECTION

SECTION 260000

GENERAL

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Work that applies to all sections of DIVISION 26
 - 2. Temporary electrical wiring
 - 3. Electrical services
 - 4. Removals (demolition) and relocations

1.02 RELATED DOCUMENTS

- A. The General Conditions, Supplementary Conditions, and applicable portions of Division 1 of the specification are part of Division 26, 27 and 28 which shall consist of all labor, equipment, materials and other costs necessary to complete all ELECTRICAL MATERIALS AND METHODS work indicated on the drawings, herein specified or both.

1.03 RELATED WORK SPECIFIED UNDER OTHER SECTIONS: (Read these DIVISIONS carefully. For purposes of bidding, assume that all work of the DIVISION referenced is to be performed under that DIVISION unless specifically indicated therein to be performed under the ELECTRICAL DIVISION.)

- A. Temporary wiring for building construction - see DIVISION 1.
- B. Cutting and patching - see DIVISION 1
- C. Allowances – see DIVISION 1.
- D. Concrete - see DIVISION 3.

1.04 DEFINITIONS

- A. Provide: Furnish and install.
- B. Wiring: Wire, raceways, boxes and fittings.

1.05 PERMITS AND FEES

- A. Obtain all permits for the work of this section

- B. Pay all fees, including a FIRE ALARM REVIEW FEE and FINAL INSPECTION FEES.

1.06 SUBMITTALS

- A. Product Data: For each product indicated
- B. Shop Drawings: Wiring and connection diagrams
- C. Manufacturers: Where the drawings or specifications list specific brands or catalog numbers, only these products may be used unless the words: "or approved equal" or "but are not limited to" are included.
- D. Limitations of approval: The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Engineer in writing of such deviation, in a separate cover letter on Contractor's letterhead, at the time of submittal and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Engineer's approval thereof.
- E. Contractor's responsibility: It is the responsibility of the Contractor to check all dimensions and details on shop drawings, before submission to the Engineer, reject same if necessary and only forward to the Engineer shop drawings which he is reasonably certain fulfill the requirements of the contract documents and the work. The approval of shop drawings by the Engineer shall be general only in character and not mean dimensions on drawings have been checked, and will in no way relieve the Contractor of the responsibility for proper fitting and construction of the work, nor from the necessity of furnishing materials or doing the work required by the drawings and/or specifications, which may not be indicated on the shop drawings when approved. All shop drawings shall be checked by the Contractor, and must bear the Contractor's stamp of approval; drawings submitted without this stamp of approval will not be considered.
- F. Tests: Test the complete installation to prove it free from shorts, grounds, opens and faulty connections. Make any corrections necessary before acceptance.
 - 1. Test each function of each system including each device.
- G. Certification: Upon request, provide "Certification" (by a recognized testing agency or a Professional Engineer registered in the state where the project is located) that submitted items of equipment are suitable for their intended use.
- H. Record of Addenda and Change Orders: To avoid overlooking addenda and change order modifications, mark all changes on all copies of drawings and specifications, in a manner acceptable to the Engineer. One method of accomplishing this is to make copies and tape them on the back of the preceding page (tape all edges). Also, circle the changed area and note: see addenda #1, etc. If whole pages or sheets change, either remove the superseded document or put a bold "X" through it.
- I. Record Drawings: Owner's record drawings shall be updated as the project progresses. Maintain documents in a safe, dry location. Indicate clearly and accurately any changes

necessitated by field conditions and dimension all raceways built into or under concrete slabs or buried under ground.

- J. Operating Instructions and Manuals: Provide the Owner or his representative with complete operating instructions by qualified personnel of all electrical systems. Provide three (3) bound sets (indexed and bound in three sturdy three-ring binders) of operating and maintenance instructions of all electrical systems employed and all shop drawings.
- K. Manuals: Provide one (1) extra bound set of all shop drawings. Bind in a sturdy 3-ring binder.
- L. Letter of Confirmation: Include in the above manuals a letter confirming that the following items have been completed. Provide written receipt signed by the Owner or his representative indicating that the first 4 items listed below have been received.
 - 1. Keys have been provided for all locked electrical equipment.
 - 2. The provisions of the "Operating Instructions and Manuals" paragraph of these specifications have been met.
 - 3. Identification is complete and in accordance with these specifications.
 - 4. As-built electrical drawings have been completed and submitted.
 - 5. All tests are complete and in accordance with these specifications.
 - 6. All required shop drawings have been submitted and approved.
 - 7. The entire installation has been accepted by all authorities.

1.07 QUALITY ASSURANCE

- A. 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.
- B. Do all wiring and provide all equipment in accordance with the prevailing issue of the National Electrical Code, State Building Code, State Fire Code, OSHA and any additional local rules or requirements.
- C. Obtain and pay for all necessary permits, certificates, reviews, etc. Present satisfactory proof of final inspection and approval by all inspection authorities.
- D. Consider the most current edition (as of the date of this specification) of the following Industry Standards as minimum requirements for all materials, equipment and systems where such standards are established for materials in question:
 - 1. National Board of Fire Underwriters
 - 2. National Electrical Manufacturers Association
 - 3. National Fire Protection Association
 - 4. Institute of Electrical and Electronic Engineers
 - 5. A nationally recognized testing laboratory (UL, ETL, etc.)
 - 6. Factory Mutual
 - 7. Americans with Disabilities Act
 - 8. American National Standards Institute
 - 9. TIA/EIA

10. BICSI TDDM

- E. Where applicable, this installation shall comply with the most recent edition of the following NECA (National Electrical Contractors Association) "National Electrical Installation Standards." Except, if there is a conflict between this specification and these standards, the requirements of this specification shall prevail.

1. NECA 1 Standard Practices for Good Workmanship in Electrical Contracting
2. NECA 101 Standard for Installing Steel Conduit (Rigid, EMT)

1.08 COORDINATION

- A. Coordinate chases, slots, inserts, sleeves, and openings for electrical supports, raceways, and cable with general construction work.
- B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment that requires positioning before closing in the building.
- C. Coordinate electrical service connections to components furnished by utility companies.
- D. Electrical Contractor shall review that portion of submittals from other Divisions which effects the electrical equipment and adjust the sizing of conductors, conduits and over current protection devices according to substitutions made. Monetary settlement for such substitutions shall be between Electrical Contractor and the party making the substitution.

1.09 TEMPORARY ELECTRICAL WIRING:

- A. Refer to DIVISION 1 of these specifications and add the following:
- B. Provide all required connections, panels, circuit breakers, feeders, branch circuit wiring, transformers, lighting fixtures, lamps, receptacles, switches, etc. for a complete and operating temporary electrical system.
- C. Provide a minimum of 5 footcandles of temporary general illumination throughout the floor area of the building, including all corridors and stairways.
- D. Existing lighting may be used where it is sufficient and remains energized.
- E. Provide feeders of sufficient capacity for the requirements of the work, sufficient number of outlets conveniently located so that extension cords not exceeding 100 feet will reach all work requiring artificial light or power.
- F. All receptacles must be GFCI protected and the entire installation must comply with all applicable OSHA requirements.
- G. At the end of the day's work, disconnect all lights and power, other than the minimum required security illumination.

- H. Provide replacement light bulbs and maintenance of the temporary wiring system, as required, throughout the period of construction.
- I. Conform to all codes and regulations.

1.10 CHANGE ORDERS/PROPOSAL REQUESTS:

- A. Refer to DIVISION 1 of these specifications and add the following:
- B. During the course of construction, changes in the work may occur. When a significant change is to be made, a Proposal Request will be issued.
- C. Provide a complete cost breakdown when responding to each Proposal Request.
- D. Each item of work to be priced separately.
- E. Each line item to be broken down including quantities and listing separately labor and material.
- F. Both credits and extras shall be separately and clearly quantified.
- G. Allowances for overhead and profit shall be as listed in the supplementary conditions.
- H. If you become aware of a field condition, code requirement, error, or omission that you feel should result in a change to the work, please contact the Engineer for discussion. The Engineer may be able to clarify the situation and avoid unnecessary paperwork.

1.11 INSPECTIONS/SITE OBSERVATIONS

- A. The authority having jurisdiction (usually the Municipal Electrical Inspector) shall be notified at periodic intervals that an inspection is requested. Inspections shall be requested at points of progress, meeting the approval of the inspector and as a minimum include the following:
 - 1. Prior to concrete encasement of duct banks.
 - 2. Prior to back filling trenches.
 - 3. Prior to installation of panel trims/covers.
 - 4. For observation of connections and grounding at transfer switch and generator.
- B. Do not cover the work before the Engineer has had a chance to observe it in completed form. The electrical foreman shall request a meeting with the Engineer within 10 days after the start of electrical construction to assure that there is agreement on the scope of work and to answer questions.
- C. The electrical foreman shall provide assistance to the Engineer during site observations:
 - 1. Describe the progress of the electrical work in detail.
 - 2. Accompany the Engineer on his tour of the site, upon request.
 - 3. Remove panel trims, junction box covers, etc. for observation of the work, upon request.
 - 4. Provide use of project drawings, specifications and shop drawings.

1.12 GUARANTEES/WARRANTIES:

- A. Refer to Division 1 of these specifications and add the following:
- B. A minimum warrantee time of one year from date of acceptance by the Engineer.
- C. The Owner reserves the right to make appropriate modifications or extensions of systems and equipment furnished under this contract during the guarantee/warranty period without "voiding" or modifying the guarantee/warranty of equipment and wiring installed under this contract. If manufacturer voids guarantee, it shall not relieve this contractor of his responsibilities for guarantee/warranty period.

1.13 MISCELLANEOUS

- A. Provide all systems complete. Drawings and Specifications form complementary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both.
- B. Although work is not specifically shown or specified, provide supplementary or miscellaneous items, appurtenances, devices and materials obviously necessary for a sound, secure and complete installation.
- C. All wiring and connections to be done with associated circuit de-energized.

PART 2 - PRODUCTS

2.01 MATERIALS - General:

- A. All materials and equipment to be new unless specifically stated otherwise.
- B. Materials and equipment shall be suitable for their intended use and for the environment in which they are installed. For example, equipment located outside shall be weatherproof and constructed of materials that will not rust. This includes brackets, screws, etc.
- C. Coordinate all dimensions to make sure that boxes, raceways, equipment, fixtures, etc., fit properly in the finished construction. If special provisions, such as shallow boxes, are required, they shall be provided at no increase in contract price, regardless of catalog numbers listed in contract documents or on shop drawings.
- D. As it is not practical to enumerate in these specifications (or show on the drawings) all details of fittings and accessory equipment required for proper operation of the various electrical systems herein described, it is understood that they will be supplied without extra compensation. Provide all fittings, terminations, relays, components of panels and equipment, etc., needed for the best performance possible at the present state-of-the-art.

2.02 EQUIPMENT BACKBOARDS

- A. Where not otherwise specified, equipment backboards shall be fire rated, exterior grade, AC grade, installed with 'A' side exposed.

PART 3 - EXECUTION

3.01 ELECTRICAL EQUIPMENT INSTALLATION

- A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components so as to allow for safe personnel movement and maintenance access.
- B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.
- D. Right of Way: Give to raceways and piping systems installed at a required slope.

3.02 LAYOUTS

- A. The electrical system layouts indicated are generally diagrammatic and locations of outlets and equipment are approximate only. Exact routing of wiring and locations of outlets and equipment shall be governed by structural conditions and obstructions. This is not to be construed to permit redesigning systems. Interconnect as shown.
- B. Locate all equipment requiring maintenance and operation so that it will be readily accessible. The right is reserved to make any reasonable change in location of outlets and equipment prior to roughing-in without involving additional expense. This may involve slightly longer wiring runs, longer stems, additional mounting provisions, etc. Allow for this in your bid because additional compensation will not be provided. Items not specifically located on the plans shall (for the purposes of bidding) be assumed to be in the farthest, most difficult location. Exact location to be as directed in the field.

3.03 ELECTRICAL SUPPORTING DEVICE APPLICATION

- A. Damp Locations and Outdoors: Hot-dip galvanized materials, slotted channel system components.
- B. Dry Locations: Steel materials.
- C. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four with, 200-lb (90-kg) minimum design load for each support element.

3.04 SEQUENCE AND BALANCE:

- A. Maintain correct phase sequence of all feeders and circuits by establishing phase identification and maintaining correct relationship throughout the system. Provide line balance within 10% of normal loads.

3.05 FIRESTOPPING

- A. Apply firestopping to cable and raceway sleeves and other penetrations of fire-rated floor and wall assemblies to restore original undisturbed fire-resistance ratings of assemblies.
- B. Penetrations through exterior surfaces shall be made watertight.

3.06 WORK INTERFERING WITH EXISTING WIRING:

- A. Make any necessary re-circuiting, extensions of existing circuits and relocations required to properly re-energize remaining existing devices or equipment that may be interfered with by new construction or removals.

3.07 CUTTING AND PATCHING

- A. Refer to Division 1 of these specifications and add the following:
- B. This trade (specification section) is responsible for its respective cutting and patching.
- C. Do not endanger any work by cutting or altering work or any part of it.

3.08 CORE DRILLING:

- A. Refer to Division 1 of these specifications and add the following:
- B. All holes through masonry surfaces must be "core drilled". This trade (specification section) is responsible for its respective core drilling, if any.
- C. Do not endanger any work by drilling or altering work or any part of it.
- D. Perform all work of core drilling to perfectly match the quality as specified throughout these specifications.

3.09 CLEANING, PAINTING AND REFINISHING:

- A. Refer to Division 1 of these specifications and add the following:
- B. Paint all new plywood backboards on all sides and edges before mounting.

- C. Thoroughly clean all new electrical equipment, devices and enclosures upon completion of all work.
- D. Refinish any new electrical equipment whose finish is damaged or rusted, as determined by the Engineer.

END OF SECTION

SECTION 260519

CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.03 QUALITY ASSURANCE

- A. 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.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.01 CONDUCTORS AND CABLES

- A. Copper Conductors only, are allowed: Comply with NEMA WC 70.
- B. Conductor Insulation: Comply with NEMA WC 70 for Types THW, THHN-THWN and XHHW.
- C. Multiconductor Cable: Comply with NEMA WC 70 for metal-clad cable, Type MC.

2.02 CONNECTORS AND SPLICES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Hubbell Power Systems, Inc.
 - 3. O-Z/Gedney; EGS Electrical Group LLC.
 - 4. 3M; Electrical Products Division.
 - 5. Tyco Electronics Corp.
 - 6. Thomas & Betts

- C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders and Branch Circuits: Copper.

- B. At terminations of devices, provide solid conductor in sizes #10 and smaller; stranded wire may be used with fork type crimp connectors or with clamp type termination on the device. Do not wrap stranded wire under screw heads. Do not use back wired devices with spring type connection.

3.02 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Exposed Feeders: Type THHN-THWN, single conductors in raceway.

- B. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

- C. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.

- D. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

3.03 INSTALLATION OF CONDUCTORS AND CABLES

- A. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

- B. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

- C. Install exposed conduits parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- D. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification."
- E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.04 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 7 Section "Through-Penetration Firestop Systems."

3.05 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test the emergency system and conductors for compliance with requirements.
 - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- C. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION

SECTION 260526

GROUNDING AND BONDING

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.03 QUALITY ASSURANCE

- A. 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.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.01 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

2.02 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, listed for use.
 - 1. Pipe Connectors: Clamp type, sized for pipe.

- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.03 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad; 3/4 inch by 10 feet.

PART 3 - EXECUTION

3.01 APPLICATIONS

- A. Conductors: Install solid conductor for No. **10** AWG and smaller, and stranded conductors for No. **8** AWG and larger, unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, No. **2/0** AWG minimum. Bury at least 24 inches (600 mm) below grade.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.02 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors in all circuits.
- B. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Bond conductor to heater units, piping, connected equipment, and components.
- C. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate insulated equipment grounding conductor. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service or at isolated ground bar in panelboard.
- D. Coordinate paragraph and subparagraphs below with Drawings and Sections for signal and communication equipment.
- E. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each Telecommunications Main Ground Bar (TMGB), and from the TMGB to each Telecommunications Ground Bar (TGB). Provide No. 6

AWG minimum insulated grounding conductor from TGB to each terminal cabinet, rack, or equipment.

1. Service Locations: Terminate grounding conductor on a TMGB.
2. Equipment Locations and Wiring Closets: Terminate grounding conductor on a TGB.
3. Terminal Cabinets, Rack or Equipment: Terminate grounding conductor on grounding terminal.

3.03 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade, unless otherwise indicated.
 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
 2. For grounding electrode system, install at least **three** rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
 3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.
- D. Grounding and Bonding for Piping:
 1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
 2. Water Meter Piping: Use bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
- E. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.

3.04 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections and prepare test reports:
 - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 - 2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells.
 - a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
- B. Report measured ground resistances that exceed the following values:
 - 1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: **10** ohms.
 - 2. Power and Lighting Equipment or System with Capacity 500 to 1000 kVA: **5** ohms.
- C. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.

1.02 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.03 SUBMITTALS

- A. Product Data: For steel slotted support systems.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.
 - 3. Equipment supports.
- C. Welding certificates

1.04 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Wesanco, Inc.
 - h. Power Strut
 - 3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - 5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 - 6. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
- 2. Mechanical-Expansion Anchors: Insert-wedge-type, [zinc-coated] [stainless] steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
- 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
- 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
- 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
- 6. Toggle Bolts: All-steel springhead type.
- 7. Hanger Rods: Threaded steel.

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 5 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.01 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity (weight bearing and raceway / cable accommodation) exceeds the current need by 25%.
 - 1. Secure raceways and cables to these supports with conduit clamps listed for the use.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.02 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
 - 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts, Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69, or Spring-tension clamps.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 5 Section "Metal Fabrications" for site-fabricated metal supports.

- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

END OF SECTION

SECTION 26 0533

RACEWAYS AND BOXES

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. See Division 2 Section "Underground Ducts and Utility Structures" for exterior ductbanks and manholes, and underground handholes, boxes, and utility construction.

1.02 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, details, and attachments to other work.

1.03 QUALITY ASSURANCE

- A. 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.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.01 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. IMC: ANSI C80.6.
- C. EMT: ANSI C80.3.
- D. FMC: Zinc-coated steel.
- E. LFMC: Flexible steel conduit with PVC jacket.

- F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
 - 2. Fittings for EMT: Steel, set-screw type or compressed type.

2.02 NONMETALLIC CONDUIT AND TUBING

- A. ENT: NEMA TC 13.
- B. RNC: NEMA TC 2, Type EPC-40-PVC unless otherwise indicated.
- C. LFNC: UL 1660.
- D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.
- E. Fittings for LFNC: UL 514B.

2.03 METAL WIREWAYS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper B-Line, Inc.
 - 2. Hoffman.
 - 3. Square D; Schneider Electric.
- C. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 3R, unless otherwise indicated.
- D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- E. Wireway Covers: Screw-cover type
- F. Finish: Manufacturer's standard enamel finish.

2.04 NONMETALLIC WIREWAYS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Hoffman.
 2. Lamson & Sessions; Carlon Electrical Products.
- C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.
- D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.05 BOXES, ENCLOSURES, AND CABINETS

- E. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- F. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- G. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- H. Nonmetallic Floor Boxes: Nonadjustable, round.
- I. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- J. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
- K. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 2. Nonmetallic Enclosures: Plastic.
- L. Cabinets:
1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 2. Hinged door in front cover with flush latch and concealed hinge.
 3. Key latch to match panelboards.
 4. Metal barriers to separate wiring of different systems and voltage.
 5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
1. Exposed Conduit: Rigid steel conduit, EMT, RNC, Type EPC-80-PVC.
 2. Concealed Conduit, Aboveground: Rigid steel conduit, EMT
 3. Underground Conduit: RNC, Type EPC-40-PVC, with 3" of concrete on all sides.
 4. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

- B. Comply with the following indoor applications, unless otherwise indicated:
 - 1. Exposed, Not Subject to Physical Damage: EMT.
 - 2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - 3. Damp or Wet Locations: Rigid steel conduit or Schedule 80.
 - 4. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, in damp or wet locations.
- C. Minimum Raceway Size: 1/2-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.02 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as specified in Division 16 Section "Electrical Supports and Seismic Restraints."
- E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- G. Raceways Embedded in Slabs:
 - 1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 - 3. Change from ENT to RNC, Type EPC-40-PVC, rigid steel conduit, or IMC before rising above the floor.
- H. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- J. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a

blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

3.03 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 7 Section "Through-Penetration Firestop Systems."

END OF SECTION

SECTION 26 0553

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Identification for conductors.
 - 2. Warning labels and signs.
 - 3. Instruction signs.
 - 4. Equipment identification labels.

1.02 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 - PRODUCTS

2.01 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

WARNING LABELS AND SIGNS

- B. Comply with NFPA 70 and 29 CFR 1910.145.
- C. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
- D. Baked-Enamel Warning Signs:
 - 1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
 - 2. 1/4-inch grommets in corners for mounting.

3. Nominal size, 7 by 10 inches.

E. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.02 EQUIPMENT IDENTIFICATION LABELS

- A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.
- B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a black background. Minimum letter height shall be 3/8 inch.

2.03 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 9 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Apply identification devices to surfaces that require finish after completing finish work.
- C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

3.02 IDENTIFICATION SCHEDULE

- A. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:

1. Emergency Power.
 2. Power.
 3. UPS.
- B. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for all conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 10 AWG.
 - b. Colors for 208/120-V Circuits:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral: White
 - 5) Ground: Green
 - 6) Isolated Ground: Green with trace ID
 - c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- C. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power:
1. Comply with 29 CFR 1910.145.
 2. Identify system voltage with black letters on an orange background.
 3. Apply to exterior of door, cover, or other access.
 4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
 - a. Power transfer switches.
 - b. Controls with external control power connections.
- D. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- E. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch high letters for emergency instructions at equipment used for power transfer or load shedding.
- F. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:

- a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on 1-1/2-inch high label; where two lines of text are required, use labels 2 inches high.

END OF SECTION

SECTION 26 12 16

LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following types of dry-type transformers rated 600 V and less.
 - 1. Distribution transformers.

1.02 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Shop Drawings: Indicate dimensions and weights.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Manufacturer Seismic Qualification Certification: Submit certification that transformers, accessories, and components will withstand seismic forces.
- D. Field quality-control test reports.
- E. Operation and maintenance data.

1.03 QUALITY ASSURANCE

- A. 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.
- B. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. ACME Electric Corporation; Power Distribution Products Division.
 - 2. Eaton Electrical Inc.; Cutler-Hammer Products.
 - 3. General Electric Company.
 - 4. Siemens Energy & Automation, Inc.
 - 5. Square D; Schneider Electric.

2.02 GENERAL TRANSFORMER REQUIREMENTS

- A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.
- B. Cores: Grain-oriented, non-aging silicon steel.
- C. Coils: Continuous windings without splices except for taps.
 - 1. Internal Coil Connections: Brazed or pressure type.
 - 2. Coil Material: Copper.

2.03 DISTRIBUTION TRANSFORMERS

- A. Comply with NEMA ST 20, and list and label as complying with UL 1561.
- B. Provide transformers that are constructed to withstand seismic forces specified in Division 16 Section "Electrical Supports and Seismic Restraints."
- C. Cores: One leg per phase.
- D. Indoor Enclosures: Ventilated, NEMA 250, Type 2.
 - 1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
- E. Transformer Enclosure Finish: Comply with NEMA 250.
 - 1. Finish Color: Gray
- F. Taps for Transformers Smaller Than 15 kVA: None.
- G. Taps for Transformers 15 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.
- H. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity.
- I. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 115 deg C rise above 40 deg C ambient temperature.
- J. Energy Efficiency for Transformers Rated 15 kVA and Larger:
 - 1. Complying with NEMA TP 1, Class 1 efficiency levels.
 - 2. Tested according to NEMA TP 2.
- K. K-Factor Rating: Transformers indicated to be K-factor rated shall comply with UL 1561 requirements for nonsinusoidal load current-handling capability to the degree defined by designated K-factor.
 - 1. Unit shall not overheat when carrying full-load current with harmonic distortion corresponding to designated K-factor.
 - 2. Indicate value of K-factor on transformer nameplate.

2.04 IDENTIFICATION DEVICES

- A. Nameplates: Engraved, laminated-plastic or metal nameplate. Nameplates are specified in Section 260553 Section "Electrical Identification."

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install wall-mounting transformers level and plumb with wall brackets fabricated by transformer manufacturer.
 - 1. Brace wall-mounting transformers as specified in Division 16 Section "Electrical Supports and Seismic Restraints."
- B. Construct concrete bases and anchor floor-mounting transformers according to manufacturer's written instructions, seismic codes applicable to Project, and requirements in Division 16 Section "Electrical Supports and Seismic Restraints."

3.02 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3.03 ADJUSTING

- A. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.

END OF SECTION

SECTION 26 2416

PANELBOARDS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.02 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
 - 1. 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."

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Include evidence of NRTL listing for series rating of installed devices.
 - 6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 7. Include wiring diagrams for power, signal, and control wiring.
 - 8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.
- C. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Division 16 Section "Vibration and Seismic Controls for Electrical Systems."
- D. Field quality-control reports.
- E. Panelboard schedules for installation in panelboards.
- F. Operation and maintenance data.

1.04 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NEMA PB 1.
- C. Comply with NFPA 70.

1.05 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 16 Section "Vibration and Seismic Controls for Electrical Systems."
- B. Enclosures: Surface-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1
 - b. Basement Locations: NEMA 250, Type 3R.
 - c. Kitchen Areas: NEMA 250, Type 4X.
 - 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
 - 3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 - 4. Directory Card: Inside panelboard door, mounted in transparent card holder.
 - 5. Type load type and location.
- C. Incoming Mains Location: Top and bottom.
- D. Phase, Neutral, and Ground Buses: Tin-plated aluminum
- E. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Hard-drawn copper, 98 percent conductivity.
 - 2. Main and Neutral Lugs: Compression type.
 - 3. Ground Lugs and Bus Configured Terminators: Compression type.
 - 4. Feed-Through Lugs: Compression type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
 - 5. Subfeed (Double) Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
- F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.
- G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.02 DISTRIBUTION PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer
2. General Electric Company
3. Siemens
4. Square D

- B. Panelboards: NEMA PB 1, power and feeder distribution type.
- C. Doors: Secured with vault-type latch with tumbler lock; keyed alike; hinged door and trim.
- D. Branch Overcurrent Protective Devices: Bolt on or Square D I-Line or equal.

2.03 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer
 2. General Electric Company
 3. Siemens
 4. Square D
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- D. Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.
1. External Control-Power Source: 120-V branch circuit.
- E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike; door in door hinged trim.

2.04 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer
 2. General Electric Company
 3. Siemens
 4. Square D
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
 3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:
 - a. Instantaneous trip.
 - b. Long- and short-time pickup levels.
 - c. Long- and short-time time adjustments.
 - d. Ground-fault pickup level, time delay, and I^2t response.

4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
5. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
6. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
7. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
8. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Compression or Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
 - d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 - e. Communication Capability: Communication module with functions and features compatible with power monitoring and control system specified in Division 16 Section "Electrical Power Monitoring and Control."
 - f. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.
 - g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Receive, inspect, handle, store and install panelboards and accessories according to NECA 407.
- B. Comply with mounting and anchoring requirements specified in Division 16 Section "Vibration and Seismic Controls for Electrical Systems."
- C. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- D. Install overcurrent protective devices and controllers not already factory installed.
 1. Set field-adjustable, circuit-breaker trip ranges.
- E. Install filler plates in unused spaces.
- F. Stub four 1-inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future.
- G. Arrange conductors in gutters into groups and bundle with tie wraps.
- H. Comply with NECA 1.

3.02 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 16 Section "Electrical Identification."

- B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 16 Section "Electrical Identification."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 16 Section "Electrical Identification."

3.03 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test each panelboard bus, component, connecting supply, feeder, and control circuit for shorts and grounds.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Report any unsatisfactory results to engineer.

END OF SECTION

SECTION 26 3213

ENGINE GENERATORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes packaged engine-generator sets for standby power supply with the following features:

1. Natural Gas engine.
2. Unit-mounted cooling system.
3. Unit-mounted control and monitoring.
4. Outdoor enclosure.

- B. References and Standards

The generator set covered by these specifications shall be designed, tested, rated, assembled and installed in strict accordance with all applicable standards below:

- CSA C22.2 No14
- CSA 282
- CSA 100
- EN61000-6
- EN55011
- FCC Part 15 Subpart B
- ISO8528
- IEC61000
- UL508
- UL2200
- UL142
- Designed to allow for installed compliance to NFPA 70, NFPA99 and NFPA 110

- C. Related Sections include the following:

1. Division 260000 Section "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.
2. Division 030000 – Concrete
3. Division 220000 – Natural Gas Piping.

1.03 WORK INCLUDED

- A. Installation: The work includes supplying and installing a complete integrated generator system. The system consists of a natural gas generator set with related component accessories and automatic transfer switches specified under a separate section.

- B. System Test: A complete system load test shall be performed after all equipment is installed. Guidelines in the Start-up Section.
- C. Requirements, Codes and Regulations: The equipment supplied and installed shall meet the requirements of the NEC and all applicable local codes and regulations. All equipment shall be of new and current production by a MANUFACTURER who has 25 years of experience building this type of equipment. Manufacturer shall be ISO9001 certified.

1.04 SUBMITTALS

- A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:
 - 1. Thermal damage curve for generator.
 - 2. Time-current characteristic curves for generator protective device.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
 - 2. Design Calculations: Signed and sealed by a qualified professional engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 - 3. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
 - 4. Wiring Diagrams: Power, signal, and control wiring.
 - 5. Concrete pad recommendation, layout and stub-up locations.
- C. Manufacturer Seismic Qualification Certification: Submit certification that engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." 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."
 - b. 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 and testing agency.

- E. Source quality-control test reports.
 - 1. Certified summary of prototype-unit test report.
 - 2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
 - 3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
 - 4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
 - 5. Report of sound generation.
 - 6. Report of exhaust emissions showing compliance with applicable regulations.
 - 7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.
- F. Field quality-control test reports.
- G. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
- H. Warranty: Special warranty specified in this Section.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
 - 1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
 - 2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within [200 miles (321 km)] of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.
- C. Source Limitations: Obtain packaged generator sets and auxiliary components 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 ASME B15.1.
- F. Comply with NFPA 37.
- G. Comply with NFPA 70.

- H. Comply with NFPA 99.
- I. Comply with NFPA 110 requirements for Level 1 emergency power supply system.
- J. Comply with UL 2200.
- K. Engine Exhaust Emissions: Comply with applicable state and local government requirements.
- L. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

1.06 PROJECT 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)].

1.07 COORDINATION

- A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.08 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.

1.09 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

1.10 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 10 of each type and rating, but no fewer than one of each.
 - 2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
 - 3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Caterpillar or a comparable product by one of the following:
1. Cummings.
 2. Generac Power Systems, Inc.
 3. Kohler Co.; Generator Division.

2.02 ENGINE-GENERATOR SET

- A. General Specifications: The synchronous three phase generator shall be a single bearing, self-ventilated, drip-proof design in accordance with NEMA MG 1 and directly connected to the engine flywheel housing with a flex coupling. The generator shall meet performance class G2 of ISO 8528. The excitation system shall enable the alternator to sustain 300% (250% for 50Hz) of rated current based on the 125C (Class H) or 105C (Class F) rise rating for ten seconds during a fault condition and shall improve the immunity of the voltage regulator to non-linear distorting loads. The excitation system shall be of brushless construction and be independent of main stator windings (either permanent magnet or auxiliary windings).
- B. 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 three phases of alternator output voltage, or operating in 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. The voltage regulator shall include standard the capability to provide generator paralleling with reactive droop compensation and reactive differential compensation.
- The voltage regulator shall communicate with the Generator Control Panel via a J1939 communication network with generator voltage adjustments made via the 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 available to allow viewing and modifying operating parameters in a windows compatible environment.
- C. Motor Starting: Provide locked rotor motor starting capability of 560 skVA at 30% instantaneous voltage dip as defined per NEMA MG 1. Sustained voltage dip data is not acceptable.
- D. Circuit Breaker Specifications: Provide a generator mounted 80% rated circuit breakers, molded case, 350 amp trip, 3 pole, NEMA 1/IP22. Breaker shall utilize a solid state trip unit. The breaker shall be UL/CSA Listed and connected to engine/generator safety shutdowns. Breakers shall be housed in an extension terminal box which is isolated from vibrations induced by the generator set. Mechanical type lugs, sized for the circuit breaker feeders shown on drawing, shall be supplied on the load side of breaker.
- E. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.

4. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.

F. Generator-Set Performance for Sensitive Loads:

1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.
 - a. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.
2. Steady-State Voltage Operational Bandwidth: 1 percent of rated output voltage from no load to full load.
3. Transient Voltage Performance: Not more than 10 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 0.5 second.
4. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.
5. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
6. Transient Frequency Performance: Less than 2-Hz variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within three seconds.
7. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
8. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.
9. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.
 - a. Provide permanent magnet excitation for power source to voltage regulator.
10. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.03 ENGINE

- A. Genset Requirements: The generator set shall be Standby Duty rated at 175.0 kW, 219 kVA, 1800 RPM, 0.8 power factor, 480 V, 3-Phase, 4 wire Y, 60 hertz, including radiator fan and all parasitic loads. Generator set shall be sized to operate at the specified load at a maximum ambient of 104 F (40 C) and altitude of 500.0 feet (152.4 m).
- B. Material and Parts: All materials and parts comprising the unit shall be new and unused.

The engine shall be natural gas fueled, four (4) cycle, water-cooled, while operating with nominal speed not exceeding 1800 RPM. The engine will utilize in-cylinder combustion technology, as required, to meet applicable EPA non-road mobile regulations and/or the EPA NSPS rule for stationary reciprocating compression ignition engines. Additionally, the engine shall comply with the

State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178 – D2 Emissions Cycle at specified kW / bHP rating. Utilization of the “Transition Program for Equipment Manufacturers” (also known as “Flex Credits”) to achieve EPA certification is not acceptable. The in-cylinder engine technology must not permit unfiltered exhaust gas to be introduced into the combustion cylinder. Emissions requirements / certifications of this package: EPA T4 Interim

- C. Rated Engine Speed: 1800 rpm.
- D. Maximum Piston Speed for Four-Cycle Engines: 1275 fpm (11.4 m/s).
- E. Lubrication System: The following items are mounted on engine or skid:
 - 1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
 - 2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
 - 3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.
- F. Engine Fuel System:
 - 1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
 - 2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
- G. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.
- H. Governor: Adjustable isochronous, with speed sensing.
- I. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.
 - 1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
 - 2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
 - 3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
 - 4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
 - 5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
 - a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and non collapsible under vacuum.

- b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.
- J. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
- K. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.
- L. Starting System: 24-V electric, with negative ground.
- 1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
 - 2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
 - 3. Cranking Cycle: As required by NFPA 110 for system level specified.
 - 4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least three times without recharging.
 - 5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
 - 6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation.
 - 7. Thermostatically controlled heater: arrange to maintain battery above 10 deg C regardless of external ambient temperature within range specified in Part 1 "Project Conditions" Article.
 - 8. Include accessories required to support and fasten batteries in place.
 - 9. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
 - 10. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and 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 shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
 - b. Automatic Temperature Compensation: Adjust float and equalize 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: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
 - d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
 - e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
 - f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.04 CONTROL AND MONITORING

- A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
- B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
- C. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.
- D. Indicating and Protective Devices and Controls:
 - 1. AC voltmeter.
 - 2. AC ammeter.
 - 3. AC frequency meter.
 - 4. DC voltmeter (alternator battery charging).
 - 5. Engine-coolant temperature gage.
 - 6. Engine lubricating-oil pressure gage.
 - 7. Running-time meter.
 - 8. Ammeter-voltmeter, phase-selector switch(es).
 - 9. Generator-voltage adjusting rheostat.
 - 10. Start-stop switch.
 - 11. Over speed shutdown device.
 - 12. Coolant high-temperature shutdown device.
 - 13. Coolant low-level shutdown device.
 - 14. Oil low-pressure shutdown device.
 - 15. Fuel tank derangement alarm.
 - 16. Fuel tank high-level shutdown of fuel supply alarm.
 - 17. Generator overload.
- E. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.
- F. Connection to Data Link: A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals are covered in Division 26 Section "Electrical Power Monitoring and Control."
- G. Common Remote Audible Alarm: Signal the occurrence of any events listed below without differentiating between event types. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.

1. Engine high-temperature shutdown.
2. Lube-oil, low-pressure shutdown.
3. Over speed shutdown.
4. Remote emergency-stop shutdown.
5. Engine high-temperature pre alarm.
6. Lube-oil, low-pressure pre alarm.
7. Fuel tank, low-fuel level.
8. Low coolant level.

- H. Remote Alarm Annunciator: Comply with NFPA 99. An LED labeled with proper alarm conditions shall identify each alarm event and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.
- I. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.05 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Circuit Breakers, provide sizes as indicated on drawings: Molded-case, thermal-magnetic type; 80 percent rated; complying with NEMA AB 1 and UL 489.
1. Tripping Characteristic: Designed specifically for generator protection.
 2. Trip Rating: Matched to generator rating.
 3. Mounting: Adjacent to or integrated with control and monitoring panel.

2.06 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

- A. Comply with NEMA MG 1.
- B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- C. Electrical Insulation: Class H or Class F.
- D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.
- E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, over speed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- F. Enclosure: Drip proof.
- G. Instrument Transformers: Mounted within generator enclosure.
- H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.
1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.

- I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- K. Sub transient Reactance: 12 percent, maximum.

2.07 OUTDOOR GENERATOR-SET ENCLOSURE

- A. Description: Vandal-resistant, weatherproof steel housing, wind resistant up to 100 mph (160 km/h). Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.
- B. Description: Prefabricated or pre-engineered sound attenuated enclosure with the following features:
 - 1. Construction: Galvanized-steel, metal-clad, integral structural-steel-framed building erected on concrete foundation.
 - 2. Structural Design and Anchorage: Comply with ASCE 7 for wind loads.
 - 3. Space Heater: Thermostatically controlled and sized to prevent condensation.
 - 4. Louvers: Equipped with bird screen and filter arranged to permit air circulation when engine is not running while excluding exterior dust, birds, and rodents.
 - 5. Hinged Doors: With padlocking provisions.
 - 6. Ventilation: Louvers equipped with bird screen and filter arranged to permit air circulation while excluding exterior dust, birds, and rodents.
 - 7. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine-generator-set components.
 - 8. Muffler Location: External to enclosure.
- C. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.
 - 1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
 - 2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.
- D. Interior Lights with Switch: Factory-wired, vapor proof-type fixtures within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.
 - 1. AC lighting system and connection point for operation when remote source is available.
- E. Convenience Outlets: Factory wired, GFCI. Arrange for external electrical connection.

2.08 VIBRATION ISOLATION DEVICES

- A. Elastomeric Isolator Pads: Oil- and water-resistant elastomer arranged in multiple layers, molded with a nonslip pattern and galvanized-steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.

1. Material: Bridge-bearing neoprene, complying with AASHTO M 251.
2. Durometer Rating: 50.
3. Number of Layers: Three.

2.09 FINISHES

- A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.10 SOURCE QUALITY CONTROL

- A. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:
 1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
 2. Full load run.
 3. Maximum power.
 4. Voltage regulation.
 5. Transient and steady-state governing.
 6. Single-step load pickup.
 7. Safety shutdown.
 8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
 9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.
- B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.
- B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.
- C. Install packaged engine generator with elastomeric isolator pads having a minimum deflection of 1 inch (25 mm) on 4-inch- (100-mm-) high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

- D. Install Schedule 40, black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet. Flexible connectors and steel piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."
 - 1. Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40, black steel pipe with welded joints. Flexible connectors and piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."
- E. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.03 CONNECTIONS

- A. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.
- B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.
- C. Connect engine exhaust pipe to engine with flexible connector.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.04 IDENTIFICATION

- A. Identify system components according to Division 26 Section "Identification for Electrical Systems."

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- C. Perform tests and inspections and prepare test reports.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections:
 - 1. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test.

2. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
 - a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
 - b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
 - c. Verify acceptance of charge for each element of the battery after discharge.
 - d. Verify that measurements are within manufacturer's specifications.
 3. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
 4. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
 5. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120 kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
 6. Exhaust Emissions Test: Comply with applicable government test criteria.
 7. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
 8. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
 9. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at [four] <Insert number> locations [on the property line] <Insert location for measurement>, and compare measured levels with required values.
- E. Coordinate tests with tests for transfer switches and run them concurrently.
- F. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.
- G. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
- H. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
- I. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- J. Remove and replace malfunctioning units and retest as specified above.
- K. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

- L. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

3.06 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 01 Section "Demonstration and Training."

3.07 OPERATION AND MAINTENANCE MANUALS

- A. Provide two (2) sets of operation and maintenance manuals covering the generator, switchgear, and auxiliary components. Include final as-built wiring interconnect diagrams and recommended preventative maintenance schedules.

END OF SECTION

SECTION 263214

DIESEL ENGINE GENERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section TO BE INCLUDED IN Alternate #1 instead of natural gas generator specified in Section 263213:

1. Diesel engine.
2. Unit-mounted cooling system.
3. Unit-mounted control and monitoring.
4. Load banks.
5. Outdoor enclosure.
6. 48 hour base mounted fuel tank.

- B. References and Standards

The generator set covered by these specifications shall be designed, tested, rated, assembled and installed in strict accordance with all applicable standards below:

- CSA C22.2 No14
- CSA 282
- CSA 100
- EN61000-6
- EN55011
- FCC Part 15 Subpart B
- ISO8528
- IEC61000
- UL508
- UL2200
- UL142
- Designed to allow for installed compliance to NFPA 70, NFPA99 and NFPA 110

- C. Related Sections include the following:

1. Division 263600 Section "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.
2. Division 030000 - Concrete

1.3 WORK INCLUDED

- A. Installation: The work includes supplying and installing a complete integrated generator system. The system consists of a diesel generator set with related component accessories and automatic transfer switches specified under a separate section.
- B. Fuel System: The CONTRACTOR shall provide a full tank of diesel fuel for the completion of all testing. Once testing is complete contractor shall provide a full tank of diesel fuel.
- C. System Test: A complete system load test shall be performed after all equipment is installed. Guidelines in the Start-up Section.
- D. Requirements, Codes and Regulations: The equipment supplied and installed shall meet the requirements of the NEC and all applicable local codes and regulations. All equipment shall be of new and current production by a MANUFACTURER who has 25 years of experience building this type of equipment. Manufacturer shall be ISO9001 certified.

1.4 SUBMITTALS

- A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:
 - 1. Thermal damage curve for generator.
 - 2. Time-current characteristic curves for generator protective device.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
 - 2. Design Calculations: Signed and sealed by a qualified professional engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 - 3. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
 - 4. Wiring Diagrams: Power, signal, and control wiring.
 - 5. Concrete pad recommendation, layout and stub-up locations.
- C. Manufacturer Seismic Qualification Certification: Submit certification that [day tank,] engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." 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."

- b. 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 and testing agency.
- E. Source quality-control test reports.
1. Certified summary of prototype-unit test report.
 2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
 3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
 4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
 5. Report of sound generation.
 6. Report of exhaust emissions showing compliance with applicable regulations.
 7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.
- F. Field quality-control test reports.
- G. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
- H. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
 2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within [200 miles (321 km)] of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

- C. Source Limitations: Obtain packaged generator sets and auxiliary components 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 ASME B15.1.
- F. Comply with NFPA 37.
- G. Comply with NFPA 70.
- H. Comply with NFPA 99.
- I. Comply with NFPA 110 requirements for Level 1 emergency power supply system.
- J. Comply with UL 2200.
- K. Engine Exhaust Emissions: Comply with applicable state and local government requirements.
- L. Noise Emission: Comply with [applicable state and local government requirements] <Insert Project criteria> for maximum noise level at [adjacent property boundaries] <Insert critical locations> due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

1.6 PROJECT 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)].
- B. Unusual Service Conditions: Engine-generator equipment and installation are required to operate under the following conditions:

1.7 COORDINATION

- A. Coordinate size and location of concrete bases for package engine generators[and remote radiators mounted on grade]. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- B. Coordinate size and location of roof curbs, equipment supports, and roof penetrations for remote radiators. These items are specified in Division 07 Section "Roof Accessories."

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

1.10 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 10 of each type and rating, but no fewer than one of each.
 2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
 3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: Subject to compliance with requirements, provide Caterpillar a comparable product by one of the following:
 1. Cummings
 2. Generac Power Systems, Inc.
 3. Kohler Co.; Generator Division.

2.2 ENGINE-GENERATOR SET

- A. General Specifications: The synchronous three phase generator shall be a single bearing, self-ventilated, drip-proof design in accordance with NEMA MG 1 and directly connected to the engine flywheel housing with a flex coupling. The generator shall meet performance class G2 of ISO 8528. The excitation system shall enable the alternator to sustain 300% (250% for 50Hz) of rated current based on the 125C (Class H) or 105C (Class F) rise rating for ten seconds during a fault condition and shall improve the immunity of the voltage regulator to non-linear distorting loads. The excitation system shall be of brushless construction and be independent of main stator windings (either permanent magnet or auxiliary windings).
- B. 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 three phases of alternator output voltage, or operating

in 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. The voltage regulator shall include standard the capability to provide generator paralleling with reactive droop compensation and reactive differential compensation.

The voltage regulator shall communicate with the Generator Control Panel via a J1939 communication network with generator voltage adjustments made via the 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 available to allow viewing and modifying operating parameters in a windows compatible environment.

- C. Motor Starting: Provide locked rotor motor starting capability of 560 skVA at 30% instantaneous voltage dip as defined per NEMA MG 1. Sustained voltage dip data is not acceptable.
- D. Circuit Breaker Specifications: Provide a generator mounted 80% rated circuit breaker, molded case, 350 amp trip, 3 pole, NEMA 1/IP22. Breaker shall utilize a solid state trip unit. The breaker shall be UL/CSA Listed and connected to engine/generator safety shutdowns. Breaker shall be housed in an extension terminal box which is isolated from vibrations induced by the generator set. Mechanical type lugs, sized for the circuit breaker feeders shown on drawing, shall be supplied on the load side of breaker.
- E. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.
 - 1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.
- F. Generator-Set Performance for Sensitive Loads:
 - 1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.
 - a. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.
 - 2. Steady-State Voltage Operational Bandwidth: 1 percent of rated output voltage from no load to full load.
 - 3. Transient Voltage Performance: Not more than 10 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 0.5 second.
 - 4. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.
 - 5. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
 - 6. Transient Frequency Performance: Less than 2-Hz variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within three seconds.

7. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
8. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.
9. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.
 - a. Provide permanent magnet excitation for power source to voltage regulator.
10. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

- A. Genset Requirements: The generator set shall be Standby Duty rated at 175.0 ekW, 219 kVA, 1800 RPM, 0.8 power factor, 120/208 V, 3-Phase, 4 wire Delta, 60 hertz, including radiator fan and all parasitic loads. Generator set shall be sized to operate at the specified load at a maximum ambient of 77F (25.0C) and altitude of 500.0 feet (152.4 m).
- B. Material and Parts: All materials and parts comprising the unit shall be new and unused.

The engine shall be diesel fueled, four (4) cycle, water-cooled, while operating with nominal speed not exceeding 1800 RPM. The engine will utilize in-cylinder combustion technology, as required, to meet applicable EPA non-road mobile regulations and/or the EPA NSPS rule for stationary reciprocating compression ignition engines. Additionally, the engine shall comply with the State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178 – D2 Emissions Cycle at specified ekW / bHP rating. Utilization of the “Transition Program for Equipment Manufacturers” (also known as “Flex Credits”) to achieve EPA certification is not acceptable. The in-cylinder engine technology must not permit unfiltered exhaust gas to be introduced into the combustion cylinder. Emissions requirements / certifications of this package: EPA T4 Interim

- C. Rated Engine Speed: 1800 rpm.
- D. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm (11.4 m/s).
- E. Lubrication System: The following items are mounted on engine or skid:
 1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
 2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
 3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.
- F. Engine Fuel System:
 1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.

2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
- G. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.
- H. Governor: Adjustable isochronous, with speed sensing.
- I. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.
 1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
 2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
 3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
 4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
 5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
 - a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and noncollapsible under vacuum.
 - b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.
- J. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
- K. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.
- L. Starting System: 24-V electric, with negative ground.
 1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
 2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
 3. Cranking Cycle: 60 seconds.
 4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least three times without recharging.
 5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
 6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation.
 7. Thermostatically controlled heater: arrange to maintain battery above 10 deg C regardless of external ambient temperature within range specified in Part 1 "Project Conditions" Article.
 8. Include accessories required to support and fasten batteries in place.

9. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
10. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and 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 shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
 - b. Automatic Temperature Compensation: Adjust float and equalize 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: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
 - d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
 - e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
 - f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.4 FUEL OIL STORAGE

- A. Comply with NFPA 30.
- B. Base-Mounted Fuel Oil Tank: Factory installed and piped, complying with UL 142 fuel oil tank. Features include the following:
 1. Tank level indicator.
 2. Capacity: Fuel for 48 hours' continuous operation at 100 percent rated power output.
 3. Vandal-resistant fill cap.
 4. Containment Provisions: Comply with requirements of authorities having jurisdiction.
 5. Mechanical reading fuel gauge.
 6. Low fuel level alarm contact.
 7. Fuel tank rupture alarm contact.

2.5 CONTROL AND MONITORING

- A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
- B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or

derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

- C. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.
- D. Indicating and Protective Devices and Controls:
1. AC voltmeter.
 2. AC ammeter.
 3. AC frequency meter.
 4. DC voltmeter (alternator battery charging).
 5. Engine-coolant temperature gage.
 6. Engine lubricating-oil pressure gage.
 7. Running-time meter.
 8. Ammeter-voltmeter, phase-selector switch(es).
 9. Generator-voltage adjusting rheostat.
 10. Start-stop switch.
 11. Overspeed shutdown device.
 12. Coolant high-temperature shutdown device.
 13. Coolant low-level shutdown device.
 14. Oil low-pressure shutdown device.
 15. Fuel tank derangement alarm.
 16. Fuel tank high-level shutdown of fuel supply alarm.
 17. Generator overload.
- E. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.
- F. Connection to Data Link: A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals are covered in Division 26 Section "Electrical Power Monitoring and Control."
- G. Common Remote Audible Alarm: Signal the occurrence of any events listed below without differentiating between event types. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.
1. Engine high-temperature shutdown.
 2. Lube-oil, low-pressure shutdown.
 3. Overspeed shutdown.
 4. Remote emergency-stop shutdown.
 5. Engine high-temperature prealarm.
 6. Lube-oil, low-pressure prealarm.
 7. Fuel tank, low-fuel level.
 8. Low coolant level.
- H. Remote Alarm Annunciator: Comply with NFPA 99. An LED labeled with proper alarm conditions shall identify each alarm event and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until

silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

- I. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Circuit Breaker: Molded-case, thermal-magnetic type; 100 percent rated; complying with NEMA AB 1 and UL 489.
 1. Tripping Characteristic: Designed specifically for generator protection.
 2. Trip Rating: Matched to generator rating.
 3. Mounting: Adjacent to or integrated with control and monitoring panel.

2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

- A. Comply with NEMA MG 1.
- B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- C. Electrical Insulation: Class H or Class F.
- D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.
- E. 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.
- F. Enclosure: Dripproof.
- G. Instrument Transformers: Mounted within generator enclosure.
- H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.
 1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.
- I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- K. Subtransient Reactance: 12 percent, maximum.

2.8 OUTDOOR GENERATOR-SET ENCLOSURE

- A. Description: Vandal-resistant, weatherproof steel housing, wind resistant up to 100 mph (160 km/h). Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

- B. Description: Prefabricated or preengineered walk-in enclosure with the following features:
1. Construction: Galvanized-steel, metal-clad, integral structural-steel-framed building erected on concrete foundation.
 2. Structural Design and Anchorage: Comply with ASCE 7 for wind loads.
 3. Space Heater: Thermostatically controlled and sized to prevent condensation.
 4. Louvers: Equipped with bird screen and filter arranged to permit air circulation when engine is not running while excluding exterior dust, birds, and rodents.
 5. Hinged Doors: With padlocking provisions.
 6. Ventilation: Louvers equipped with bird screen and filter arranged to permit air circulation while excluding exterior dust, birds, and rodents.
 7. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine-generator-set components.
 8. Muffler Location: External to enclosure.
- C. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.
1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
 2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.
- D. Interior Lights with Switch: Factory-wired, vaporproof-type fixtures within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.
1. AC lighting system and connection point for operation when remote source is available.
- E. Convenience Outlets: Factory wired, GFCI. Arrange for external electrical connection.

2.9 VIBRATION ISOLATION DEVICES

- A. Elastomeric Isolator Pads: Oil- and water-resistant elastomer arranged in multiple layers, molded with a nonslip pattern and galvanized-steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.
1. Material: Bridge-bearing neoprene, complying with AASHTO M 251.
 2. Durometer Rating: 50.
 3. Number of Layers: Three.

2.10 FINISHES

- A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.11 SOURCE QUALITY CONTROL

- A. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Full load run.
3. Maximum power.
4. Voltage regulation.
5. Transient and steady-state governing.
6. Single-step load pickup.
7. Safety shutdown.
8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.
- B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.
- B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.
- C. Install packaged engine generator with elastomeric isolator pads having a minimum deflection of 1 inch (25 mm) on 4-inch- (100-mm-) high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- D. Install Schedule 40, black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet. Flexible connectors and steel piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."
 1. Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40, black steel pipe with welded joints. Flexible connectors and piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."
- E. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.
- B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.
- C. Connect engine exhaust pipe to engine with flexible connector.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.4 IDENTIFICATION

- A. Identify system components according to Division 26 Section "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- C. Perform tests and inspections and prepare test reports.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections:
 - 1. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test.
 - 2. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
 - a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
 - b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
 - c. Verify acceptance of charge for each element of the battery after discharge.
 - d. Verify that measurements are within manufacturer's specifications.
 - 3. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.

4. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
 5. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120 kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
 6. Exhaust Emissions Test: Comply with applicable government test criteria.
 7. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
 8. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
- E. Coordinate tests with tests for transfer switches and run them concurrently.
- F. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.
- G. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
- H. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
- I. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- J. Remove and replace malfunctioning units and retest as specified above.
- K. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.
- L. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- 3.6 DEMONSTRATION
- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 01 Section "Demonstration and Training."
- 3.7 OPERATION AND MAINTENANCE MANUALS
- A. Provide two (2) sets of operation and maintenance manuals covering the generator, switchgear, and auxiliary components. Include final as-built wiring interconnect diagrams and recommended preventative maintenance schedules.

END OF SECTION 263214

SECTION 263600
TRANSFER SWITCHES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes transfer switches rated 600 V and less, including the following:
 - 1. Automatic transfer switches.

1.03 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 transfer switch, bypass/isolation switch, power sources, and load; and show interlocking provisions for each combined transfer switch and bypass/isolation switch.
- C. Qualification Data: For manufacturer.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Features and operating sequences, both automatic and manual.
 - 2. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

1.04 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.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Contactor Transfer Switches:
 - a. Caterpillar; Engine Div.
 - b. Emerson; ASCO Power Technologies, LP.
 - c. Generac Power Systems, Inc.
 - d. Russelectric, Inc.

2.02 AUTOMATIC TRANSFER SWITCHES

- A. Comply with Level 1 equipment according to NFPA 110.
- B. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning, unless otherwise indicated.
- C. Manual Switch Operation: Under load, with door closed and with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.
- D. Manual Switch Operation: Unloaded. Control circuit automatically disconnects from electrical operator during manual operation.
- E. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval is adjustable from 1 to 30 seconds.
- F. Digital Communication Interface: Matched to capability of remote annunciator or annunciator and control panel.
- G. 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. 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.
10. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
11. Engine Shutdown Contacts: Instantaneous; shall initiate shutdown sequence at remote engine-generator controls after retransfer of load to normal source.
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 starts 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 are 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.

2.03 REMOTE ANNUNCIATOR SYSTEM

- A. Functional Description: Remote annunciator panel shall annunciate conditions for indicated transfer switches. Annunciation shall include the following:
 1. Sources available, as defined by actual pickup and dropout settings of transfer-switch controls.
 2. Switch position.
 3. Switch in test mode.
 4. Failure of communication link.

2.04 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

3.01 INSTALLATION

- A. Design each fastener and support to carry load indicated by seismic requirements and according to seismic-restraint details. See Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- B. Annunciator and Control Panel Mounting: Surface on wall, provide plywood mounting backboard.
- C. Identify components according to Division 26 Section "Identification for Electrical Systems."
- D. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

3.02 CONNECTIONS

- A. Wiring to Remote Components: Match type and number of cables and conductors to control and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.
- B. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- C. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.03 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- B. Perform tests and inspections and prepare test reports.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installation, including connections, and to assist in testing.
 - 2. After installing equipment and after electrical circuitry has been energized, test for compliance with requirements.
 - 3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.
 - a. Check for electrical continuity of circuits and for short circuits.
 - b. Inspect for physical damage, proper installation and connection, and integrity of barrier, covers, and safety features.

- c. Verify that manual transfer warnings are properly placed.
 - d. Perform manual transfer operation.
5. After energizing circuits, demonstrate interlocking sequence and operational function for each switch at least three times.
- a. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
 - b. Simulate loss of phase-to-ground voltage for each phase of normal source.
 - c. Verify time-delay settings.
 - d. Verify pickup and dropout voltages by data readout or inspection of control settings.
 - e. Test bypass/isolation unit functional modes and related automatic transfer-switch operations.
 - f. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for 1 pole deviating by more than 50 percent from other poles.
 - g. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.
6. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.
- a. Verify grounding connections and locations and ratings of sensors.
- C. Coordinate tests with tests of generator and run them concurrently.
- D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- E. Remove and replace malfunctioning units and retest as specified above.

3.04 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment as specified below. Refer to Division 01 Section "Demonstration and Training."
- B. Coordinate this training with that for generator equipment.

END OF SECTION

**SECTION 32 1216
ASPHALT PAVING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Aggregate base course under repaired areas.
- B. Double course bituminous concrete paving, repair and patching.

1.02 RELATED REQUIREMENTS

- A. See drawings for extent of area to be removed and repaired after trenching for utilities.

1.03 REFERENCE STANDARDS

- A. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types; The Asphalt Institute; 1997.
- B. RI DOT paving standards for heavy truck traffic.

1.04 PERFORMANCE REQUIREMENTS

- A. Design paving and subbase at [repaired areas] for movement of trucks up to 30,000 lbs (13 600 kg).

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Rhode Island Highways standard.
- B. Mixing Plant: Conform to State of Rhode Island Highways standard.
- C. Obtain materials from same source throughout.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for paving work on public property.

1.07 FIELD CONDITIONS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F (4 degrees C), or surface is wet or frozen.
- B. Place bitumen mixture when temperature is not more than 15 F degrees (8 C degrees) below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Aggregate for Base Course: In accordance with State of Rhode Island Highways standards.

2.02 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Base Course: State of Rhode Island Highways standards.
- B. Wearing Course: State of Rhode Island Highways standards.
- C. Submit proposed mix design of each class of mix for review prior to beginning of work.

2.03 SOURCE QUALITY CONTROL**PART 3 EXECUTION****3.01 BASE COURSE**

- A. Place and compact base course.

3.02 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions.
- B. Apply primer on aggregate base or subbase at uniform rate of 1/3 gal/sq yd (1.5 L/sq m).
- C. Use clean sand to blot excess primer.

3.03 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with manufacturer's instructions.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd (1.5 L/sq m).

3.04 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Place asphalt binder course within 24 hours of applying primer or tack coat.
- B. Place wearing course within two hours of placing and compacting binder course.
- C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.05 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch (6 mm) measured with 10 foot (3 m) straight edge.
- B. Variation from True Elevation: Within 1/2 inch (12 mm).

3.06 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for quality control.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.

3.07 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for three days or until surface temperature is less than 140 degrees F (60 degrees C).

END OF SECTION

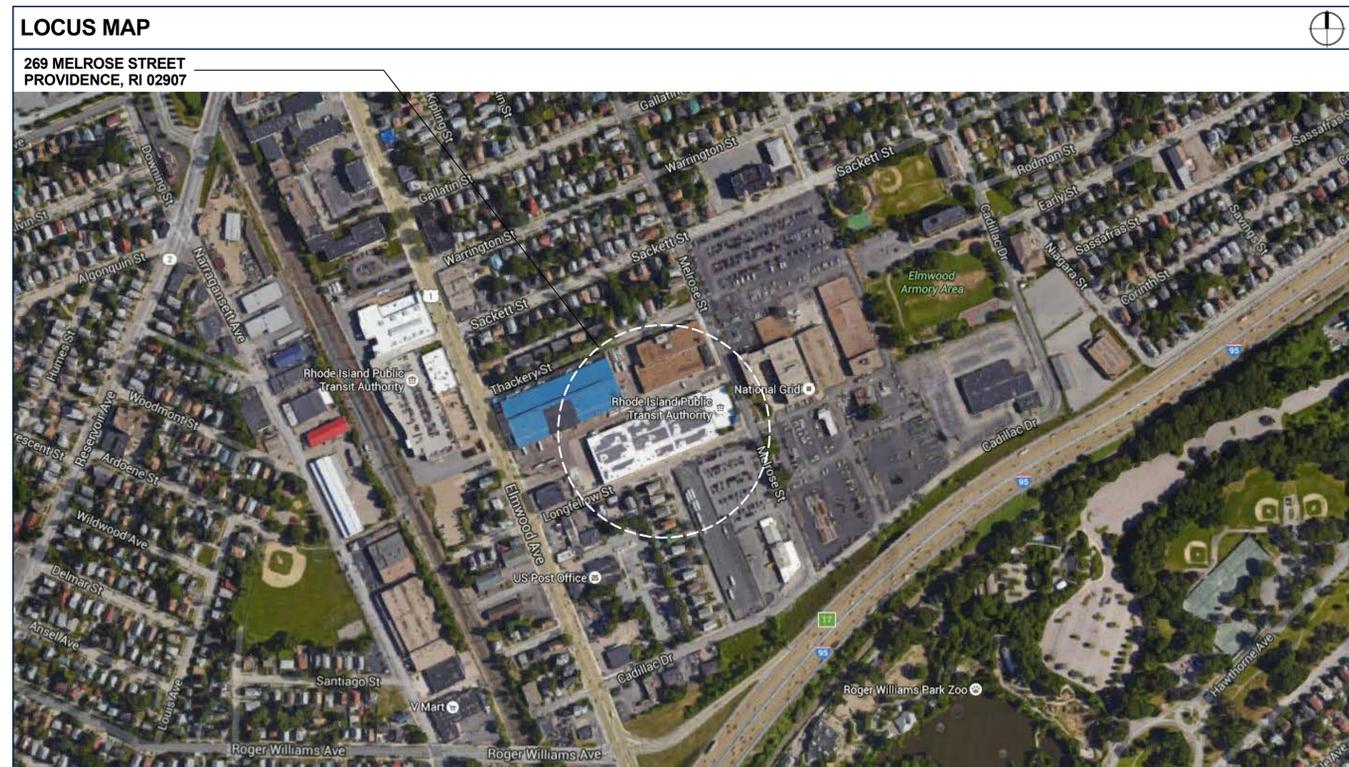
FACILITY IMPROVMENTS TO

RIPTA TRANSIT MAINTENANCE FACILITY

PROVIDENCE, RI

M/E/P + FP ENGINEER:
 CREATIVE ENVIRONMENT CORP.
 195 FRANCES AVE BLDG#2
 CRANSTON, RI 02910

ARCHITECT:
 BREWSTER THORNTON GROUP
 ARCHITECTS, LLP
 150 CHESTNUT STREET
 PROVIDENCE, RI 02903

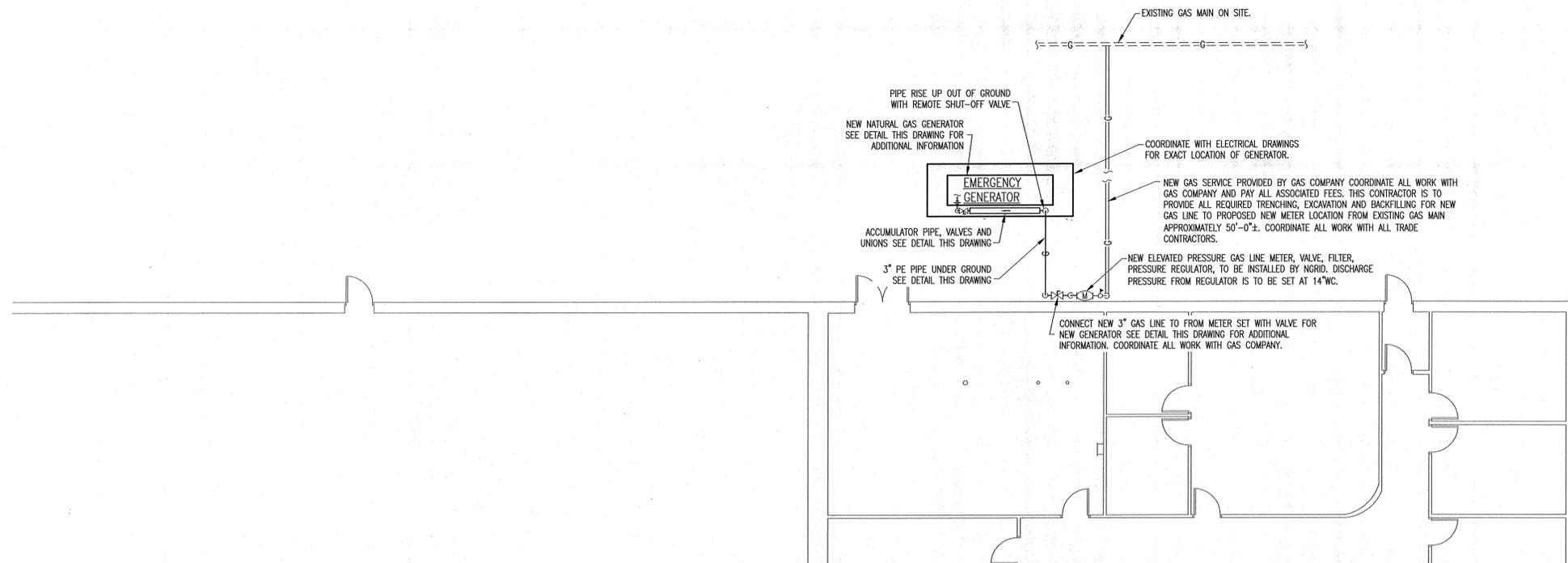


DRAWING LIST

SHEET	SHEET NAME
GENERIC	
.	COVER
PLUMBING	
P.1	PARTIAL FLOOR PLAN - GAS DETAILS
ELECTRICAL	
E1.1	ELECTRICAL FLOOR PLANS, NOTES, DETAILS, AND LEGEND
E1.2	GENERATOR SCHEMATIC, DETAILS, AND SCHEDULES



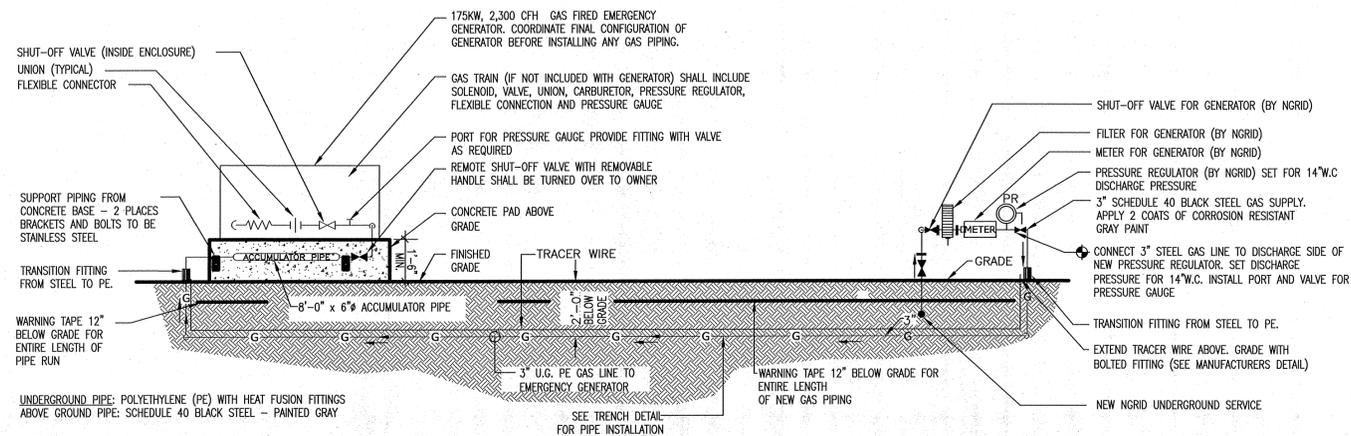
NOTE:
 WORK INDICATED ON THIS DRAWING IS TO BE COMPLETED UNDER BASE BID.
 ALL WORK THIS DRAWING IS TO BE DELETED UNDER ALTERNATE #1 FOR DIESEL GENERATOR.



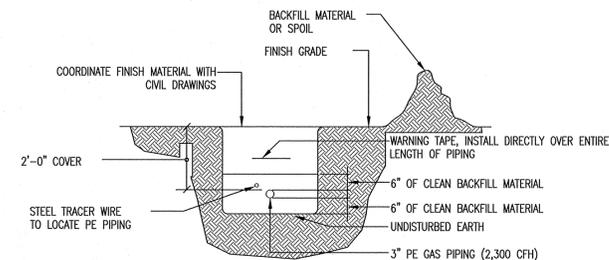
① PARTIAL FLOOR PLAN
 SCALE: 1/8" = 1'-0"

INSTALLATION NOTE:
 DO NOT INSTALL ANY PIPING OR FITTINGS IN FRONT OF ANY DOORS OR ACCESS PANELS ON THE GENERATOR ENCLOSURE. PAINT ALL EXPOSED STEEL PIPING, VALVES, HANGERS, CLAMPS AND BOLTS WITH 2 COATS OF GRAY RUST INHIBITIVE PAINT.

NATURAL GAS PIPE SIZING NOTE:
 NATURAL GAS PIPE SIZING CALCULATIONS ARE BASED ON AN OLYMPIAN MODEL #G175LG WITH AN INPUT RATING OF 2,300 CFH. IF A SUBSTITUTED MODEL IS INSTALLED WITH A DIFFERENT CFH CAPACITY AND/OR PRESSURE REQUIREMENT THE AWARDED CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESIZING AND ALSO PROVIDING AND INSTALLING OF THE NEW PIPING AND SHALL BE RESPONSIBLE FOR ALL ASSOCIATED ADDITIONAL COSTS. COORDINATE SUBSTITUTED CFH AND PRESSURE REQUIREMENTS WITH NATIONAL GRID FOR APPROVAL.



EMERGENCY GENERATOR PIPING DETAIL
 SCALE: NONE



HVAC-ELECTRICAL-PLUMBING
 FIRE PROTECTION
 158 FRANKS AVE. BUILDING 2
 P. 407.483.7733 F. 407.483.7600
 120 MAPLE STREET, SUITE 304
 SPRINGFIELD, MA 01108
 WWW.CDC-ENGINEERING.COM

FACILITY IMPROVEMENTS
 RIPTA
 TRANSIT MAINTENANCE FACILITY
 PROVIDENCE, RI

KRISTA LYNN IACOBUCCI
 No. 9455
 0316
 REGISTERED PROFESSIONAL ENGINEER
 MECHANICAL

Status:
ISSUED FOR CONSTRUCTION

Date	Revision/Issue	No.

Sheet Title:
PARTIAL FLOOR PLAN - GAS DETAILS

Project No: 20140142
 Drawn By: WFH
 Checked By: KI
 Scale: AS NOTED
 Date: 1/28/16

Drawing No:
P.1
 0 0

