

**CONNECTICUT
RESOURCES
RECOVERY
AUTHORITY**

**REQUEST FOR BIDS
("RFB")**

FOR

**REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM,
1410 HONEYSPOUT ROAD EXTENSION
STRATFORD, CONNECTICUT 06615
(RFB Number 08-O-004)**

**BID DUE DATE
SEPTEMBER 13, 2007**

**Connecticut Resources Recovery Authority
100 Constitution Plaza, 6th Floor
Hartford, Connecticut 06103-1722**

August 13, 2007

REQUEST FOR BIDS
For
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM
1410 HONEYSPOOT ROAD EXTENSION
STRATFORD, CONNECTICUT 06615
(RFB Number 08-O-004)

Connecticut Resources Recovery Authority
100 Constitution Plaza, 6th Floor
Hartford, Connecticut 06103-1722

August 13, 2007

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**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

SECTION 1

**NOTICE TO CONTRACTORS
INVITATION TO BID**

CONNECTICUT RESOURCES RECOVERY AUTHORITY

NOTICE TO CONTRACTORS – INVITATION TO BID

The Connecticut Resources Recovery Authority (“CRRA”) is a quasi-public entity of the State of Connecticut that is responsible for implementing the State Solid Waste Management Plan and is currently providing solid waste disposal and recycling services to more than 100 municipalities in the state. Among the facilities CRRA has developed is The Children’s Garbage Museum (the “Museum”) at 1410 Honeyspot Road Extension, Stratford, Connecticut 06615.

CRRA is seeking bids from qualified contractors to furnish all tools, materials, labor, equipment and incidentals thereto for the replacement of the 2nd Floor Rooftop HVAC Unit (“RTU-2”) at the Museum **and/or** the replacement of the Novar HVAC controls for RTU-2. The replacement of the RTU-2 controls must be provided by a certified representative of Novar. Qualified contractors may bid on just the replacement of RTU-2 (except for the controls), **or** on just the replacement of the RTU-2 controls, **or** on both parts of the work.

Request for Bid (“RFB”) package documents may be obtained Monday through Friday, from 8:30 a.m. to 5:00 p.m. at the offices of CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722, beginning **Monday, August 13, 2007**. The documents will also be available beginning on the same date on the World Wide Web at <http://www.crra.org> under the “Business Opportunities” page.

There will be a mandatory pre-bid conference and tour of the site for all prospective bidders. **The mandatory pre-bid conference and tour will be held at the Museum, 1410 Honeyspot Road Extension, Stratford, Connecticut 06615, at 10:00 a.m, Monday, August 27, 2007.** Any prospective bidder intending to participate in the tour must contact George Carlson at (860) 757-7782 at least 24 hours in advance of the pre-bid conference and site tour.

Sealed bids must be received at the offices of CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722 no later than 2:00 p.m., Thursday, September 13, 2007. Bids received after the time and date set forth above shall be rejected. All bids shall remain open for sixty (60) days after the bid due date.

Bids will be opened publicly at 2:15 p.m., Thursday, September 13, 2007 at the offices of CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722. Note that all information submitted by a bidder is subject to the Freedom of Information Act.

All questions regarding this RFB must be submitted **in writing** to George Carlson, Facilities Manager, by e-mail (gcarlson@crra.org), by fax ((860) 757-7742), or by correspondence (CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103) no later than 2:00 p.m., Friday, August 31, 2007. Any firm considering submitting a bid is prohibited from having any ex-parte communications with any CRRA staff member or CRRA Board member except Mr. Carlson.

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 2
INSTRUCTIONS TO BIDDERS**

INSTRUCTIONS TO BIDDERS

REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT AT THE CHILDREN'S GARBAGE MUSEUM 1410 HONEYSPOOT ROAD EXTENSION STRATFORD, CONNECTICUT 06615

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1. Introduction

The Connecticut Resources Recovery Authority ("CRRA") is a quasi-public entity of the State of Connecticut that is responsible for implementing the State Solid Waste Management Plan and is currently providing solid waste disposal and recycling services to more than 100 municipalities in the state. Among the facilities CRRA has developed is The Children's Garbage Museum (the "Museum") at 1410 Honeyspot Road Extension, Stratford, Connecticut 06615. CRRA is seeking bids from qualified contractors to furnish all tools, materials, labor, equipment and incidentals thereto to replace the 2nd Floor Rooftop HVAC Unit ("RTU-2") at the Museum (except for the controls) **and/or** replacement of the Novar HVAC controls for RTU-2. The replacement of the RTU-2 controls must be provided by a certified representative of Novar. Qualified contractors may bid on just the replacement of RTU-2, **or** on just the replacement of the RTU-2 controls, **or** on both parts of the work. It is CRRA's intention to select the contractor or combination of contractors to complete all of the Work that is in CRRA's best interests.

2. RFB Projected Timeline

The following is the projected timeline for the RFB process:

ITEM	DATE
RFB Documents Available	Monday, August 13, 2007
Pre-Bid Conference and Site Tour	Monday, August 27, 1007
Deadline for Written Questions	Friday, August 31, 2007
Response to Written Questions	No Later Than Friday September 7, 2007
Bids Due at CRRA	Thursday, September 13, 2007
Bid Opening	Thursday, September 13, 2007

CRRA reserves the right at its sole and absolute discretion to extend any of the actual or proposed dates in the above Projected Timeline applicable to all bidders, and further reserves the right to reject any and all bids and republish this RFB. CRRA also reserves the right at its sole and absolute discretion to terminate this RFB process at any time prior to the execution of any Agreement.

3. Definitions

As used in this Instructions To Bidders and in other Contract Documents (as defined herein), the following terms shall have the meanings as set forth below:

- (a) **Addenda:** Written or graphic documents issued prior to the bid due date that clarify, correct or change any or all of the Contract Documents.
- (b) **Agreement:** The Terms And Conditions and all exhibits to the Bid Form.
- (c) **Contract Documents:**
 - (1) The Agreement;
 - (2) Notice To Firms – Invitation To Bid;
 - (3) Instructions To Bidders;
 - (4) Required Insurance;
 - (5) Bid Form;

- (6) Questionnaire Concerning Affirmative Action, Small Business Contractors And Occupational Health And Safety;
 - (7) Affidavit Of Third Party Fees;
 - (8) SEEC Form 11, Notice To Executive Branch State Contractors And Prospective State Contractors Of Campaign Contribution And Solicitation Ban;
 - (9) Addenda;
 - (10) Contractor's Bid (including all documentation attached to or accompanying such Bid, all other documentation submitted in connection with such Bid, and all post-bid documentation submitted prior to the Notice Of Award);
 - (11) Notice Of Award, with Contractor Certification Concerning Gifts attached;
 - (12) Notice To Proceed; and
 - (13) Any written amendments to the Agreement issued pursuant to Section 7.4 and Section 7.19.4 of the Agreement.
- (d) **Laws And Regulations:** Any and all applicable laws, rules, regulations, ordinances, codes, orders and permits of any and all federal, state and local governmental and quasi-governmental bodies, agencies, authorities and courts having jurisdiction.
- (e) **Notice Of Award:** Written notification from CRRA to the apparent successful bidder that states that CRRA has accepted such bidder's bid and sets forth the remaining conditions that must be fulfilled by such bidder before CRRA executes the Agreement.
- (f) **Project:** The provision by the successful bidder the work required for replacement of the Second (2nd) Floor Rooftop HVAC Unit ("RTU-2") at the Children's Garbage Museum in accordance with the Contract Documents.
- (g) **Property:** The certain parcel of real property located at 1410 Honeyspot Road Extension, Stratford, Connecticut 06615, upon which property CRRA operates the Children's Garbage Museum.
- (h) **Site:** Those areas of the Property upon which any of the Work is to be performed, furnished and completed by the successful bidder in accordance with the Contract Documents.
- (i) **Terms And Conditions:** Section 7 of the Bid Form

Terms used, but not defined, in this Instructions To Bidders shall have the same respective meanings assigned to such terms in the Agreement.

4. **Communications With CRRA Staff and Board Members**

Except as otherwise authorized by this Instructions To Bidders, during the period while the RFB process is active (i.e., from the date CRRA issues the RFB until the date the success-

ful bidder accepts the Notice Of Award), contractors contemplating or preparing bids are prohibited from contacting CRRA staff or CRRA Board of Director members in an ex parte manner to discuss the RFB submission process. A contractor's RFB submission shall be rejected if any of the foregoing ex parte communications take place.

5. Scope Of Work

The Connecticut Resources Recovery Authority (CRRA) is seeking bids from qualified contractors to furnish all tools, materials, labor, equipment, and incidentals thereto necessary to replace RTU-2 (except for the controls) **and/or** to replace the Novar HVAC controls for RTU-2 (collectively, the "Work"). The replacement of the RTU-2 controls must be provided by a certified representative of Novar. Qualified contractors may bid on just the replacement of RTU-2 (except for the controls), **or** on just the replacement of the RTU-2 controls, **or** on both parts of the Work. It is CRRA's intention to select the contractor or combination of contractors to complete all of the Work that is in CRRA's best interests.

The Work to be performed is more particularly described in **Exhibit A** of the Bid Form.

6. Bid Package Documents

This RFB package consists of the following documents:

1. Notice To Contractors – Invitation To Bid;
2. Instructions To Bidders;
3. Required Insurance;
4. Bid Form;
 - A. Scope Of Work;
 - B. Performance Bond Form;
 - C. Payment Bond Form; and
 - D. SEEC Form 11, Notice To Executive Branch State Contractors And Prospective State Contractors Of Campaign Contribution And Solicitation Ban.
5. Questionnaire Concerning Affirmative Action, Small Business Contractors And Occupational Health And Safety;
6. Affidavit Of Third Party Fees;
7. SEEC Form 11, Notice To Executive Branch State Contractors And Prospective State Contractors Of Campaign Contribution And Solicitation Ban;
8. Notice Of Award, with Contractor Certification Concerning Gifts attached [to be executed by successful bidder]; and
9. Notice To Proceed.

Complete sets of the above documents may be obtained Monday through Friday, from 8:30 a.m. to 5:00 p.m. at CRRA's offices 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722, beginning Monday, August 13, 2007.

All of the documents are also available in PDF format beginning on the same date on the World Wide Web at:

<http://www.crra.org> under the "Business Opportunities" page.

All of the forms included in the documents are available for downloading in Microsoft Word format at CRRA's web site. CRRA encourages bidders to make use of the downloaded Word forms.

7. **Mandatory Pre-Bid Conference And Site Tour**

A mandatory pre-bid conference and tour of the Site for all prospective bidders will be conducted by CRRA staff at 10:00 a.m., Monday, August 27, 2007. Bids submitted by a bidder who did not attend the mandatory pre-bid conference and site tour shall be rejected. Alternate times for visiting the Site will not be allowed.

Prospective bidders should contact George Carlson at (860) 757-7782 at least 24 hours prior to the mandatory pre-bid conference and site tour to make arrangements for participating in the tour and for directions to the Site. Except as otherwise authorized by this Instructions To Bidders, bidders are expressly prohibited from contacting any CRRA personnel regarding this bid solicitation.

8. **Addenda And Interpretations**

CRRA may issue Addenda to this bid package that shall, upon issuance, become part of this package and binding upon all potential or actual bidders for the Work. Such Addenda may be issued in response to requests for interpretation or clarification received from potential bidders. Any request for interpretation or clarification of any documents included in this bid package must be **submitted in writing to George Carlson, Facilities Manager, by e-mail (gcarlson@ crra.org), by fax ((860) 757-7742), or by correspondence (CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722). To be given consideration, any such written request must be received by CRRA by 2:00 p.m., Friday, August 31, 2007.**

Addenda, if any, issued prior to the mandatory pre-bid conference and site tour will be mailed and/or e-mailed to all persons who picked up or requested a printed copy from CRRA of the bid package documents or who otherwise notified CRRA of their interest in the RFB. Such addenda will also be posted on CRRA's web site (<http://www.crra.org> on the "Business Opportunities" page).

Addenda issued after the mandatory pre-bid conference and site tour will be mailed and/or e-mailed to all persons who attended the pre-bid conference and site tour and will be posted on CRRA's web site (<http://www.crra.org> on the "Business Opportunities" page). Such addenda will be mailed/e-mailed and posted on the web site no later than three (3) days before the submittal deadline.

Failure of any bidder to receive any such Addenda shall not relieve such bidder from any conditions stipulated in such Addenda. Only questions answered or issues addressed by formal written Addenda will be binding. **All oral and other written responses, statements, interpretations or clarifications shall be without legal effect and shall not be binding upon CRRA.**

9. Bid Submittal Procedures

Sealed bids shall be submitted no later than 2:00 p.m., Eastern Time, Thursday, September 13, 2007 at the offices of CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722, Attn: George Carlson. Bids received after the time and date set forth above shall be rejected.

Each bidder must submit one (1) original and two (2) copies of its bid. The original bid shall be stamped or otherwise marked as such.

Each bid (the original and two copies) shall be enclosed in a sealed envelope that shall be clearly marked "Bid For Replacement Of The 2nd Floor Rooftop HVAC Unit At The Children's Garbage Museum."

Bids shall remain open and subject to acceptance for sixty (60) days after the bid due date.

The terms and conditions of the Agreement (Section 7 of the Bid Form) are non-negotiable.

Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a bid must be executed) and delivered to the place where bids are to be submitted at any time prior to the bid due date.

10. Bid Contents

Bids shall be submitted on forms provided by CRRA as part of this bid package, all of which forms must be completed with the appropriate information required and all blanks on such forms filled in.

A bid must consist of the following and must be in the following order:

- (a) Title page;
- (b) The Bid Form (Section 4 of the RFB), with Addenda, if any, listed in the appropriate place (Page 4 of the Bid Form), the Bid Price entered in the appropriate place (Pages 7 and 8 of the Bid Form), the name and address of the contact for Notices listed in the appropriate place (Page 18 of the Bid Form) and the completed agreement page (Page 19 of the Bid Form);
- (c) The completed Questions Concerning Affirmative Action, Small Business Contractors And Occupational Health And Safety form (Section 5 of the RFB),

with the Bidder's most recent EEO-1 data attached if the Bidder wishes such data to be considered in the evaluation of its Bid;

- (d) The completed Affidavit Of Third Party Fees form (Section 6 of the RFB) (subscribed and sworn before a Notary Public or Commissioner of the Superior Court); and
- (e) Documentation evidencing that bidder has procured and is currently maintaining the insurance set forth in Section 3 of this RFB.

Bidders should not include in their bids other portions of the Bid Package Documents (e.g., this Instructions To Bidders or the Agreement).

A bidder may include additional information as an addendum/appendix to its bid if the bidder thinks that it will assist CRRA in evaluating the bidder's bid. A bidder should not include information that is not directly related to the subject matter of this solicitation.

11. Bid Opening

Bids will be opened publicly at 2:15 p.m., Thursday, September 13, 2007, at the offices of CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722.

CRRA reserves the right to reject any or all of the bids, or any part(s) thereof, and/or to waive any informality or informalities in any bid or the RFB process for this Project.

12. Bid Evaluation

The award of the contract for the Work will be made, if at all, to the bidder whose evaluation by CRRA results in CRRA determining that such award to such bidder is in the best interests of CRRA. **However, the selection of a bidder and the award of such contract, while anticipated, are not guaranteed.**

CRRA is an Equal Opportunity and Affirmative Action employer and does not discriminate in its hiring, employment, contracting, or business practices. CRRA is committed to complying with the Americans with Disability Act of 1990 (ADA) and does not discriminate on the basis of disability in admission to, access to, or operation of its programs, services, or activities.

CRRA will base its evaluation of the bids on price, qualifications, demonstrated skill, ability and integrity of each bidder to perform the Work required by the Contract Documents and any other factor or criterion that CRRA, in its sole discretion, deems or may deem relevant or pertinent for such evaluation.

13. Contract Award

If the contract is to be awarded, CRRA will issue to the successful bidder a Notice Of Award within sixty (60) days after the bid due date.

CRRA reserves the right to correct inaccurate awards resulting from CRRA's clerical errors. This may include, in extreme circumstances, revoking a Notice Of Award already made to a bidder and subsequently awarding the Notice of Award to another bidder. Such action by CRRA shall not constitute a breach of this RFB by CRRA since the Notice Of Award to the initial bidder is deemed to be void ab initio and of no effect as if no Agreement ever existed between CRRA and the initial bidder.

14. Contractor's Certification Concerning Gifts

Pursuant to *Connecticut General Statutes* Section 4-252, the apparently successful Bidder must submit a document certifying that it has not given any gifts to certain individuals between the date CRRA started planning the RFB and the date the Agreement is executed. If the apparently successful Bidder does not execute the Certification, it will be disqualified for the Agreement. The dates between which the Bidder may not give gifts and the identities of those to whom it may not give gifts are specified in the attachment to the Notice of Award included in this RFB (see Section 8 of the RFB).

15. Bidder's Qualifications

CRRA may make any investigation deemed necessary to determine the ability of any bidder to perform the Work required. Each bidder shall furnish CRRA with all such information as may be required for this purpose.

16. Bid Preparation And Other Costs

Each bidder shall be solely responsible for all costs and expenses associated with the preparation and/or submission of its bid, or incurred in connection with any interviews and negotiations with CRRA, and CRRA shall have no responsibility or liability whatsoever for any such costs and expenses.

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 3
REQUIRED INSURANCE**

REQUIRED INSURANCE

Each bidder shall submit, as part of its bid, documentation evidencing that bidder has procured and is currently maintaining the insurance set forth below:

- (a) Commercial general liability insurance alone or in combination with Commercial Umbrella insurance with a limit of not less than one million dollars (\$1,000,000.00) each occurrence covering liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insurance contract (including the tort liability of another assumed in a business contract);
- (b) Business automobile liability insurance alone or in combination with Commercial Umbrella insurance covering any auto or vehicle (including owned, hired, and non-owned autos or vehicles), with a limit of not less than one million dollars (\$1,000,000.00) each accident and including pollution liability coverage equivalent to that provided under the ISO pollution liability broadened coverage for covered autos endorsement (CA9948), and the Motor Carrier Act Endorsement (MCS90);
- (c) Workers' Compensation with statutory limits and Employers' Liability limits of not less than five hundred thousand dollars (\$500,000.00) each accident for bodily injury by accident or five hundred thousand dollars (\$500,000.00) for each employee for bodily injury by disease;
- (d) Contractor's property and equipment insurance covering all property and equipment that bidder proposes to use in performing any of the work in an amount equal to one hundred (100%) percent of the actual cash value; and
- (e) Contractor's pollution liability insurance with a limit of not less than five hundred thousand dollars (\$500,000.00).

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 4
BID FORM**

BID FORM

PROJECT: Bridgeport Project

CONTRACT NUMBER: _____ (To be filled in later by CRRA)

CONTRACT FOR: Replacement Of The 2nd Floor Rooftop HVAC Unit At The Children's Garbage Museum

BIDS SUBMITTED TO: Connecticut Resources Recovery Authority
100 Constitution Plaza, 6th Floor
Hartford, Connecticut 06103-1722

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2. DEFINITIONS

Unless otherwise defined herein, all terms that are not defined and used in this Bid Form (a "Bid") shall have the same respective meanings assigned to such terms in the Contract Documents.

3. BIDDER'S OBLIGATIONS

Bidder proposes and agrees, if this Bid is accepted by CRRA and CRRA issues a Notice Of Award to Bidder, to the following:

- (a) To satisfy any conditions set forth in such Notice of Award to CRRA's satisfaction, including to execute and deliver to CRRA the Contractor's Certification Concerning Gifts (see **Exhibit A** to the Notice Of Award);
- (b) To comply with and be bound by the terms and conditions contained in Section 6 of this Bid Form (the "Terms And Conditions");
- (c) To perform, furnish and complete all the Work as specified or indicated in the Contract Documents for the applicable prices, rates and/or costs set forth in this Bid and in accordance with the terms and conditions of the Contract Documents and Agreement; and
- (d) At the request of CRRA and if the successful Bidder qualifies, to apply with the State of Connecticut Department of Administrative Services, and do all that is necessary to make itself qualify, as a Small Contractor and/or Minority/Women/Disabled Person Business Enterprise in accordance with Section 4a-60g of the *Connecticut General Statutes*.
- (e) To hold this Bid open and subject to acceptance for sixty (60) days after the Bid due date.

4. BIDDER'S REPRESENTATIONS

4.1 General

In submitting this Bid, Bidder accepts all terms and conditions of the Contract Documents, all of which terms and conditions are deemed to be incorporated herein by reference as if such terms and conditions had been fully set forth herein.

4.2 Concerning Examination of Contract Documents

In submitting this Bid, Bidder represents that:

- (a) Bidder has thoroughly examined and carefully studied the RFB package documents and the following Addenda, receipt of which is hereby acknowledged (list Addenda by Addendum number and date):

Addendum Number	Date Issued

- (b) Without exception the Bid is premised upon performing, furnishing and completing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures (if any) that may be shown, indicated or expressly required by the Contract Documents;
- (c) Bidder is fully informed and is satisfied as to all Laws and Regulations that may affect cost, progress, performance, furnishing and/or completion of the Work;
- (d) Bidder has studied and carefully correlated Bidder's knowledge and observations with the Contract Documents and such other related data;
- (e) Bidder has given CRRA written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Contract Documents and the written resolutions thereof by CRRA are acceptable to Bidder;
- (f) If Bidder has failed to promptly notify CRRA of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Contract Documents, such failure shall be deemed by both Bidder and CRRA to be a waiver to assert these issues and claims in the future;
- (g) Bidder is aware of the general nature of work to be performed by CRRA and others that relates to the Work for which this Bid is submitted; and
- (h) The Contract Documents are generally sufficient to indicate and convey understanding by Bidder of all terms and conditions for performing, furnishing and completing the Work for which this Bid is submitted.

4.3 Concerning Site Conditions

In submitting this Bid, Bidder acknowledges and agrees that:

- (a) All information and data included in this RFB package relating to the surface, subsurface and other conditions of the Site are from presently available sources and are being provided only for the information and convenience of the bidders;
- (b) CRRA does not assume any responsibility for the accuracy or completeness of such information and data, if any, shown or indicated in the Contract Documents with respect to any surface, subsurface or other conditions of the Site;
- (c) Bidder is solely responsible for investigating and satisfying itself as to all actual and existing Site conditions, including surface conditions, subsurface conditions and underground facilities; and
- (d) Bidder has visited the Site and has become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance, furnishing and completion of the Work.

4.4 Concerning Information Made Available

In submitting this Bid, Bidder acknowledges and agrees that Bidder shall not use any information made available to it or obtained in any examination made by it in connection with this RFB in any manner as a basis or grounds for a claim or demand of any nature against CRRA arising from or by reason of any variance which may exist between information offered or so obtained and the actual materials, conditions, or structures encountered during performance of any of the Work.

4.5 Concerning State Of Connecticut Taxes

In submitting this Bid, Bidder acknowledges and agrees that CRRA is exempt from all State of Connecticut taxes and assessments, including sales and use taxes. Accordingly, Bidder shall not charge CRRA any State of Connecticut taxes or assessments at any time in connection with Bidder's performance of this Agreement, nor shall Bidder include any State of Connecticut taxes or assessments in any rates, costs, prices or other charges to CRRA hereunder. Bidder represents and warrants that no State of Connecticut taxes or assessments were included in any rates, costs, prices or other charges presented to CRRA in any Bid or other submittal to CRRA in connection with this RFB.

4.6 Concerning Disclosure Of Information

In submitting this Bid, Bidder:

- (a) Recognizes and agrees that CRRA is subject to the Freedom of Information provisions of the *Connecticut General Statutes* and, as such, any information contained in or submitted with or in connection

with Bidder's Bid is subject to disclosure if required by law or otherwise; and

- (b) Expressly waives any claim(s) that Bidder or any of its successors and/or assigns has or may have against CRRA or any of its directors, officers, employees or authorized agents as a result of any such disclosure.

4.7 Concerning Non-Collusion

By submission of this Bid, the Bidder, together with any affiliates or related persons, and any joint ventures, hereby represents that, under risk of termination of the Agreement, if awarded, to the best of its knowledge and belief:

- (a) The prices in the Bid have been arrived at as the result of an independent business judgment without collusion, consultation, communication, agreement or otherwise for the purpose of restricting competition, as to any matter relating to such prices and any other person or company;
- (b) Unless otherwise required by law, the prices that have been quoted in this Bid have not, directly or indirectly, been knowingly disclosed by the Bidder prior to "opening" to any other person or company;
- (c) No attempt has been made or will be made by the Bidder to induce any other person, partnership or corporation to submit, or not to submit, a Bid for the purpose of restricting competition;
- (d) Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; and
- (e) Bidder has not sought by collusion to obtain for itself any advantage for the Work over any other Bidder for the Work or over CRRA.

4.8 Concerning RFB Forms

By submission of this Bid, the Bidder, together with any affiliates or related business entities or persons, and any joint ventures, hereby represents that, under risk of termination of the Agreement, if awarded, all of the forms included in the RFB that are submitted to CRRA as part of its Bid are identical in form and content to the preprinted forms in the RFB except that information requested by the forms has been inserted in the spaces on the forms provided for the insertion of such requested information.

4.9 Waiver Of Damages

Bidder and all its affiliates and subsidiaries understand that by submitting a Bid, Bidder is acting at its and their own risk and Bidder does for itself and all its

affiliates, subsidiaries, successors and assigns hereby waive any rights any of them may have to receive any damages for any liability, claim, loss or injury resulting from:

- (a) Any action or inaction on the part of CRRA or any of its directors, officers, employees or authorized agents concerning the evaluation, selection, non-selection and/or rejection of any or all Bids/Proposals by CRRA or any of its directors, officers, employees or authorized agents;
- (b) Any agreement entered into for the Work (or any part thereof) described in the Contract Documents; and/or
- (c) Any award or non-award of a contract for the Work (or any part thereof) pursuant to the Contract Documents.

4.10 Regarding The Connecticut Campaign Contribution And Solicitation Ban

With regard to a State contract as defined in P.A. 07-1 having a value in a calendar year of \$50,000 or more or a combination or series of such agreement or contracts having a value of \$100,000 or more, the authorized signatory to this submission in response to CRRA’s solicitation expressly acknowledges receipt of the State Elections Enforcement Commission’s notice advising prospective state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice. See Section 7 [SEEC Form 11] of the RFB.

5. BID PRICE

Bidder will complete the Work described in the Contract Documents for the following lump sum bid price (use the tables below). Bidder may bid on Item 5.1, “Replacement of RTU-2 (except for the controls)”, or Item 5.2, “Replacement of RTU-2 controls”, or both Items 5.1 and 5.2.

Bidder warrants and represents that the above prices: (i) include all expenses and costs to be incurred by Bidder in performing and completing the Work, and (ii) do not include sales and use tax.

5.1 Replacement Of RTU-2 (Except For The Controls)

	Dollars	Cents
TOTAL BID PRICE		
	(Use Numbers)	

TOTAL BID PRICE	
	(Use Words)

5.2 Replacement Of The RTU-2 Controls

	Dollars	Cents
TOTAL BID PRICE		
	(Use Numbers)	

TOTAL BID PRICE	
	(Use Words)

6. TIME OF COMPLETION

Bidder shall perform and complete the Work within seventy-five (75) calendar days' following the date on which CRRA issues the notice to proceed with such Work (the "Notice to Proceed").

7. TERMS AND CONDITIONS

The undersigned (the "Bidder") accepts and agrees to all terms and conditions of the Request For Bids, Instructions To Bidders and the Agreement. The term "Contractor" shall mean bidder. The term "Acceptance Date" shall mean the date on which CRRA determines that the Work has been completed by Contractor in accordance with the Agreement.

7.1 Contractor's Responsibilities

Contractor shall be responsible for:

- (a) The replacement of RTU-2 (except for the controls) or the replacement of the Novar HVAC controls for RTU-2 or the replacement of RTU-2 including replacement of the Novar HVAC controls, as specified by Contractor in Section 1 of this Bid Form;
- (b) Performing all other work required for the Project, all of which is in accordance with and as required by the Contract Documents, including but not limited to, the Scope Of Work set forth in **Exhibit A** attached hereto and made a part hereof;
- (c) Furnishing all labor, materials, supplies, tools, equipment and other facilities and necessary appurtenances or property for or incidental to the Project and the performance and completion of the Work (as hereinafter defined);
- (d) Restoring any part of the Property, the improvements thereon, including but not limited to any access roads, or the Work (as hereinafter defined) that require restoration pursuant to the terms and conditions in Section 7.8 hereof; and

- (e) Making all required notifications and obtaining all local, state, and federal permits and approvals necessary for the completion of the Work, except as otherwise described in the Scope Of Work.

Items (a) through (e) above are hereinafter collectively referred to as the “Work.”

7.2 Performance and Completion of Work

Contractor shall perform and complete all Work in a good workmanlike manner consistent and in accordance with:

- (a) Any and all instructions, guidance and directions provided by CRRA to Contractor;
- (b) The Contract Documents;
- (c) The Terms And Conditions of this Agreement;
- (d) All Laws And Regulations; and
- (e) The highest industry standards applicable to Contractor and its performance of the Work.

Items (a) through (e) above are hereinafter collectively referred to as the “Standards.”

7.3 Right To Test And Analyze Materials

CRRA reserves the right to test and analyze any materials or Work provided by Contractor to the Stratford Children’s Garbage Museum in its performance of the Work hereunder in order to determine if said materials or Work comply with the Standards and Plans detailed herein.

7.4 Change In Scope Of Work

In the event that CRRA determines during the term of this Agreement that any revisions, modifications or changes to the Scope of Work are necessary, then pursuant to CRRA’s request and the mutual agreement of the parties hereto on the cost of, and time schedule for, the work required for such revisions, modifications or changes, Contractor shall perform such work.

7.5 Compensation

Contractor represents that the price set forth in Section 5 of this Bid Form (the “Contract Price”) constitutes the full compensation to Contractor for the Work to be performed by Contractor under this Agreement and includes all expenses and costs to be incurred by Contractor in performing such Work.

7.6 Payment Procedure

Contractor shall submit an invoice to CRRA upon Contractor's completion of all of the Work.

If CRRA determines, in its sole discretion, that

- (a) The Work for which Contractor is requesting payment has been properly performed and completed in conformance with the Standards,
- (b) Contractor is not in default hereunder, and
- (c) CRRA does not dispute the amount of the payment requested,

then CRRA shall pay Contractor the amount requested within forty five (45) calendar days after CRRA's receipt of such invoice.

If, however,

- (a) CRRA determines that any of the Work for which Contractor has requested payment is/are not in conformance with the Standards, or
- (b) Contractor is in default hereunder,

then CRRA may, in its sole and absolute discretion, withhold all or a portion of the payment requested by Contractor and Contractor shall, if requested by CRRA, immediately take, at Contractor's sole cost and expense, all action necessary to render such Work in conformance with the Standards, or to cure such default.

CRRA shall have no obligation under this Agreement to pay for any Work that CRRA determines has not been performed and/or completed in conformance with the Standards, and CRRA shall have no obligation to pay Contractor any amount due Contractor under this Agreement if Contractor is in default hereunder. If CRRA disputes the amount in any written request for payment submitted by Contractor, CRRA shall have the right to withhold the disputed amount until the dispute is settled. CRRA shall notify Contractor of any disputed amount and the reason(s) for disputing such amount.

7.7 Termination

CRRA may terminate this Agreement at any time by providing Contractor with ten (10) days' prior written notice of such termination. Upon receipt of such written notice from CRRA, Contractor shall immediately cease performance of any and all Work, unless otherwise directed in writing by CRRA. Contractor shall also, prior to the termination date, remove all of its personnel and equipment from the Property and restore any portion of the Property, any improvements thereon or any completed Work that requires restoration pursuant to subsection 7.8 below

Upon CRRA's termination of this Agreement,

- (a) CRRA shall pay Contractor for all Work performed and completed by Contractor prior to the termination date, provided:
 - (1) Such Work has been performed and completed by Contractor in conformance with the Standards;
 - (2) Payment for such Work has not been previously made or is not disputed by CRRA;
 - (3) Contractor is not in default hereunder; and,
 - (4) Contractor has performed and completed all its obligations under this subsection 7.7 and subsection 7.8 below to CRRA's satisfaction, and
- (b) CRRA shall have no further liability hereunder.

Except for the payment that may be required pursuant to the preceding sentence, CRRA shall not be liable to Contractor/Consultant in any other manner whatsoever in the event CRRA exercises its right to terminate this Agreement.

7.8 Restoration

Unless otherwise directed in writing by CRRA, Contractor shall:

- (a) Restore any part of the Property or any of the improvements located or to be located thereon, other than those areas of the Property or such improvements improved by Contractor pursuant to this Agreement, disturbed or damaged by Contractor or any of its directors, officers, employees, agents, subcontractors or materialmen to the same condition existing immediately prior to such disturbance or damage; and
- (b) Restore or repair any completed Work so disturbed or damaged to the condition required by the Agreement for acceptance of such Work by CRRA.

7.9 Insurance

7.9.1 Required Insurance

Contractor shall procure and maintain, at its own cost and expense, throughout the term of this Agreement and any extension thereof, the insurance set forth in Section 3 of this RFB, including any required endorsements to, and amendments of, any such insurance.

7.9.2 Certificates

Within ten (10) days after CRRA issues the Notice of Award to Contractor and prior to Contractor commencing any Work, Contractor shall submit to CRRA a certificate or certificates for each required insurance referenced in Section 3 this RFB certifying that such insurance is in full force and effect and setting forth the information required by subsection 7.9.3 below. Additionally, Contractor shall furnish to CRRA, within thirty (30) days before the expiration date of the coverage of each required insurance set forth in Section 3 of this RFB, a certificate or certificates containing the information required by subsection 7.9.3 below and certifying that such insurance has been renewed and remains in full force and effect.

7.9.3 Specific Requirements

All policies for each insurance required hereunder shall:

- (a) Name CRRA as an additional insured (this requirement shall not apply to workers' compensation insurance, employers' liability insurance, or Contractor's property and equipment insurance);
- (b) Include a standard severability of interest clause;
- (c) Provide for not less than thirty (30) days' prior written notice to CRRA by registered or certified mail of any cancellation, restrictive amendment, non-renewal or change in coverage;
- (d) Hold CRRA free and harmless from all subrogation rights of the insurer; and
- (e) Provide that such required insurance hereunder is the primary insurance and that any other similar insurance that CRRA may have shall be deemed in excess of such primary insurance.

7.9.4 Issuing Companies

All policies for each insurance required hereunder shall be issued by insurance companies that are either licensed by the State of Connecticut and have a Best's Key Rating Guide of A- VII or better, or otherwise deemed acceptable by CRRA in its sole discretion.

7.9.5 No Limitation On Liability

No provision of the Section 7.9 shall be construed or deemed to limit Contractor's obligations under this Agreement to pay damages or other costs and expenses.

7.9.6 Other Conditions

CRRA shall not, because of accepting, rejecting, approving, or receiving any certificates of insurance required hereunder, incur any liability for:

- (a) The existence, non-existence, form or legal sufficiency of the insurance described on such certificates;
- (b) The solvency of any insurer; or
- (c) The payment of losses.

7.10 **Bonds**

Within ten (10) days after CRRA issues the Notice of Award to Contractor, Contractor shall furnish CRRA with construction performance and payment bonds for the Work each in the full amount of the Contract Price (the "Bonds"). The Bonds shall be in and drawn on the forms set forth in **Exhibit B** and **Exhibit C** attached hereto and made a part hereof, and such Bonds shall be issued and executed by a surety company or surety companies acceptable to CRRA. Contractor shall maintain and keep the Bonds in full force effect from the date of this Agreement until the first anniversary of the Acceptance Date. If the surety on any of the Bonds furnished by Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the above requirements, Contractor shall immediately substitute another bond and surety, subject to the requirements set forth in this Section 7.10.

7.11 **Contractor's Indemnity**

Contractor shall at all times defend, indemnify, and hold harmless CRRA and its board of directors, officers, agents, and employees from and against any and all claims, damages, losses, judgments, workers' compensation payments, and expenses (including but not limited to attorneys' fees) arising out of injuries to the person (including death) or damage to property or other damages alleged to have been sustained by: (a) CRRA or any of its directors, officers, agents, or employees, or (b) Contractor or any of its directors, officers, employees, agents, subcontractors, or materialmen, or (c) any other person, to the extent any such injuries, damage or damages are caused or alleged to have been caused in whole or in part by the acts, omissions, or negligence of Contractor or any of its directors, officers, employees, agents, subcontractors or materialmen. Contractor further undertakes to reimburse CRRA for damage to property of CRRA caused by Contractor or any of its directors, officers, employees, agents, subcontractors, or materialmen or by faulty, defective, or unsuitable material or equipment used by it or any of them. Contractor's obligations under this Section 7.11 shall survive the termination of this Agreement. The existence of insurance shall in no way limit the scope of this indemnification.

7.12 Non-Discrimination

Contractor agrees to the following:

- (a) Contractor agrees and warrants that in the performance of the Work for CRRA Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, including civil union status, national origin, ancestry, sex, sexual orientation, mental retardation or physical disability, including, but not limited to, blindness, unless it is shown by Contractor that such disability prevents performance of the Work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut. Contractor further agrees to take affirmative action to insure that applicants with job related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, including civil union status, national origin, ancestry, sex, sexual orientation, mental retardation, or physical disability, including, but not limited to, blindness, unless it is shown by Contractor that such disability prevents performance of the Work involved;
- (b) Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of Contractor, to state that it is an “affirmative action-equal opportunity employer” in accordance with regulations adopted by the Connecticut Commission on Human Rights and Opportunities (The “Commission”);
- (c) Contractor agrees to provide each labor union or representative of workers with which Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union, workers’ representative and vendor of Contractor’s commitments under Sections 4a-60 and 4a-60a of the *Connecticut General Statutes* and to post copies of the notice in conspicuous places available to employees and applicants for employment;
- (d) Contractor agrees to comply with each applicable provision of Sections 4a-60, 4a-60a, 46a-68e, and 46a-68f, inclusive, of the *Connecticut General Statutes* and with each regulation or relevant order issued by the Commission pursuant to Sections 46a-56, 46a-68e, and 46a-68f of the *Connecticut General Statutes*; and
- (e) Contractor agrees to provide the Commission with such information requested by the Commission, and permit access to pertinent books, records and accounts concerning the employment practices and

procedures of Contractor as related to the applicable provisions of Sections 4a-60, 4a-60a and 46a-56 of the *Connecticut General Statutes*. If this Agreement is a public works contract, Contractor agrees and warrants that it will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials in such public works project.

7.13 Campaign Contribution And Solicitation Prohibitions

For all State contracts as defined in P.A. 07-1 having a value in a calendar year of \$50,000 or more or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this Agreement expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice. See Exhibit D [SEEC Form 11].

7.14 Mechanic's Liens

Contractor shall claim no interest in the Property or any equipment, fixtures or improvements located or to be located thereon, including but not limited to the Site or any part thereof. Contractor shall not file any mechanic's liens or other liens or security interests against CRRA or any of its properties, including but not limited to the Property. Contractor shall defend, indemnify and hold harmless CRRA against all costs associated with the filing of such liens or interests by Contractor or any of its subcontractors or materialmen. Before any subcontractor or materialman of Contractor commences any Work hereunder, Contractor shall deliver to CRRA an original waiver of mechanic's liens properly executed by such subcontractor or materialman. If any mechanic's lien is filed against CRRA or any of its properties in connection with the Work hereunder, Contractor shall cause the same to be canceled and discharged of record within fifteen (15) days after the filing of such lien and, if Contractor fails to do so, CRRA may, at its option but without any obligation to do so, make any payment necessary to obtain such cancellation or discharge and the cost thereof, at CRRA's election, shall be either deducted from any payment due to Contractor hereunder or reimbursed to CRRA promptly upon demand by CRRA to Contractor.

7.15 Time Is Of The Essence

Contractor hereby acknowledges and agrees that time is of the essence with respect to Contractor's performance and completion of the Work. Accordingly, Contractor shall perform and complete the Work within the time frame set forth in Section 6 of this Bid Form (the "Contract Time"). CRRA and Contractor recognize the difficulties involved in proving actual damages and losses suffered by CRRA if the Work is not completed and ready for CRRA's acceptance by the Completion Date. Accordingly, instead of requiring any such proof, CRRA and Contractor agree that as liquidated damages for any such delay in completion or readiness for acceptance

(but not as a penalty) Contractor shall pay CRRA TWO HUNDRED FIFTY and 00/100 (\$250.00) DOLLARS for each calendar day beyond the Completion Date that Contractor fails to complete all of the Work or have the same ready for CRRA's acceptance until all such Work is completed by Contractor and readied by Contractor for acceptance by CRRA.

7.16 Site Conditions

All information and data shown or indicated in this Agreement with respect to underground facilities, surface conditions, subsurface conditions or other conditions at or contiguous to the Property are furnished for information only and CRRA does not assume any responsibility for the accuracy or completeness of such information and data. Contractor acknowledges and agrees that CRRA does not assume any responsibility for such information and data and that Contractor is solely responsible for investigating and satisfying itself as to all actual and existing Property conditions, including but not limited to surface conditions, subsurface conditions and underground facilities. Contractor has carefully studied all such information and data and Contractor has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (including but not limited to surface conditions, subsurface conditions and underground facilities) at or contiguous to the Property and all other conditions or factors which may affect cost, progress, performance, furnishing or completion of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction or performance of the Work to be employed by Contractor and safety precautions and programs incident thereto. Contractor does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for Contractor to conclusively determine, and Contractor has so determined, that the Work can be performed, furnished and completed in accordance with the Contract Time, the Contract Price and the other terms and conditions of this Agreement. In the event that the information or data shown or indicated in this Agreement with respect to underground facilities or surface, subsurface or other conditions at or contiguous to the Property differs from conditions encountered by Contractor during performance of the Work, there shall be no increase in the Contract Price and/or no extension of the Contract Time as a result of such differing conditions, unless CRRA, in its sole and absolute discretion, agrees to such increase and/or extension.

7.17 Access

CRRA hereby grants to Contractor, during the Stratford Children's Garbage Museum normal hours of operation, access to only those areas of the Property necessary for Contractor to perform the Work hereunder, provided that:

- (a) Contractor shall not interfere with any other operations or activities being conducted on the Property by either CRRA or any other person or entity;

- (b) Contractor directly coordinates with CRRA on such access and Contractor's storage of any equipment or materials on the Property; and
- (c) Contractor is in compliance with all of the terms and conditions of this Agreement.

CRRA reserves the right to revoke the access granted to Contractor herein if Contractor fails to comply with any of the foregoing conditions of access.

7.18 Miscellaneous

7.18.1 Entire Agreement

This Agreement constitutes the entire agreement and understanding between the parties hereto and concerning the subject matter hereof, and supersedes any previous agreements, written or oral, between the parties hereto and concerning the subject matter hereof.

7.18.2 Governing Law

This Agreement shall be governed by, and construed, interpreted and enforced in accordance with the laws of the State of Connecticut as such laws are applied to contracts between Connecticut residents entered into and to be performed entirely in Connecticut.

7.18.3 Assignment

This Agreement may not be assigned in whole or in part by either party without the prior written consent of the other party.

7.18.4 Modification

This Agreement may not be amended, modified or supplemented except by a writing signed by CRRA and Contractor that specifically refers to this Agreement.

7.18.5 Benefit And Burden

This Agreement shall inure to the benefit of and be binding upon the heirs, personal representatives, successors and assigns of CRRA and Contractor.

7.18.6 Usage

Whenever nouns or pronouns are used in this Agreement, the singular shall mean the plural, the plural shall mean the singular, and any gender shall mean all genders or any other gender, as the context may require. The words "herein", "hereof" and "hereunder" and words of similar import refer to this Agreement as a whole and not to any particular Section

or Subsection unless the particular Section, or Subsection is specifically referenced. The captions contained in this Agreement have been inserted for convenience only and shall not affect or be effective to interpret, change or restrict the terms of provisions of this Agreement.

8. ATTACHMENTS

The following documents are attached hereto and made a part of this Bid:

- (a) Questionnaire Concerning Affirmative Action, Small Business Contractors And Occupational Health and Safety, which has been completely filled out by the Bidder;
- (b) Affidavit Of Third Party Fees, which has been completely filled out by Bidder and signed before a Notary Public or Commissioner of the Superior Court; and
- (c) Documentation evidencing that Bidder has procured and is currently maintaining the insurances required by Section 3 of the RFB.

9. NOTICES

Communications concerning this Bid should be addressed to Bidder at the address set forth below.

Bidder Name:	
Bidder Contact:	
Title:	
Address:	
Telephone Number:	
Fax Number:	
E-Mail Address:	

10. ADDITIONAL REPRESENTATION

Bidder hereby represents that the undersigned is duly authorized to submit this Bid on behalf of Bidder.

AGREED TO AND SUBMITTED ON _____, 200__

Name of Bidder (Firm):	
Signature of Bidder Representative:	
Name (Typed/Printed):	
Title (Typed/Printed):	

EXHIBIT A

To

BID FORM

SCOPE OF WORK

SCOPE OF WORK

The CRRA Children's Garbage Museum is located at 1410 Honeyspot Road Extension, Stratford, Connecticut. CRRA desires to replace the Second (2nd) Floor Rooftop HVAC Unit (RTU-2) at the Children's Garbage Museum.

The Contractor shall complete the following Scope Of Work. [THE SCOPE OF WORK FOR A PARTICULAR CONTRACTOR SHALL REFLECT THE WORK FOR WHICH THAT CONTRACTOR HAS BEEN SELECTED (I.E., IT SHALL BE FOR REPLACEMENT OF RTU-2 (EXCEPT FOR THE CONTROLS) OR REPLACEMENT OF THE RTU-2 CONTROLS OR BOTH)]

1. REPLACEMENT OF RTU-2 (EXCEPT FOR THE CONTROLS)

The Contractor shall furnish all tools, materials, labor, equipment, and incidentals thereto necessary to replace RTU-2 (except for the controls) (the "Work") at the Children's Garbage Museum.

The work associated with replacement of RTU-2 will include, but not be limited to, the following items:

- (a) Disconnect power wiring, control wiring, duct smoke detectors, natural gas fuel, and ductwork from Rooftop Air Handling Unit serving the second floor (RTU-2).
- (b) Remove and dispose of existing RTU-2. Reclaim refrigerant as required by code.
- (c) Remove and dispose rooftop ductwork serving RTU-2.
- (d) Provide new Rooftop Air Handling Unit with side discharge duct with new adaptor curb as outlined in specification 15732 Packaged Outdoor Central Station Air-Handling Units.
- (e) Hoist new Rooftop Air Handling Unit to roof.
- (f) Reconnect wiring and natural gas fuel to RTU-2.
- (g) Reconnect duct smoke detectors to shut down RTU-2.
- (h) Provide new rooftop ductwork, insulation and exterior duct weather protection covering.
- (i) Balance and adjust RTU-2.
- (j) Coordinate all activities with CRRA.

- (k) [INCLUDE IF APPLICABLE] Coordinate with RTU-2 controls replacement Contractor.

2. REPLACEMENT OF THE RTU-2 CONTROLS

The work associated with replacement of the RTU-2 controls will include, but not be limited to the following items:

- (a) Provide new DDC controls for RTU-2 manufactured by Novar.
- (b) Connect RTU-2 controls to existing Novar Control system.
- (c) Provide duct pressure sensor and connection to Novar Control system.
- (d) Coordinate all activities with CRRA.
- (e) [INCLUDE IF APPLICABLE] Coordinate with RTU-2 replacement Contractor.

The Contractor for this portion of the Work must be a certified representative of Novar.

3. GENERAL REQUIREMENTS

The Contractor shall adhere to the following General Requirements in performing the Work.

- (a) Contractor shall verify all field dimension and conditions prior to ordering equipment.
- (b) Contractor shall prepare and submit shop drawings and/or product information for all project components.
- (c) Contractor shall restore roof area to retain roof integrity.
- (d) Construction activities to be coordinated with CRRA as required.
- (e) Contractor is responsible for clean-up, removal of construction waste and debris, removal of existing RTU from the site and restoration of facility to satisfaction of CRRA.
- (f) Contractor is responsible for clean-up, removal of construction waste and debris, removal of existing RTU from the site, and restoration of facility to satisfaction of CRRA.
- (g) Contractor is responsible for physical dimensions and compatibility with existing curb and duct connections of proposed roof top unit and shall provide any curb and duct modifications required to reinstall and reconnect proposed unit in a manner acceptable to CRRA.

4. BID ATTACHMENTS AND SPECIFICATIONS

The following items to be incorporated as Attachments to this Exhibit A:

Attachment A: Record drawing of the roof top unit and the second floor it serves

Attachment B: Detail of roof top ductwork exterior weatherproof wrap

Attachment C: Carrier Corporation model 48 PG equipment selection

Attachment D: Specification Sections:

15732 - Packaged Outdoor Central Station Air-Handling Units¹

15815 - Metal Duct and Duct Insulation

15900 - HVAC Instrumentation, Controls and Sequences²

15950 - Testing, Adjusting and Balancing

16269 - Variable Frequency Controllers

¹ If Contractor is not selected for the replacement of the RTU-2 controls, exclude 2.12-A, 2.12-C and 2.12-D.

² If Contractor is not selected for the replacement of the RTU-2 controls, exclude those portions of the specification associated with providing such controls.

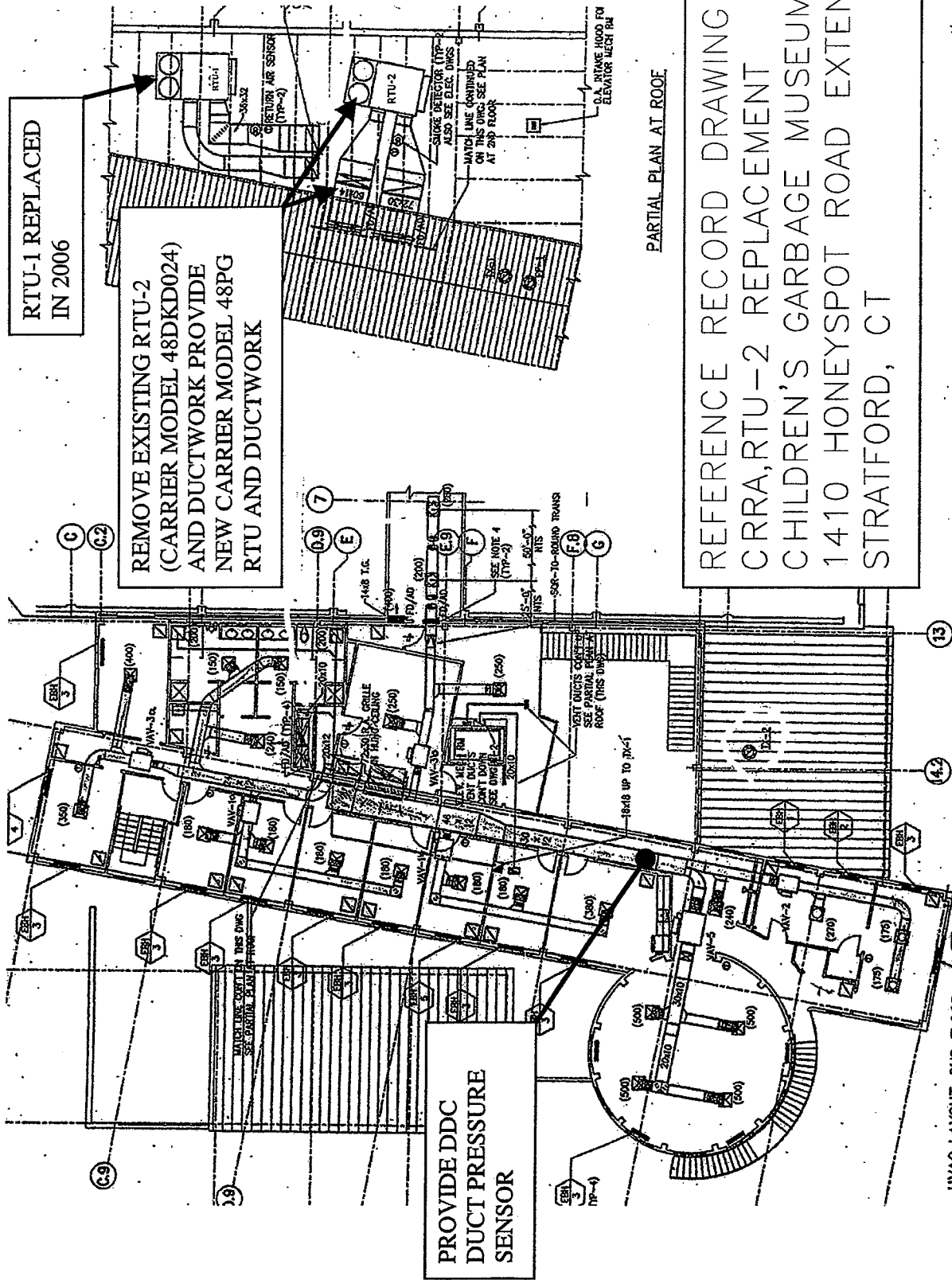
ATTACHMENT A

To

SCOPE OF WORK

**RECORD DRAWING OF THE ROOFTOP UNIT
AND THE SECOND FLOOR IT SERVES**

ATTACHMENT "A"



RTU-1 REPLACED
IN 2006

REMOVE EXISTING RTU-2
(CARRIER MODEL 48DKD024)
AND DUCTWORK PROVIDE
NEW CARRIER MODEL 48PG
RTU AND DUCTWORK

PROVIDE DDC
DUCT PRESSURE
SENSOR

PARTIAL PLAN AT ROOF

REFERENCE RECORD DRAWING FOR:
CRRA, RTU-2 REPLACEMENT
CHILDREN'S GARBAGE MUSEUM
1410 HONEYSPOT ROAD EXTENSION
STRATFORD, CT

HVAC 1 AY/11T-2ND FLOOR
2ND FLOOR AREA SERVED BY RTU-2

JUNE 1, 2007

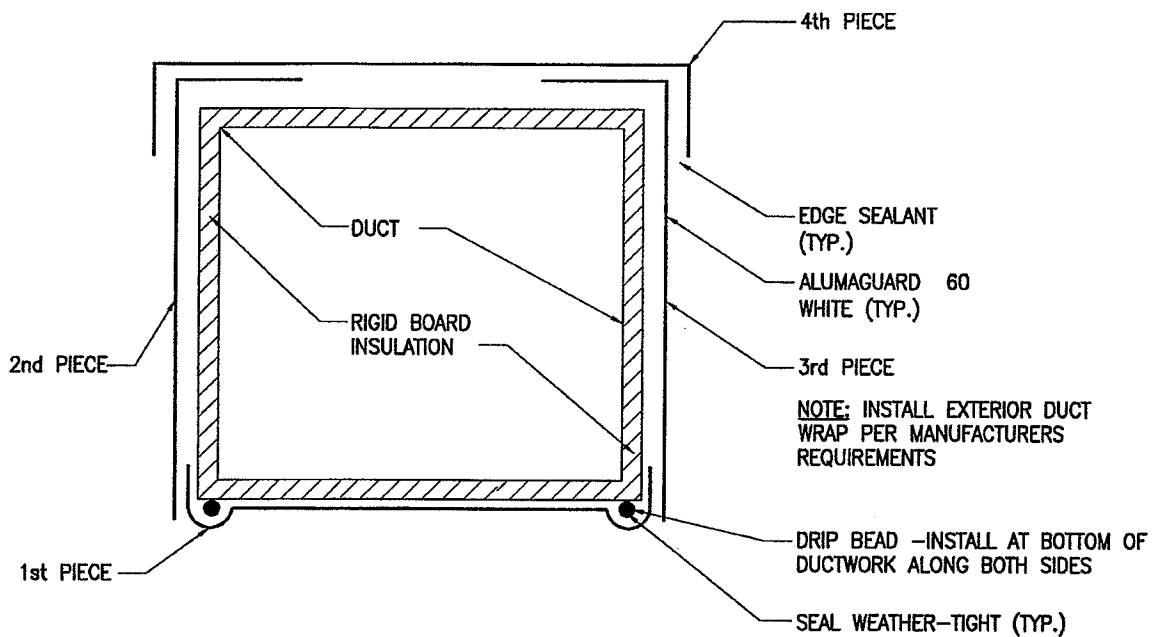
ATTACHMENT B

To

SCOPE OF WORK

**DETAIL OF ROOF TOP DUCTWORK EXTERIOR
WEATHERPROOF WRAP**

ATTACHMENT "B"



EXTERIOR DUCT WRAP INSTALLATION

SCALE: N.T.S.

CRRA, RTU-2 REPLACEMENT
CHILDREN'S GARBAGE MUSEUM
1410 HONEYSPOOT ROAD EXTENSION
STRATFORD CT

ATTACHMENT C

To

SCOPE OF WORK

**CARRIER CORPORATION MODEL 48 PG
EQUIPMENT SELECTION**

ATTACHMENT C

Performance Summary For RTU-2

Project: CRRA - Childrens Garbage Museum
Prepared By:

PROPOSED RTU

05/09/2007
12:01PM

Part Number: 48PGEC24-BC6--BP

ARI EER:.....11.60
IPLV:.....12.0
Base Unit Weight:.....2588 lb
Base Unit Dimensions
Unit Length:.....196.4 in
Unit Width:.....86.3 in
Unit Height:.....57.8 in
Unit Voltage-Phase-Hertz:.....460-3-60
Air Discharge:.....Vertical
Fan Drive Type:.....Belt
Actual Airflow:.....7000 CFM
Site Altitude:.....37 ft

Cooling Performance

Condenser Entering Air DB:.....95.0 F
Evaporator Entering Air DB:.....80.0 F
Evaporator Entering Air WB:.....67.0 F
Entering Air Enthalpy:.....31.46 BTU/lb
Evaporator Leaving Air DB:.....57.4 F
Evaporator Leaving Air WB:.....55.6 F
Evaporator Leaving Air Enthalpy:.....23.55 BTU/lb
Gross Cooling Capacity:.....248.93 MBH
Gross Sensible Capacity:.....170.80 MBH
Compressor Power Input:.....18.70 kW
Coil Bypass Factor:.....0.160

Heating Performance

Heating Airflow:.....7000 CFM
Entering Air Temp:.....70.0 F
Leaving Air Temp:.....109.2 F
Gas Input Capacity:.....281.0 / 365.0 MBH
Gas Heating Capacity:.....296.00 MBH
Temperature Rise:.....39.2 F

MEDIUM HEAT

Supply Fan

External Static Pressure:.....1.00 in wg
Options / Accessories Static Pressure
Economiser:.....0.08 in wg
Total External Static:.....1.08 in wg
Fan RPM:.....1015
Fan Power:.....4.78 BHP
Fan Motor Horsepower:.....5.0 hp WITH VFD
NOTE:.....Mid-Low Range Fan Option

Electrical Data

Minimum Voltage:.....414
Maximum Voltage:.....506
Compressor #1 RLA:.....15.4
Compressor #1 LRA:.....110
Compressor #2 RLA:.....15.4
Compressor #2 LRA:.....110
Outdoor Fan Motor Qty:.....6
Outdoor Fan Motor HP (ea):.....0.25
Outdoor Fan FLA (ea):.....0.7
Indoor Fan Motor Type:.....Mid Low
Indoor Fan Motor HP:.....5

ATTACHMENT D

To

SCOPE OF WORK

SPECIFICATION SECTIONS

15732 - Packaged Outdoor Central Station Air-Handling Units

15815 - Metal Duct and Duct Insulation

15900 - HVAC Instrumentation, Controls and Sequences

15950 - Testing, Adjusting and Balancing

16269 - Variable Frequency Controllers

SECTION 15732 - PACKAGED, OUTDOOR, CENTRAL-STATION AIR-HANDLING UNITS**PART 1 - GENERAL****1.1 SCOPE**

- A. Provide replacement roof top unit with VFD drive.
- B. Provide adaptor curb.

1.2 SUMMARY

- A. This Section includes packaged, outdoor, central-station air-handling units (rooftop units) with the following components and accessories:
 - 1. Direct-expansion cooling.
 - 2. Gas furnace.
 - 3. Economizer outdoor- and return-air damper section.
 - 4. Roof curb adaptor.
 - 5. Scheduled capacities.

1.3 DEFINITIONS

- A. Outdoor-Air Refrigerant Coil: Refrigerant coil in the outdoor-air stream to reject heat during cooling operations and to absorb heat during heating operations. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.
- B. Outdoor-Air Refrigerant-Coil Fan: The outdoor-air refrigerant-coil fan in RTUs. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.
- C. RTU: Rooftop unit. As used in this Section, this abbreviation means packaged, outdoor, central-station air-handling units. This abbreviation is used regardless of whether the unit is mounted on the roof or on a concrete base on ground.
- D. Supply-Air Fan: The fan providing supply-air to conditioned space. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.
- E. Supply-Air Refrigerant Coil: Refrigerant coil in the supply-air stream to absorb heat (provide cooling) during cooling operations and to reject heat (provide heating) during heating operations. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.
- F. VVT: Variable-air volume and temperature.

1.4 SUBMITTALS

- A. 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. Wiring Diagrams: Power, signal, and control wiring.
 - 2. Curb Adaptor
 - 3. Control components provided with roof top unit
- B. Field quality-control test reports.
- C. Operation and maintenance data.
- D. Warranty.

1.5 QUALITY ASSURANCE

- A. Unit shall well exceed ASHRA 90.1-2001 Energy Efficiency Standards. All units shall be ENERGY STAR qualified.
- B. Unit shall be rated in accordance with ARI Standards 210 (03-12) and 360 on all others. All units shall be designed in accordance with UL Standard 1995. Unit shall be rated in accordance with ARI sound standards 270 or 370.
- C. Unit shall be designed to conform to ASHRAE 15.
- D. Unit shall be UL and UL, Canada, tested and certified in accordance with ANSI Z21.47 Standards as a total package.
- E. Roof curb shall be designed to conform to NRCA Standards.
- F. Insulation and adhesive shall meet NFPA 90A and 90B requirements for flame spread and smoke generation.
- G. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
- H. NFPA Compliance: Comply with NFPA 90A and NFPA 90B.
- I. UL Compliance: Comply with UL 1995.
- J. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of RTUs that fail in materials or workmanship within specified warranty period.
1. Warranty Period for Compressors: Manufacturer's standard, but not less than five years from date of Substantial Completion.
 2. Warranty Period for Gas Furnace Heat Exchangers: Manufacturer's standard, but not less than 10 years from date of Substantial Completion.
 3. Warranty Period for Solid-State Ignition Modules: Manufacturer's standard, but not less than three years from date of Substantial Completion.
 4. Warranty Period for Control Boards: Manufacturer's standard, but not less than three years from date of Substantial Completion.

PART 2 - PRODUCTS**2.1 SYSTEM DESCRIPTION**

- A. Unit is an outdoor rooftop mounted, electrically controlled heating and cooling unit utilizing fully hermetic scroll compressors with on demand crankcase heaters for cooling duty and induced draft gas combustion for heating duty. Supply air shall be discharged horizontally, as shown on contract drawings. Units shall be of ultra high cooling efficiency and utilize environmentally friendly R-410A refrigerant.

2.2 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Carrier Corporation Model 48 PG.

2.3 CASING

- A. Constructed of galvanized steel, bonderized and coated with a pre-painted baked enamel finish on all externally exposed surfaces. Internal surfaces shall be of a primer coated finish.
- B. All air stream interior surfaces shall be insulated with a minimum ½-in. thick, 1 lb density foil-faced cleanable insulation. Insulation shall be bonded with a thermosetting resin and coated with an acrylic or other material that meets the NFPA 90 flame retardance requirements and has an "R" value of 3.70. Insulation shall also be encapsulated with panel design or tape edges ensuring secure fit.
- C. Cabinet panels shall be hinged with integrated non-corrosive hinges. Large area hinged access panels for the filter, compressors, evaporator fan, and control box and heat section areas. Each panel shall use multiple quarter-turn latches and handles. Each major external hinged access panel shall be double-wall construction and permanently attached to the rooftop unit. Panels shall also include tiebacks.

- D. Return air filters shall be accessible through a dedicated hinged access panel and be on a slide-out track using standard size filters. Filter shall be standard off the shelf sizes and be the size per cabinet. Capability for 2 or 4 inch filters shall be on all sizes.
- E. Holes shall be provided in the base rails (minimum 16 gage) for rigging shackles and level travel and movement during overhead rigging operations.
- F. Fork lift slots shall be available from two sides of the unit (end and side).
- G. Unit shall have a factory-installed internally sloped condensate drain pan, providing a minimum 3/4-in.-14 NPT connection to prevent standing water from accumulating. Pan shall be fabricated of epoxy powder coated steel for other sizes. All drain pans conform to ASHRAE 62 self-draining provisions.
- H. Unit shall have standard thru-the-bottom power and control wiring connection capability.

2.4 FANS

- A. Indoor Blower (Evaporator Fan):
 - 1. Centrifugal supply air blower shall have rubber-isolated, pillow-block ball bearings and adjustable belt drive.
 - 2. Fan wheel shall be made from steel with a corrosion resistant finish. It shall be a dynamically balanced, double-inlet type with forward-curved blades.
 - 3. The indoor fan system (blower wheels, motors, belts, and both bearings) shall slide out for easy access.
 - 4. Evaporator-fan motors shall be continuous operation, open drip-proof. Bearings shall be sealed, permanently lubricated ball-bearing type for longer life and lower maintenance.
 - 5. Fan belt catch system shall be used.
- B. Condenser fans shall be of the direct-driven propeller type, with corrosion-resistant aluminum blades riveted to corrosion-resistant steel supports. They shall be dynamically balanced and discharge air upwards. Condenser-fan motors shall be totally enclosed, thermally protected, and be of a shaft down design to protect from direct contact from harsh environments.
- C. Induced-draft blower shall be of the direct-driven, single inlet, forward-curved, centrifugal type. It shall be made from aluminized steel with a corrosion-resistant finish and shall be dynamically balanced.

2.5 COILS

- A. Supply-Air Refrigerant Coil:
 - 1. Dual circuit unit shall have face-split type evaporator coils.
 - 2. Condenser and evaporator coils shall be single slab, single pass design to facilitate easy coil cleaning. Composite coils or coils that require unit top panels removed shall be unacceptable.

3. Coils shall be leak tested at 170 psig and pressure tested at 1875 psig.
4. Coil Coating:
 - a. Pre-coated aluminum-fin coils shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.

2.6 REFRIGERANT CIRCUIT COMPONENTS

- A. Number of Refrigerant Circuits and Compressors: Two.
- B. Compressors:
 1. Fully hermetic, scroll type with on demand crankcase heaters, internal high-pressure and temperature protection.
 2. Factory mounted on rubber grommets and internally spring mounted for vibration isolation.
 3. Be mounted on dedicated mounting plate to ensure secure design and reduced sound levels.
- C. Refrigeration Specialties:
 1. Refrigerant: R-407C or R-410A.
 2. Expansion valve with replaceable thermostatic element.
 3. Refrigerant filter/dryer with pressure parts.
 4. Manual-reset high-pressure safety switch.
 5. Automatic-reset low-pressure safety switch.
 6. Minimum off-time relay.
 7. Automatic-reset compressor motor thermal overload.
 8. Brass service valves installed in compressor suction and liquid lines.

2.7 AIR FILTRATION

- A. Standard filter section shall consist of factory-installed 2-in. thick disposable fiberglass filters and shall be on a dedicated slide out track to easily facilitate access and replacement.
- B. Filter section shall use standard size filters and be of common sizes within cabinet sizes.
- C. Provide 2" filters with minimum of MERV 5 rating

2.8 GAS FURNACE

- A. Induced-draft combustion type with energy saving direct-spark ignition system and redundant main gas valve with 2-stage capability.
- B. Heat Exchanger:

1. The stainless steel heat exchanger shall be of the tubular-section type, constructed of a minimum of 20-gage type 409 stainless steel, including stainless steel tubes, vestibule plate, and collector box.
2. Burner shall be of the in-shot type constructed of aluminum-coated steel
3. All gas piping shall enter the unit at a single location. Gas entry shall be capable through side or bottom for unit.
4. All factory-installed orifices are for operation up to 2,000 feet of altitude.
5. The integrated gas controller (IGC) board shall include gas heat operation fault notification using an LED (light-emitting diode).
6. The IGC board shall contain algorithms that modify evaporator-fan operation to prevent future cycling on high-temperature limit switch.
7. The LED shall be visible without removal of control box access panel.
8. Gas burner tray, when disconnected, shall easily slide out for maintenance.

2.9 INTEGRATED ECONOMIZER AND DAMPERS

A. Integrated Economizer:

1. Tilt-out economizer shall be furnished and installed complete with outside air dampers and controls and barometric relief damper.
2. Low-leakage, opposing, gear-driven dampers with UL approved gears.
3. Capable of introducing up to 200% outdoor air for minimum ventilation as well as free cooling.
4. Damper actuator shall be electronic 4 to 20 mA/2 to 10 vdc fully modulating design.
5. Economizer outdoor hood requires field assemble.
6. Economizer shall be factory installation.

2.10 ELECTRICAL POWER CONNECTION

- ### A.
- Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in overcurrent protection.

2.11 MOTORS

- ### A.
- Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have line break thermal and current overload protection.
- ### B.
- Evaporator fan motor shall have permanently lubricated, sealed bearings and circuit breakers.
- ### C.
- All evaporator fan motors 5 hp and larger shall meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT), effective October 24, 1997.
- ### D.
- Totally enclosed condenser-fan motor shall have permanently lubricated, sealed bearings, and inherent automatic-reset thermal overload protection.

- E. Induced-draft motor shall have permanent lubricated sealed bearings and inherent automatic-reset thermal overload protection.

2.12 CONTROLS AND SAFETIES

- A. Controller to be manufactured by Novar to match existing Building Automation System (provide controller separate from RTU):
1. Shall provide a 5 deg. F temperature difference between cooling and heating set points to meet ASHRAE 90.1 Energy Standard.
 2. Shall provide and display a current alarm list and an alarm history list.
 3. Automatic compressor redundancy.
 4. Service run test capability.
 5. Shall accept input from a CO2 sensor.
 6. Configurable alarm light shall be provided which activates when certain types of alarms occur.
 7. Compressor minimum run time (3 minutes) and minimum off time (5 minutes) are provided.
 8. Service diagnostic mode.
 9. Economizer control.
 10. Multiple capacity stages.
 11. Unit shall be complete with self-contained low-voltage control circuit.
- B. Safeties: Unit control components shall be provided as part of RTU equipment as follows.
1. Unit shall incorporate a solid-state compressor lockout that provides optional reset capability at the space thermostat, should any of the following safety devices trip and shut off compressor:
 - a. Compressor lockout protection provided for either internal or external overload.
 - b. Low-pressure protection.
 - c. Freeze protection (evaporator coils).
 - d. High-pressure protection (high pressure switch or internal).
 - e. Loss of charge protection.
 2. Supply-air sensor shall be located in the unit and detect both heating and cooling operation.
 3. Induced draft heating section shall be provided with the following minimum protections:
 - a. High-temperature limit switch.
 - b. Induced-draft motor speed sensor.
 - c. Flame rollout switch.
 - d. Flame proving controls
 - e. Redundant gas valve.
- C. Novar DDC Controller:
1. Controller shall have volatile-memory backup.
 2. Safety Control Operation:

- a. Smoke Detectors: Stop fan and close outdoor-air damper if smoke is detected. Provide additional contacts for alarm interface to fire alarm control panel.
3. Scheduled Operation: Occupied and unoccupied periods on seven day clock with a minimum of four programmable periods per day.
4. Unoccupied Period:
 - a. Heating Setback: 10 deg F (5.6 deg C).
 - b. Cooling Setback: 5 deg F.
 - c. Override Operation: Two hours.
5. Supply Fan Operation:
 - a. Occupied Periods: Run fan continuously.
 - b. Unoccupied Periods: Run fan continuously to pressurize space.
6. Refrigerant Circuit Operation:
 - a. Occupied Periods: Cycle or stage compressors to match compressor output to cooling load to maintain room temperature. Cycle condenser fans to maintain maximum hot-gas pressure.
 - b. Unoccupied Periods: Compressors off.
7. Gas Furnace Operation:
 - a. Occupied Periods: Stage burner to maintain room temperature.
 - b. Unoccupied Periods: Cycle burner to maintain setback temperature.
8. Minimum Outdoor-Air Damper Operation:
 - a. Occupied Periods: Open to 15 percent, modulate per CO₂.
 - b. Unoccupied Periods: Open to 15 percent.
9. Economizer Outdoor-Air Damper Operation:
 - a. Occupied Periods: Open to 15 percent fixed minimum intake, and maximum 100 percent of the fan capacity to comply with ASHRAE Cycle II. Controller shall permit air-side economizer operation when outdoor air is less than 60 deg F. Use mixed-air and outdoor-air temperature to adjust mixing dampers. During economizer cycle operation, lock out cooling.
 - b. Unoccupied Periods: Minimize outdoor-air damper and open return-air damper.
10. VVT Relays:
 - a. Provide heating- and cooling-mode changeover relays compatible with VVT terminal control system required in Division 15 Sections "Air Terminal Units" and "HVAC Instrumentation and Controls."

D. Interface Requirements for HVAC Instrumentation and Control System:

1. Interface relay for scheduled operation.
2. Interface relay to provide indication of fault at the central workstation and diagnostic code storage.
3. Provide compatible interface for central HVAC Novar control workstation for the following:
 - a. Adjusting set points.
 - b. Monitoring supply fan start, stop, and operation.
 - c. Inquiring data to include outdoor-air damper position, supply- and room-air temperature and humidity.
 - d. Monitoring occupied and unoccupied operations.

2.13 ACCESSORIES

- A. Duplex, 115-V, ground-fault-interrupter outlet with 15-A overcurrent protection. Include transformer if required. Outlet shall be energized even if the unit main disconnect is open.
- B. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.
- C. Coil guards of painted, galvanized-steel wire.
- D. Concentric diffuser with white louvers and polished aluminum return grilles, insulated diffuser box with mounting flanges, and interior transition.

2.14 ROOF CURB ADAPTER

- A. Adapter Roof Curb
 1. Shall be available for fit up to previously installed Carrier 48 DKD024 roof curb. Horizontal RTU to Horizontal discharge RTU.
 2. Provide insulation as required for exposed areas of curb.

2.15 CAPACITIES AND CHARACTERISTICS

- A. Supply-Air Fan:
 1. Airflow: 7,000 CFM.
 2. External Static Pressure: 1.08" WC.
 3. Fan Speed: 1015 RPM.
 4. Motor Horsepower: 5.0 HP.
 5. Motor Speed: Variable.
- B. Supply-Air Refrigerant Coil:
 1. Total Cooling Capacity: 249 MBH.
 2. Sensible Cooling Capacity: 171 MBH.
 3. Entering-Air Dry-Bulb Temperature: 80 deg F.

4. Entering-Air Wet-Bulb Temperature: 67 deg F..
 5. Coating: Epoxy-phenolic.
- C. Outdoor-Air Refrigerant Coil:
1. Ambient-Air Temperature: 95 deg F.
 2. Coating: Epoxy-phenolic.
 3. Fan Motor: ¼ HP each.
 4. Number of Fans: 6 Fans.
- D. Compressors:
1. Power Input: 15.4 RLA.
 2. Energy-Efficiency Ratio (EER): 11.60.
 3. Part Load IPLV: 12.0.
- E. Gas Furnace:
1. Airflow: 7,000 CFM.
 2. Efficiency: 81 percent.
 3. Input: 281.0/365.0 MBH (Medium Heat)
 4. Entering-Air Temperature: 70 deg F.
 5. Air-Temperature Rise: 39.2 F.
- F. Recirculating-Air Filters:
1. Minimum Face Area: 9 – 16" x 25".
 2. Thickness: 2 inches.
- G. Outdoor-Air Screens:
1. Minimum Face Area: 3 – 20" x 25"
- H. Electrical Characteristics for Single-Point Connection:
1. Voltage: 460.
 2. Phase: 3.
 3. Hertz: 60.
 4. Full-Load Amperes:
 5. Minimum Circuit Ampacity:
 6. Maximum Overcurrent Protection:
- I. Sound Power: Radiated from condenser casing.
1. 1st Octave: 90.0 dB.
 2. 2nd Octave: 86.3 dB.
 3. 3rd Octave: 83.6 dB.
 4. 4th Octave: 82.9 dB.
 5. 5th Octave: 80.3 dB.
 6. 6th Octave: 74.9 dB.
 7. 7th Octave: 71.4 dB.

8. 8th Octave: 66.5 dB.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. **Roof Curb:** Install roof curb adaptor to transition from existing carrier model 48 DKD024 to new roof top unit. Seal all points to be weather tight. Secure adaptor curb to existing curb.
- B. **Unit Support:** Install unit level on existing curb. Coordinate wall penetrations and flashing with wall construction. Secure RTUs to structural support with anchor bolts.
- C. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.
- D. Install piping adjacent to RTUs to allow service and maintenance.
 1. **Gas Piping:** Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.
- E. Duct installation requirements are specified in other Division 15 Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
 1. Install side discharge duct to existing opening..
 2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
 3. Connect supply ducts to RTUs with flexible duct connectors specified in Division 15 Section "Duct Accessories."
 4. Install return-air duct continuously through roof structure.

3.2 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 installations, including connections, and to assist in testing. Report results in writing.
- C. **Tests and Inspections:**
 1. After installing RTUs and after electrical circuitry has been energized, test units for compliance with requirements.

2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Remove and replace malfunctioning units and retest as specified above.

3.3 CLEANING AND ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site during other-than-normal occupancy hours for this purpose.
- B. After completing system installation and testing, adjusting, and balancing RTU and air-distribution systems, clean filter housings and install new filters.

END OF SECTION 15732

SECTION 15815 - METAL DUCTS AND DUCT INSULATION**PART 1 - GENERAL****1.1 SCOPE**

- A. Provide metal duct from new horizontal discharge RTU to existing supply and return. Duct to be on roof, exposed, insulated and protected from weather.
- B. Insulate roof top duct.

1.2 SUMMARY

- A. Section Includes:
 - 1. Rectangular ducts and fittings.
 - 2. Sheet metal materials.
 - 3. Sealants and gaskets.
 - 4. Hangers and supports.
 - 5. Duct Insulation
- B. Related Sections:
 - 1. Division 15 Section "Testing, Adjusting, and Balancing" for testing, adjusting, and balancing requirements for metal ducts.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.
- B. Structural Performance: Duct supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
 2. Duct layout indicating sizes, configuration, and static-pressure classes.
- C. Duct insulation materials and products.

1.5 QUALITY ASSURANCE

- A. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-Up."
- B. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6.4.4 - "HVAC System Construction and Insulation."

PART 2 - PRODUCTS

2.1 RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-4, "Transverse (Girth) Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-5, "Longitudinal Seams - Rectangular Ducts," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 2, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: **G90**.
 - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.

2.3 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL;723; certified by an NRTL.
- B. Water-Based Joint and Seam Sealant:
 - 1. Application Method: Brush on.
 - 2. Solids Content: Minimum 65 percent.
 - 3. Shore A Hardness: Minimum 20.
 - 4. Water resistant.
 - 5. Mold and mildew resistant.
 - 6. VOC: Maximum 75 g/L (less water).
 - 7. Maximum Static-Pressure Class: 10-inch wg (2500 Pa), positive and negative.
 - 8. Service: Indoor or outdoor.
 - 9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
- C. Flanged Joint Sealant: Comply with ASTM C 920.
 - 1. General: Single-component, acid-curing, silicone, elastomeric.
 - 2. Type: S.
 - 3. Grade: NS.
 - 4. Class: 25.
 - 5. Use: O.
- D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

2.4 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 4-1 (Table 4-1M), "Rectangular Duct Hangers Minimum Size," and Table 4-2, "Minimum Hanger Sizes for Round Duct."
- D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials. Roof top support to be equal to product manufacture by "B-Line" model "C-Port" for support system at the roof interface

E.

2.5 DUCT INSULATION MATERIALS

A. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid hermetically sealed cells. Factory-applied jacket requirements are specified in Part 2 "Factory-Applied Jackets" Article.

1. Products: Board Insulation:

a. Board Insulation: ASTM C552, Type IV.

2.6 OUTDOOR DUCT FIELD-APPLIED JACKETS

A. Self-Adhesive Outdoor Jacket: 60-mil- (1.5-mm-) thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a cross laminated polyethylene film covered with aluminum-foil facing.

1. Products:

a. Polyguard; Alumaguard 60.

2.7 OUTDOOR DUCT INSULATION SECUREMENTS

A. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:

1. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch (0.76 mm) thick by 2 inches (50 mm) square.
2. Spindle: Copper or zinc-coated, low carbon steel fully annealed, 0.106 inch (2.6 mm) diameter shank, length to suit depth of insulation indicated.
3. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers and substrates.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install ducts with fewest possible joints.

3.2 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":
 - 1. Outdoor, Supply-Air Ducts: Seal Class A.
 - 2. Outdoor, Return-Air Ducts: Seal Class C.

3.3 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Hangers and Supports."
- B. Support duct in configuration similar to existing rooftop duct system. Methods used must not damage rubber roof. Support to be equal to product manufacture by "B-Line" model "C-Port" support system at the roof interface

3.4 START UP

- A. Air Balance: Comply with requirements in Division 15 Section "Testing, Adjusting, and Balancing."

3.5 DUCT SCHEDULE

- A. Supply Ducts:
 - 1. Ducts Connected to Variable-Air-Volume Air-Handling Units
 - a. Pressure Class: Positive 2-inch
 - b. Minimum SMACNA Seal Class: A
 - c. SMACNA Leakage Class for Rectangular: 3.
- B. Return Ducts:
 - 1. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive or negative 2-inch wg (500 Pa)
 - b. Minimum SMACNA Seal Class: A.

- c. SMACNA Leakage Class for Rectangular: 6.

3.6 OUTDOOR DUCT INSULATION PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.7 COMMON INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties.
- B. Install insulation with tightly butted joints free of voids and gaps. Vapor barriers shall be continuous. Before installing jacket material, install vapor-barrier system.
- C. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, duct system, and pipe system as specified in insulation system schedules.
- D. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- E. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- F. Install multiple layers of insulation with longitudinal and end seams staggered.
- G. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- H. Keep insulation materials dry during application and finishing.
- I. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- J. Install insulation with least number of joints practical.
- K. Hangers and Anchors: Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
1. Install insulation continuously through hangers and around anchor attachments.
 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

- L. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- M. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches , 4 inches o.c.
 - a. For below ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape as recommended by insulation material manufacturer to maintain vapor seal.
 - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct and pipe flanges and fittings.
- N. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- O. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- P. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.8 DUCT AND PLENUM INSULATION INSTALLATION

- A. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
 - 1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
 - 2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
 - 3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
 - a. On duct sides with dimensions 18 inches (450 mm) and smaller, place pins along longitudinal centerline of duct. Space 3 inches (75 mm) maximum from insulation end joints, and 16 inches (400 mm) o.c.
 - b. On duct sides with dimensions larger than 18 inches (450 mm), space pins 16 inches (400 mm) o.c. each way, and 3 inches (75 mm) maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
 - c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.

- d. Do not overcompress insulation during installation.
 - e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches (50 mm) from 1 edge and 1 end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch (13-mm) outward-clinching staples, 1 inch (25 mm) o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
 - a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
 - b. Install vapor stops for ductwork and plenums operating below 50 deg F (10 deg C) at 18-foot (5.5-m) intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to 2 times the insulation thickness but not less than 3 inches (75 mm).
 5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows.
 6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch- (150-mm-) wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches (150 mm) o.c.

3.9 DUCT INSULATION SCHEDULE, GENERAL

- A. Plenums and Ducts Requiring Insulation:
 1. Outdoor, exposed supply and return.

END OF SECTION 15815

SECTION 15900 - HVAC INSTRUMENTATION CONTROLS AND SEQUENCES**PART 1 - GENERAL****1.1 SCOPE**

- A. Provide RTU controller, connect to RTU to facilitate operation. Connect RTU controller to building head end. Initiate & test control sequences. Provide duct static pressure sensor, wiring and control interface. Provide CO2 sensor wiring and control. Incorporate existing RTU into new controller. Provide graphical display on embedded web pages for existing unit.

1.2 SUMMARY

- A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units not supplied with factory-wired controls.
- B. See Division 15 Section "Sequence of Operation" for requirements that relate to this Section.
- C. See Section 15732 2.12 for RTU controller to be provided separately from RTU.

1.3 SUBMITTALS

- A. Product Data: For each control device indicated.
- B. Shop Drawings:
 - 1. Schematic flow diagrams.
 - 2. Power, signal, and control wiring diagrams.
 - 3. DDC System Hardware: Wiring diagrams, schematic control diagrams.
 - 4. Control System Software: Schematic diagrams, written descriptions, and points list.
 - 5. Sequence of Operation
 - 6. Alarms
 - 7. Web Accessible control parameter
- C. Software and firmware operational documentation.
- D. Field quality-control test reports.
- E. Operation and maintenance data.

1.4 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.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturer: Subject to compliance with requirements, provide products by the manufacturer specified.

2.2 CONTROL SYSTEM

- A. Manufacturer:
 - 1. Novar/Trend
- B. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, and accessories to control mechanical systems.
- C. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems. An operator workstation permits interface with the network via dynamic color graphics with each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

2.3 DDC EQUIPMENT

- A. Operator Workstation: Existing Novar/Trend System.
- B. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; local operator access and display panel; integral interface equipment; and backup power source.
 - 1. Units monitor or control each I/O point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator workstation.
 - 2. Stand-alone mode control functions operate regardless of network status. Functions include the following:
 - a. Global communications.
 - b. Discrete/digital, analog, and pulse I/O.

- c. Monitoring, controlling, or addressing data points.
 - d. Software applications, scheduling, and alarm processing.
 - e. Testing and developing control algorithms without disrupting field hardware and controlled environment.
- C. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-only memory; and backup power source.
1. Units monitor or control each I/O point, process information, and download from or upload to operator workstation or diagnostic terminal unit.
 2. Stand-alone mode control functions operate regardless of network status. Functions include the following:
 - a. Global communications.
 - b. Discrete/digital, analog, and pulse I/O.
 - c. Monitoring, controlling, or addressing data points.
 3. Local operator interface provides for download from or upload to operator workstation.
- D. I/O Interface: Hardwired inputs and outputs may tie into system through controllers. Protect points so that shorting will cause no damage to controllers.
1. Binary Inputs: Allow monitoring of on-off signals without external power.
 2. Pulse Accumulation Inputs: Accept up to 10 pulses per second.
 3. Analog Inputs: Allow monitoring of low-voltage (0- to 10-V dc), current (4 to 20 mA), or resistance signals.
 4. Binary Outputs: Provide on-off or pulsed low-voltage signal, selectable for normally open or normally closed operation.
 5. Analog Outputs: Provide modulating signal, either low voltage (0- to 10-V dc) or current (4 to 20 mA).
 6. Tri-State Outputs: Provide two coordinated binary outputs for control of three-point, floating-type electronic actuators.
 7. Universal I/Os: Provide software selectable binary or analog outputs.
- E. Power Supplies: Transformers with Class 2 current-limiting type or overcurrent protection; limit connected loads to 80 percent of rated capacity. DC power supply shall match output current and voltage requirements and be full-wave rectifier type with the following:
1. Output ripple of 5.0 mV maximum peak to peak.
 2. Combined 1 percent line and load regulation with 100-mic.sec. response time for 50 percent load changes.
 3. Built-in overvoltage and overcurrent protection and be able to withstand 150 percent overload for at least 3 seconds without failure.
- F. Power Line Filtering: Internal or external transient voltage and surge suppression for workstations or controllers with the following:
1. Minimum dielectric strength of 1000 V.

2. Maximum response time of 10 nanoseconds.
3. Minimum transverse-mode noise attenuation of 65 dB.
4. Minimum common-mode noise attenuation of 150 dB at 40 to 100 Hz.

2.4 UNITARY CONTROLLERS

- A. Unitized, capable of stand-alone operation with sufficient memory to support its operating system, database, and programming requirements, and with sufficient I/O capacity for the application. Controller will have embedded web pages for monitoring and control of the system. Access via Internet Explorer will open web pages having graphical diagrams of the controlled unit(s) with monitoring points placed on the screen.
- B. No monitoring software package will be required for controller web page access.
 1. Configuration: Local keypad and display will allow access to the system when PC is not available. IQ view touchscreen will reside on the Ethernet system. ; diagnostic LEDs for power, communication, and processor; wiring termination to terminal strip or card connected with ribbon cable; memory with bios; and 72 - hour battery backup.
 2. Operating System: Manage I/O communication to allow distributed controllers to share real and virtual object information and allow central monitoring and alarms. Perform automatic system diagnostics; monitor system and report failures.
 3. Enclosure: Dustproof rated for operation at 32 to 120 deg F (0 to 50 deg C).

2.5 ELECTRONIC SENSORS

- A. Description: Vibration and corrosion resistant; for wall, immersion, or duct mounting as required.
- B. Thermistor Temperature Sensors, RTDs and Transmitters, BTD.
 1. Manufacturers:
 - a. Novar/Trend/Trend
 2. Accuracy: Plus or minus 0.5 deg F (0.3 deg C) at calibration point.
 3. Wire: Twisted, shielded-pair cable.
 4. Insertion Elements in Ducts: Single point, 18 inches long; use where not affected by temperature stratification or where ducts are smaller than 9 sq. ft. (0.84 sq. m).

2.6 THERMOSTATS

- A. Manufacturers:
 1. Novar/Trend/Trend.

PART 3 - EXECUTION**3.1 INSTALLATION**

- A. Verify location of thermostats, humidistats, and other exposed control sensors with Owner before installation.

3.2 ELECTRICAL WIRING AND CONNECTION INSTALLATION

- A. Install raceways, boxes, and cabinets according to Local Code.
- B. Install building wire and cable according to Local Code.
- C. Install signal and communication cable according to Local Code.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, field-assembled components and equipment installation, including connections. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.
 - 2. Test and adjust controls and safeties.
 - 3. Test calibration of controllers by disconnecting input sensors and stimulating operation with compatible signal generator.
 - 4. Test each point through its full operating range to verify that safety and operating control set points are as required.
 - 5. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust PID actions.
 - 6. Test each system for compliance with sequence of operation.
 - 7. Test software and hardware interlocks.
- C. DDC Verification:
 - 1. Verify that instruments are installed before calibration, testing, and loop or leak checks.
 - 2. Check instruments for proper location and accessibility.
 - 3. Check instrument installation for direction of flow, elevation, orientation, insertion depth, and other applicable considerations.
 - 4. Check instrument tubing for proper fittings, slope, material, and support.
 - 5. Check temperature instruments and material and length of sensing elements.
 - 6. Check control valves. Verify that they are in correct direction.
 - 7. Check DDC system as follows:

- a. Verify that DDC controller power supply is from emergency power supply, if applicable.
 - b. Verify that wires at control panels are tagged with their service designation and approved tagging system.
 - c. Verify that spare I/O capacity has been provided.
 - d. Verify that DDC controllers are protected from power supply surges.
- D. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain HVAC instrumentation and controls. Refer to Division 1 Section "Demonstration and Training."

APPENDIX "A" SEQUENCE OF OPERATION

- B. Variable Air volume – AHU (Typical of 1)
1. Run Conditions – Scheduled:
 - a. The unit shall run based upon an operator adjustable schedule.
 2. Return Air smoke Detection:
 - a. The unit shall shut down and generate an alarm upon receiving a return air smoke detector status.
 3. Supply Air smoke Detection:
 - a. The unit shall shut down and generate an alarm upon receiving a supply air smoke detector status.
 4. AHU Optimal Start:
 - a. The unit shall start prior to scheduled occupancy based on the time necessary for the zones to reach their occupied setpoints. The start time shall automatically adjust based on changes in outside air temperature and zone temperatures.
 5. Supply Fan:
 - a. The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.
 - 1) Alarms shall be provided as follows:
 - a) Supply Fan Failure: Commanded on, but the status is off.

- b) Supply Fan in Hand: Commanded off, but the status is on.
- c) Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).

6. Supply Air Duct Static Pressure Control:

- a. The controller shall measure duct static pressure and modulate the supply fan VFD speed to maintain a duct static pressure setpoint. The speed shall not drop below 30% (adj.). The static pressure setpoint shall be reset based on zone cooling requirements.
 - 1) The initial duct static pressure setpoint shall be .5 in H₂O (adj.).
 - 2) As cooling demand increases, the setpoint shall incrementally reset up to a maximum of .9 in H₂O (adj.).
 - 3) As cooling demand decreases, the setpoint shall incrementally reset down to a minimum of .3 in H₂O (adj.)
- b. Alarms shall be provided as follows:
 - 1) High Supply air static Pressure: If the supply air static pressure is 25% (adj.) greater than setpoint.
 - 2) Low Supply Air Static Pressure; If the supply air static pressure is 25% (adj.) less than setpoint.
 - 3) Supply Fan VFD Fault.
- c. If more zones need heating than cooling, then the supply air temperature setpoint shall be reset for heating as follows:
 - 1) The initial supply air temperature setpoint shall be 55 deg. F. (adj.).
 - 2) As heating demand increases, the setpoint shall incrementally reset up to maximum of 85 deg. F (adj.)
 - 3) As heating demand decreases, the setpoint shall incrementally reset down to a minimum of 72 deg. F (adj.).

7. Cooling Stages:

- a. The controller shall measure the supply air temperature and stage the cooling to maintain its cooling setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime.
- b. The cooling shall be enabled whenever:
 - 1) Outside air temperature is greater than 60 deg. F (adj.).
 - 2) AND the economizer is disabled or fully open.
 - 3) AND the supply fan status is on.
 - 4) AND the heating is not active.
- c. Alarms shall be provided as follows:
 - 1) High Supply air Temp: If the supply air temperature is 5 deg. F (adj.) greater than setpoint.

8. Gas Heating Stages:

- a. The controller shall measure the supply air temperature and stage the heating to maintain its heating setpoint. To prevent short cycling, there

- shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime.
- b. The heating shall be enabled whenever
 - 1) Outside air temperature is less than 65 deg. F (adj.)
 - 2) AND the supply fan status is on.
 - 3) AND the cooling (if present is not active.
 - c. The heating stages shall run for freeze protection whenever:
 - 1) Supply air temperature drops from 40 deg. F to 35 deg. F (adj.)
 - 2) AND the supply fan status is on.
 - d. Alarms shall be provided as follows:
 - 1) Low Supply air Temp: If the supply air temperature is 5 deg. F (adj.) less than setpoint.
9. Economizer:
- a. The controller shall measure the mixed air temperature and modulate the economizer dampers in sequence to maintain a setpoint 2 deg. F (adj.) less than the supply air temperature setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj) open whenever occupied.
 - b. The economizer shall be enabled whenever:
 - 1) Outside air temperature is less than 65 deg. F (adj).
 - 2) AND the outside air temperature is less than the return air temperature.
 - 3) AND the supply fan status is on.
 - c. The economizer shall close whenever:
 - 1) Mixed air temperature drops from 40 deg. F to 35 deg. F (adj.).
 - 2) OR the freezestat (if present) is on.
 - 3) OR on loss of supply fan status.
 - d. The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.
10. Minimum Outside Air Ventilation – Carbon Dioxide (CO2) Control:
- a. When in the occupied mode, the controller shall measure the return air CO2 levels and modulate the outside air dampers open on rising CO2 concentrations, overriding normal damper operation to maintain a CO2 setpoint of 930 ppm (adj.).
 - b. Alarms shall be provided as follows:
 - 1) High Return air Carbon dioxide concentration: If the return air CO2 concentration is greater than 1200 ppm (adj.)
11. Final Filter Hours:
- a. The controller shall monitor the fan runtime.
 - b. Alarm shall be provided as follows:
 - 1) Final Filter change Required: final filter has been in use for more than 1800 hrs. (adj.).
12. Mixed Air Temperature:

- a. The controller shall monitor the mixed air temperature and use as required for economizer control (if present) or preheating control (if present).
 - b. Alarms shall be provided as follows:
 - 1) High Mixed Air Temp: If the mixed air temperature is greater than 90 deg. F (adj.).
 - 2) Low Mixed Air Temp: If the mixed air temperature is less than 45 deg. F (adj.).
13. Return air Temperature:
- a. The controller shall monitor the return air temperature and use as required for setpoint control or economizer control (if present).
 - b. Alarms shall be provided as follows:
 - 1) High Return Air Temp: If the return air temperature is greater than 90 deg. F (adj.).
 - 2) Low Return Air Temp: if the return air temperature is less than 55 deg. F (adj.).
14. Supply Air Temperature:
- a. The controller shall monitor the supply air temperature.
 - b. Alarms shall be provided as follows:
 - 1) High Supply air Temp: If the supply air temperature is greater than 120 deg. F (adj.).
 - 2) Low Supply Air Temp: If the supply air temperature is less than 45 deg. F (adj.).

END OF SECTION 15900

SECTION 15950 - TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.1 SCOPE

- A. Verify RTU-2 airflow, pressures, temperatures rotation and amp draw.

1.2 SUMMARY

- A. Section Includes:
 - 1. Balancing Air Systems:
 - a. Variable-air-volume systems.

1.3 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An entity engaged to perform TAB Work.

1.4 QUALITY ASSURANCE

- A. Certify TAB field data reports and perform the following:
 - 1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
 - 2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine equipment performance data including fan curves.
- F. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- G. Examine test reports specified in individual system and equipment Sections.
- H. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- I. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.
- J. Examine operating safety interlocks and controls on HVAC equipment.
- K. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system-readiness checks and prepare reports. Verify the following:
 - 1. Permanent electrical-power wiring is complete.
 - 2. Automatic temperature-control systems are operational.
 - 3. Equipment and duct access doors are securely closed.
 - 4. Balance, smoke, and fire dampers are open.
 - 5. Isolating and balancing valves are open and control valves are operational.
 - 6. Windows and doors can be closed so indicated conditions for system operations can be met.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance" and in this Section.
 - 1. Comply with requirements in ASHRAE 62.1-2004, Section 7.2.2, "Air Balancing."
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 - 2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 15 Section "HVAC Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. For variable-air-volume systems, develop a plan to simulate diversity.
- D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- G. Verify that motor starters are equipped with properly sized thermal protection.
- H. Check dampers for proper position to achieve desired airflow path.
- I. Check for airflow blockages.
- J. Check condensate drains for proper connections and functioning.
- K. Check for proper sealing of air-handling-unit components.
- L. Verify that air duct system is sealed as specified in Division 15 Section "Metal Ducts."

3.5 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

- A. Compensating for Diversity: When the total airflow of all terminal units is more than the indicated airflow of the fan, place a selected number of terminal units at a minimum set-point airflow with the remainder at maximum airflow condition until the total airflow of the terminal units equals the indicated airflow of the fan. Select the reduced-airflow terminal units so they are distributed evenly among the branch ducts.
- B. Pressure-Independent, Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
1. Set outdoor-air dampers at minimum, and set return- and exhaust-air dampers at a position that simulates full-cooling load.
 2. Select the terminal unit that is most critical to the supply-fan airflow and static pressure. Measure static pressure. Adjust system static pressure so the entering static pressure for the critical terminal unit is not less than the sum of the terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
 3. Measure total system airflow. Adjust to within indicated airflow.
 4. Set terminal units at maximum airflow and adjust controller or regulator to deliver the designed maximum airflow. Use terminal-unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units the same as described for constant-volume air systems.
 5. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow the same as described for constant-volume air systems.
 - a. If air outlets are out of balance at minimum airflow, report the condition but leave outlets balanced for maximum airflow.
 6. Remeasure the return airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.
 - a. Adjust the fan and balance the return-air ducts and inlets the same as described for constant-volume air systems.
 7. Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure that adequate static pressure is maintained at the most critical unit.
 8. Record final fan-performance data.

3.6 PROCEDURES FOR MOTORS

- A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
1. Manufacturer's name, model number, and serial number.
 2. Motor horsepower rating.
 3. Motor rpm.

4. Efficiency rating.
 5. Nameplate and measured voltage, each phase.
 6. Nameplate and measured amperage, each phase.
 7. Starter thermal-protection-element rating.
- B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass of the controller to prove proper operation. Record observations including name of controller manufacturer, model number, serial number, and nameplate data.

3.7 PROCEDURES FOR HEAT-TRANSFER COILS

- A. Measure, adjust, and record the following data for each refrigerant coil:
1. Dry-bulb temperature of entering and leaving air.
 2. Wet-bulb temperature of entering and leaving air.
 3. Airflow.
 4. Air pressure drop.
 5. Refrigerant suction pressure and temperature.

3.8 REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

3.9 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
- B. Final Report Contents: In addition to certified field-report data, include the following:
1. Fan curves.
 2. Manufacturers' test data.
 3. Field test reports prepared by system and equipment installers.
- C. General Report Data: In addition to form titles and entries, include the following data:
1. Title page.
 2. Name and address of the TAB contractor.
 3. Project name.

4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
12. Nomenclature sheets for each item of equipment.
13. Notes to explain why certain final data in the body of reports vary from indicated values.
14. Test conditions for fans performance forms including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet- and dry-bulb conditions.
 - d. Fan drive settings including settings and percentage of maximum pitch diameter.
 - e. Settings for supply-air, static-pressure controller.
 - f. Other system operating conditions that affect performance.

END OF SECTION 15950

SECTION 16269 - VARIABLE FREQUENCY CONTROLLERS**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes solid-state, pulse-width modulated (PWM), variable frequency controllers (VFCs) for speed control of three-phase, squirrel-cage induction motors.
- B. VFC will be compatible with Novar BMS control system.

1.2 SUBMITTALS

- A. Product Data: For each type of VFC.
- B. Shop Drawings: For each VFC.
 - 1. Include wiring diagrams.
- C. Manufacturer Seismic Qualification Certification: Submit certification that VFCs, accessories, and components will withstand seismic forces defined in Division 16 Section "Electrical Supports and Seismic Restraints."
- D. Field quality-control test reports.
- E. Operation and maintenance data.
- F. Load-current and overload-relay heater list.
- G. Load-current and list of settings of adjustable overload relays.
- H. Novar control system compatibility interface

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100.
- B. Comply with NFPA 70.
- C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for VFCs, minimum clearances between VFCs, and adjacent surfaces and other items. Comply with indicated maximum dimensions and clearances.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation, capable of driving full load without derating, under the following conditions, unless otherwise indicated:
1. Ambient Temperature: 0 to 40 deg C.
 2. Humidity: Less than 90 percent (noncondensing).
 3. Altitude: Not exceeding 3300 feet (1005 m).
 4. enclosed in Rooftop unit cabinet.

1.5 COORDINATION

- A. Coordinate features of VFCs, installed units, and accessory devices with pilot devices and control circuits to which they connect.
- B. Coordinate features, accessories, and functions of each VFC and each installed unit with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

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:
1. ABB Power Distribution, Inc.; ABB Control, Inc. Subsidiary.
 2. Baldor Electric Company (Graham).
 3. Danfoss Inc.; Danfoss Electronic Drives Div.
 4. Eaton Corporation; Cutler-Hammer Products.
 5. General Electric Company; GE Industrial Systems.
 6. Rockwell Automation; Allen-Bradley Co.; Industrial Control Group.
 7. Siemens Energy and Automation; Industrial Products Division.
 8. Square D.
 9. Toshiba International Corporation.

2.2 VARIABLE FREQUENCY CONTROLLERS

- A. Description: NEMA ICS 2, IGBT, PWM, VFC; listed and labeled as a complete unit and arranged to provide variable speed of an NEMA MG 1, Design B, 3-phase induction motor by adjusting output voltage and frequency.
1. Provide unit suitable for operation of premium-efficiency motor as defined by NEMA MG 1.

- B. Design and Rating: Match load type such as fans, blowers, and pumps; and type of connection used between motor and load such as direct or through a power-transmission connection.
- C. Output Rating: 3-phase; 6 to 60 Hz, with voltage proportional to frequency throughout voltage range.
- D. Unit Operating Requirements:
1. Input ac voltage tolerance of 380 to 500 V, plus or minus 10 percent.
 2. Input frequency tolerance of 50/60 Hz, plus or minus 6 percent.
 3. Minimum Efficiency: 96 percent at 60 Hz, full load.
 4. Minimum Displacement Primary-Side Power Factor: 96 percent.
 5. Overload Capability: 1.1 times the base load current for 60 seconds; 2.0 times the base load current for 3 seconds.
 6. Starting Torque: 100 percent of rated torque or as indicated.
 7. Speed Regulation: Plus or minus 1 percent.
- E. Isolated control interface to allow controller to follow control signal over an 11:1 speed range.
1. Electrical Signal: 4 to 20 mA at 24 V.
- F. Internal Adjustability Capabilities:
1. Minimum Speed: 5 to 25 percent of maximum rpm.
 2. Maximum Speed: 80 to 100 percent of maximum rpm.
 3. Acceleration: 2 to a minimum of 22 seconds.
 4. Deceleration: 2 to a minimum of 22 seconds.
 5. Current Limit: 50 to a minimum of 110 percent of maximum rating.
- G. Self-Protection and Reliability Features:
1. Input transient protection by means of surge suppressors.
 2. Under- and overvoltage trips; inverter overtemperature, overload, and overcurrent trips.
 3. Motor Overload Relay: Adjustable and capable of NEMA ICS 2, Class 10 performance.
 4. Notch filter to prevent operation of the controller-motor-load combination at a natural frequency of the combination.
 5. Instantaneous line-to-line and line-to-ground overcurrent trips.
 6. Loss-of-phase protection.
 7. Reverse-phase protection.
 8. Short-circuit protection.
 9. Motor overtemperature fault.
- H. Automatic Reset/Restart: Attempts three restarts after controller fault or on return of power after an interruption and before shutting down for manual reset or fault correction. Bidirectional autospeed search shall be capable of starting into rotating loads spinning in either direction and returning motor to set speed in proper direction, without damage to controller, motor, or load.

- I. Power-Interruption Protection: To prevent motor from re-energizing after a power interruption until motor has stopped.
- J. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.
- K. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.
- L. Input Line Conditioning: Filtered
- M. Status Lights: Door-mounted LED indicators shall indicate the following conditions:
 - 1. Power on.
 - 2. Run.
 - 3. Overvoltage.
 - 4. Line fault.
 - 5. Overcurrent.
 - 6. External fault.
- N. Panel-Mounted Operator Station: Start-stop and auto-manual selector switches with manual speed control potentiometer and elapsed time meter.
- O. Indicating Devices: Meters or digital readout devices and selector switch, mounted flush in controller door and connected to indicate the following controller parameters:
 - 1. Output frequency (Hz).
 - 2. Motor speed (rpm).
 - 3. Motor status (running, stop, fault).
 - 4. Motor current (amperes).
 - 5. Motor torque (percent).
 - 6. Fault or alarming status (code).
 - 7. PID feedback signal (percent).
 - 8. DC-link voltage (VDC).
 - 9. Set-point frequency (Hz).
 - 10. Motor output voltage (V).
- P. Control Signal Interface:
 - 1. Electric Input Signal Interface: A minimum of 2 analog inputs (0 to 10 V or 0/4-20 mA) and 6 programmable digital inputs.
 - 2. Remote Signal Inputs: Capability to accept any of the following speed-setting input signals from the BMS or other control systems:
 - a. 0 to 10-V dc.
 - b. 0-20 or 4-20 mA.
 - c. Potentiometer using up/down digital inputs.
 - d. Fixed frequencies using digital inputs.
 - e. RS485.
 - f. Keypad display for local hand operation.

3. Output Signal Interface:
 - a. A minimum of 1 analog output signal (0/4-20 mA), which can be programmed to any of the following:
 - 1) Output frequency (Hz).
 - 2) Output current (load).
 - 3) DC-link voltage (VDC).
 - 4) Motor torque (percent).
 - 5) Motor speed (rpm).
 - 6) Set-point frequency (Hz).
4. Remote Indication Interface: A minimum of 2 dry circuit relay outputs (120-V ac, 1 A) for remote indication of the following:
 - a. Motor running.
 - b. Set-point speed reached.
 - c. Fault and warning indication (overtemperature or overcurrent).
 - d. PID high- or low-speed limits reached.
- Q. Communications: Provide an RS485 interface allowing VFC to be used with an external system within a multidrop LAN configuration. Interface shall allow all parameter settings of VFC to be programmed via Novar BMS control. Provide capability for VFC to retain these settings within the nonvolatile memory.
- R. Manual Bypass: Magnetic contactor arranged to safely transfer motor between controller output and bypass controller circuit when motor is at zero speed. Controller-off-bypass selector switch sets mode, and indicator lights give indication of mode selected. Unit shall be capable of stable operation (starting, stopping, and running), with motor completely disconnected from controller (no load).
- S. Bypass Controller: NEMA ICS 2, full-voltage, nonreversing enclosed controller with across-the-line starting capability in manual-bypass mode. Provide motor overload protection under both modes of operation with control logic that allows common start-stop capability in either mode.
- T. Integral Disconnecting Means: NEMA AB 1, instantaneous-trip circuit breaker with lockable handle.
- U. Isolating Switch: Non-load-break switch arranged to isolate VFC and permit safe troubleshooting and testing, both energized and de-energized, while motor is operating in bypass mode.
- V. Remote Indicating Circuit Terminals: Mode selection, controller status, and controller fault.

2.3 ACCESSORIES

- A. Devices shall be factory installed in controller enclosure, unless otherwise indicated.

- B. Push-Button Stations, Pilot Lights, and Selector Switches: NEMA ICS 2, heavy-duty type.
- C. Stop and Lockout Push-Button Station: Momentary-break, push-button station with a factory-applied hasp arranged so padlock can be used to lock push button in depressed position with control circuit open.
- D. Control Relays: Auxiliary and adjustable time-delay relays.
- E. Standard Displays:
 - 1. Output frequency (Hz).
 - 2. Set-point frequency (Hz).
 - 3. Motor current (amperes).
 - 4. DC-link voltage (VDC).
 - 5. Motor torque (percent).
 - 6. Motor speed (rpm).
 - 7. Motor output voltage (V).
- F. Historical Logging Information and Displays:
 - 1. Real-time clock with current time and date.
 - 2. Running log of total power versus time.
 - 3. Total run time.
 - 4. Fault log, maintaining last four faults with time and date stamp for each.
- G. Current-Sensing, Phase-Failure Relays for Bypass Controller: Solid-state sensing circuit with isolated output contacts for hard-wired connection; arranged to operate on phase failure, phase reversal, current unbalance of from 30 to 40 percent, or loss of supply voltage; with adjustable response delay.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Select features of each VFC to coordinate with ratings and characteristics of supply circuit and motor; required control sequence; and duty cycle of motor, controller, and load.
- B. Select horsepower rating of controllers to suit motor controlled.

3.2 CONTROL WIRING INSTALLATION

- A. Connect hand-off-automatic switch and other automatic-control devices where applicable.
 - 1. Connect selector switches to bypass only manual- and automatic-control devices that have no safety functions when switch is in hand position.

3.3 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
 - 1. Test insulation resistance for each enclosed controller element, bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.

- B. Manufacturer's Field Service: Engage a factory-authorized service representative to perform the following:
 - 1. Inspect controllers, wiring, components, connections, and equipment installation.
 - 2. Assist in field testing of equipment
 - 3. Report results in writing.

- C. Perform the following field tests and inspections and prepare test reports:
 - 1. Perform each electrical test and visual and mechanical inspection, except optional tests, stated in NETA ATS. 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.

3.4 ADJUSTING

- A. Set field-adjustable switches and circuit-breaker trip ranges.

END OF SECTION 16269

EXHIBIT B

To

BID FORM

PERFORMANCE BOND FORM

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable. The below addresses are to be used for giving required notice.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

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OWNER (Name and Address):

Connecticut Resources Recovery Authority 100 Constitution Plaza, 6 th Floor Hartford, CT 06103-1722
--

AGREEMENT

DATE:	
AMOUNT:	
PROJECT DESCRIPTION <small>(Including Name and Location):</small>	Replacement Of The 2 nd Floor Rooftop HVAC Unit At The Children's Garbage Museum Children's Garbage Museum 1410 Honeyspot Road Extension Stratford, Connecticut 06615

BOND

BOND NUMBER:	
DATE: <small>(Not earlier than Agreement Date)</small>	
AMOUNT:	DOLLARS (\$ _____)

IN WITNESS WHEREOF, Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on Pages 2 and 3 hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

--

(SEAL)

--

(SEAL)

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

SIGNATURE:		SIGNATURE:	
NAME AND TITLE:		NAME AND TITLE:	

TERMS AND CONDITIONS TO PERFORMANCE BOND

1. The Contractor and the Surety jointly and severally bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the foregoing Agreement, the terms of which are incorporated herein by reference. Any singular reference to the Contractor, the Surety, the Owner or any other party herein shall be considered plural where applicable.
2. If the Contractor performs the Agreement, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no Owner Default (as hereinafter defined), the Surety's obligation under this Bond shall arise after:
 - 3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default (as hereinafter defined) and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen (15) days after the receipt of such notice to discuss methods of performing the Agreement. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Agreement, but such an agreement shall not waive the Owner's right, if any, to subsequently declare a Contractor Default; and
 - 3.2 The Owner has declared a Contractor Default (as hereinafter defined) and formally terminated the Contractor's right to complete the Agreement. Such Contractor Default shall not be declared earlier than twenty (20) days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1.
 - 3.3 The Owner has agreed to pay the Balance of the Agreement Price to the Surety in accordance with the terms of the Agreement or to a contractor selected to perform the Agreement in accordance with the terms of the agreement with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 4.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Agreement; or
 - 4.2 Undertake to perform and complete the Agreement itself, through its agents or through independent contractors; or
 - 4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Agreement, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with a performance bond executed by a qualified surety equivalent to the bond issued on the Agreement, and pay to the Owner the amount of damages described in Paragraph 6; or
 - 4.4 Waive its right to perform and complete, arrange for completion or obtain a new contractor and with reasonable promptness under the circumstances:
 - 4.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or
 - 4.4.2 Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen (15) days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4 and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
6. After the Owner has terminated the Contractor's right to complete the Agreement, and if the Surety elects to act under Subparagraph 4.1, 4.2 or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Agreement, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Agreement. To the limit of the amount of this Bond, the Surety is obligated without duplication for:
 - 6.1 The responsibilities of the Contractor for correction of defective work and completion of the Agreement;
 - 6.2 Additional legal and delay costs resulting from the Contractor's Default and resulting from the actions or failure to act of the Surety under Paragraph 4; and
 - 6.3 Liquidated damages, or if no liquidated damages are specified in the Agreement, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Agreement. No right of action shall accrue on this Bond to any person or entity other than the Owner or its successors and assigns.
8. The Surety hereby waives notice of any change, including changes of time, to the Agreement or to related subcontracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two (2) years after Contractor Default or within two (2) years after the Contractor ceased working or within two (2) years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions

of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page of this Bond.
11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Agreement was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions confirming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

- 12.1 Balance of the Agreement Price: The total amount payable by the Owner to the Contractor under the Agreement after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Agreement.

12.2 Agreement: The agreement between the Owner and the Contractor identified on the signature page, including all Agreement Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with any of the terms of the Agreement.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Agreement or to perform and complete or comply with the other terms hereof.

EXHIBIT C

To

BID FORM

PAYMENT BOND FORM

PAYMENT BOND

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable. The below addresses are to be used for giving required notice.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

--	--

OWNER (Name and Address):

Connecticut Resources Recovery Authority 100 Constitution Plaza, 6 th Floor Hartford, CT 06103-1722
--

AGREEMENT

DATE:	
AMOUNT:	
PROJECT DESCRIPTION <small>(Including Name and Location):</small>	Replacement Of The 2 nd Floor Rooftop HVAC Unit At The Children's Garbage Museum Children's Garbage Museum 1410 Honeyspot Road Extension Stratford, Connecticut 06615

BOND

BOND NUMBER:	
DATE: (Not earlier than Agreement Date)	
AMOUNT:	DOLLARS (\$ _____)

IN WITNESS WHEREOF, Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on Pages 2 and 3 hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

--

(SEAL)

--

(SEAL)

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

SIGNATURE:		SIGNATURE:	
NAME AND TITLE:		NAME AND TITLE:	

TERMS AND CONDITIONS TO PAYMENT BOND

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Agreement, which is incorporated herein by reference.

thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
 - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment for labor, materials or equipment furnished for use in the performance of the Agreement, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2 Claimants who do not have a direct contract with the Contractor:
 - 4.2.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
 - 4.2.2 Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 - 4.2.3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
 - 6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2 Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owed by the Owner to the Contractor under the Agreement shall be used for the performance of the Agreement and to satisfy claims, if any, under any Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Agreement are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Agreement. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. The Surety hereby waives notice of any change, including changes of time, to the Agreement or to related subcontracts, purchase orders and other obligations.
11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Agreement, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
15. Definitions
 - 15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or

equipment for use in the performance of the Agreement. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Agreement, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished,

- 15.2 Agreement: The agreement between the Owner and the Contractor identified on the signature page, including all Agreement Documents and changes thereto.
- 15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Agreement or to perform and complete or comply with the other terms thereof.

EXHIBIT D

To

BID FORM

**SEEC FORM 11
NOTICE TO EXECUTIVE BRANCH STATE
CONTRACTORS AND PROSPECTIVE STATE
CONTRACTORS OF CAMPAIGN CONTRIBUTION
AND SOLICITATION BAN**

SEEC FORM 11

NOTICE TO EXECUTIVE BRANCH STATE CONTRACTORS AND PROSPECTIVE STATE CONTRACTORS OF CAMPAIGN CONTRIBUTION AND SOLICITATION BAN

This notice is provided under the authority of Connecticut General Statutes 9-612(g)(2), as amended by P.A. 07-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined below):

Campaign Contribution and Solicitation Ban

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract or state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to, or *solicit* contributions on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee;

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to, or solicit contributions on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

Duty to Inform

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

Penalties for Violations

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties--\$2000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of \$2000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or \$5000 in fines, or both.

Contract Consequences

Contributions made or solicited in violation of the above prohibitions may result, in the case of a state contractor, in the contract being voided.

Contributions made or solicited in violation of the above prohibitions, in the case of a prospective state contractor, shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State will not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information and the entire text of P.A 07-1 may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "State Contractor Contribution Ban."

Definitions:

"State contractor" means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. "State contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Prospective state contractor" means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. "Prospective state contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

"State contract" means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. "State contract" does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan or a loan to an individual for other than commercial purposes.

"State contract solicitation" means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

"Managerial or discretionary responsibilities with respect to a state contract" means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

"Dependent child" means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

"Solicit" means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact

information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 5
QUESTIONNAIRE CONCERNING AFFIRMATIVE
ACTION, SMALL BUSINESS CONTRACTORS
AND OCCUPATIONAL HEALTH AND SAFETY**



**QUESTIONNAIRE CONCERNING AFFIRMATIVE
ACTION, SMALL BUSINESS CONTRACTORS AND
OCCUPATIONAL HEALTH AND SAFETY**

Because CRRA is a political subdivision of the State of Connecticut, it is required by various statutes and regulations to obtain background information on prospective contractors prior to entering into a contract. The questions below are designed to assist CRRA in procuring this information. Many of the questions are required to be asked by RCSA 46a-68j-31. For the purposes of this form, "Contractor" means Bidder or Proposer, as appropriate.

	Yes	No
1. Is the Contractor an Individual? <i>If you answered "Yes" to Question 1, skip to Question 2. If you answered "No" to Question 1, proceed to Question 1A and then to Question 2.</i>	<input type="checkbox"/>	<input type="checkbox"/>
1A. How many employees does the Contractor have? <input type="text"/>		
2. Is the Contractor a Small Contractor based on the criteria in Schedule A? <i>If you answered "Yes" to Question 2, proceed to Question 2A and then to Question 3. If you answered "No" to Question 2, skip to Question 3.</i>	<input type="checkbox"/>	<input type="checkbox"/>
2A. Is the Contractor registered with the DAS as a Certified Small Business? <i>If you answered "Yes" to Question 2A, please provide a copy of your Set-Aside Certificate.</i>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is the Contractor a MWDP Business Enterprise based on the criteria in Schedule B? <i>If you answered "Yes" to Question 3, proceed to Question 3A and then to Question 4. If you answered "No" to Question 3, skip to Question 4.</i>	<input type="checkbox"/>	<input type="checkbox"/>
3A. Is the Contractor registered with DAS as a MWDP Small Business?	<input type="checkbox"/>	<input type="checkbox"/>
4. Does the Contractor have an Affirmative Action Plan? <i>If you answered "Yes" to Question 4, proceed to Question 4A and then to Question 5. If you answered "No" to Question 4, skip to Question 4B and then to Question 5.</i>	<input type="checkbox"/>	<input type="checkbox"/>
4A. Has the Affirmative Action Plan been approved by the CHRO?	<input type="checkbox"/>	<input type="checkbox"/>
4B. Will the Contractor develop and implement an Affirmative Action Plan?	<input type="checkbox"/>	<input type="checkbox"/>
5. Does the Contractor have an apprenticeship program complying with RCSA 46a-68-1 through 46a-68-17?	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the Contractor been cited for three or more willful or serious violations of any occupational safety and health act?	<input type="checkbox"/>	<input type="checkbox"/>
7. Has the Contractor received one or more criminal convictions related to the injury or death of any employee in the three-year period preceding the issuance of this Request For Bids/Proposals/Qualifications?	<input type="checkbox"/>	<input type="checkbox"/>
8. Has the Contractor been the recipient of one or more ethical violations from the State of Connecticut Ethics Commission during the three-year period preceding the issuance of this Request For Bids/Proposals/Qualifications?	<input type="checkbox"/>	<input type="checkbox"/>
9. Will subcontractors be involved? <i>If you answered "Yes" to Question 9, proceed to Question 9A. If you answered "No" to Question 9, you are finished with the questionnaire.</i>	<input type="checkbox"/>	<input type="checkbox"/>
9A. How many subcontractors will be involved? <input type="text"/>		

LIST OF ACRONYMS

RCSA	-	Regulations of Connecticut State Agencies
CHRO	-	State of Connecticut Commission on Human Rights and Opportunities
DAS	-	State of Connecticut Department of Administrative Services
MWDP	-	Minority/Women/Disabled Person

FOOTNOTE

- ¹ If the Contract is a "public works contract" (as defined in Section 46a-68b of the Connecticut General Statutes), the dollar amount exceeds \$50,000.00 in any fiscal year, and the Contractor has 50 or more employees, the Contractor, in accordance with the provisions of Section 46a-68c of the Connecticut General Statutes, shall develop and file an affirmative action plan with the Connecticut Commission on Human Rights and Opportunities.

SCHEDULE A CRITERIA FOR A SMALL CONTRACTOR

Contractor must meet all of the following criteria to qualify as a Small Contractor:

1. Has been doing business and has maintained its principal place of business in the State for a period of at least one year immediately preceding the issuance of the Request For Bids/Proposals/Qualifications;
2. Has had gross revenues not exceeding ten million dollars in the most recently completed fiscal year;
3. Is headquartered in Connecticut; and,
4. At least 51% of the ownership of the Contractor is held by a person or persons who are active in the daily affairs of the business and have the power to direct the management and policies of the business.

SCHEDULE B CRITERIA FOR A MINORITY/WOMAN/DISABLED PERSON BUSINESS ENTERPRISE

Contractor must meet all of the following criteria to qualify as a Minority/Woman/Disabled Person Business Enterprise:

1. Satisfies all of the criteria in Schedule A for a Small Contractor;
2. 51% or more of the business and/or its assets must be owned by a person or persons who are minorities as defined in Connecticut General Statutes Section 32-9n (please see below) or is an individual with a disability;
3. The Minority/Woman/Disabled Person must have the power to change policy and management of the business; and,
4. The Minority/Woman/Disabled Person must be active in the day-to-day affairs of the business.

CONNECTICUT GENERAL STATUTES SECTION 32-9n

Sec. 32-9n. Office of Small Business Affairs. (a) There is established within the Department of Economic and Community Development an Office of Small Business Affairs. Such office shall aid and encourage small business enterprises, particularly those owned and operated by minorities and other socially or economically disadvantaged individuals in Connecticut. As used in this section, minority means: (1) Black Americans, including all persons having origins in any of the Black African racial groups not of Hispanic origin; (2) Hispanic Americans, including all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race; (3) all persons having origins in the Iberian Peninsula, including Portugal, regardless of race; (4) women; (5) Asian Pacific Americans and Pacific islanders; or (6) American Indians and persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 6
AFFIDAVIT OF THIRD PARTY FEES**



AFFIDAVIT OF THIRD PARTY FEES (Form A2)

All Bidders/Proposers must complete and properly execute this Affidavit of Third Party Fees. The purpose of this Affidavit is to ascertain if the Bidder/Proposer has made or promised any payment to a third party attributable to this Agreement. If no such payment has been made or promised, Bidder/Proposer should write "None" in the first box in the table and execute this Affidavit. For purposes of the Affidavit, Bidder's/Proposer's subcontractors, if any, are not considered third parties.

I, _____, a duly authorized officer and/or representative of _____ (firm name), being duly sworn, hereby depose and say that:

1. I am over eighteen (18) years of age and believe in the obligations of an oath;
2. _____ (firm name) seeks to enter into the Replacement Of The 2nd Floor Rooftop HVAC Unit At The Children's Garbage Museum Agreement (the "Agreement") with the Connecticut Resources Recovery Authority; and
3. All third party fees and agreements to pay third party fees attributable to the "Agreement" are as follows:

Name Of Payee	Dollar Amount Paid Or Value Of Non-Cash Compensation <u>AND</u> Date	Fee Arrangement	Specific Services Performed Or To Be Performed By Payee ¹

(Attach additional copies of this page as necessary.)

NOTE: For each third party fee arrangement described above (if any), complete the attached Form A2a.

4. The information set forth herein is true, complete and accurate to the best of my knowledge and belief under penalty of perjury.

Signed: _____
 Name (Print): _____
 Title: _____

Sworn to before me this _____ day of _____ 200 _____

 Notary Public/Commissioner of the Superior Court

¹ Please attach documents evidencing the terms of the fee arrangement and services.



**ADDENDUM TO
AFFIDAVIT OF THIRD PARTY FEES
(Form A2a)**

For each third party fee arrangement disclosed in the attached Affidavit, please explain whether and how each such payment falls within one or more of the following categories of compensation:

- (1) Compensation earned for the rendering of legal services when provided by an attorney while engaged in the ongoing practice of law;
- (2) Compensation earned for the rendering of investment services, other than legal services, when provided by an investment professional while engaged in the ongoing business of providing investment services;
- (3) Compensation for placement agent, due diligence or comparable tangible marketing services when paid to a person who is an investment professional (i) engaged in the ongoing business of representing providers of investment services, or (ii) in connection with the issuance of bonds, notes or other evidence of indebtedness by a public agency;
- (4) Compensation earned by a licensed real estate broker or real estate salesperson while engaging in the real estate business on an ongoing basis; or
- (5) Payments for client solicitation activities meeting the requirements of Rule 206(4)-3 under the Investment Advisers Act of 1940.

Attach additional pages as necessary.

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 7
SEEC FORM 11
NOTICE TO EXECUTIVE BRANCH STATE
CONTRACTORS AND PROSPECTIVE STATE
CONTRACTORS OF CAMPAIGN CONTRIBUTION
AND SOLICITATION BAN**

SEEC FORM 11

NOTICE TO EXECUTIVE BRANCH STATE CONTRACTORS AND PROSPECTIVE STATE CONTRACTORS OF CAMPAIGN CONTRIBUTION AND SOLICITATION BAN

This notice is provided under the authority of Connecticut General Statutes 9-612(g)(2), as amended by P.A. 07-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined below):

Campaign Contribution and Solicitation Ban

No state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to, or solicit contributions on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee;

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to, or solicit contributions on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

Duty to Inform

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

Penalties for Violations

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties--\$2000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of \$2000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or \$5000 in fines, or both.

Contract Consequences

Contributions made or solicited in violation of the above prohibitions may result, in the case of a state contractor, in the contract being voided.

Contributions made or solicited in violation of the above prohibitions, in the case of a prospective state contractor, shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State will not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information and the entire text of P.A 07-1 may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "State Contractor Contribution Ban."

Definitions:

"State contractor" means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. "State contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Prospective state contractor" means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. "Prospective state contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

"State contract" means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. "State contract" does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan or a loan to an individual for other than commercial purposes.

"State contract solicitation" means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

"Managerial or discretionary responsibilities with respect to a state contract" means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

"Dependent child" means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

"Solicit" means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact

information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 8
NOTICE OF AWARD**

NOTICE OF AWARD

TO: [NAME OF SUCCESSFUL BIDDER]
PROJECT: Bridgeport Project
CONTRACT NUMBER: [To be entered later by CRRA]
CONTRACT FOR: Replacement Of The 2nd Floor Rooftop HVAC Unit At The Children's Garbage Museum

The Connecticut Resources Recovery Authority ("CRRA") has considered the Bid submitted by you dated [DATE] in response to CRRA's Notice To Contractors – Invitation To Bid for the above-referenced Work, which Work is more particularly described in the Bid Form (the "Work").

You are hereby notified that your Bid has been accepted for the [DESCRIPTION OF THE WORK FOR WHICH THE BIDDER IS SELECTED] Work. The amount of the award for the Work is \$[CONTRACT PRICE].

Within ten (10) days from the date of this Notice of Award you are required to:

- (a) Execute the attached Contractor's Certification Concerning Gifts and deliver such executed Certification to CRRA;
- (b) Deliver to CRRA the requisite certificates of insurance;
- (c) Deliver to CRRA all other Contract Documents attached to the Notice Of Award;
and
- (d) Satisfy all other conditions set forth herein.

If you fail within ten (10) days from the date of this Notice Of Award to perform and complete any of your obligations set forth in items (a) through (e) above, CRRA will be entitled to consider all your rights arising out of CRRA's acceptance of your Bid as abandoned and terminated. CRRA will also be entitled to such other rights and remedies as may be granted at law or in equity.

You are required to acknowledge your receipt of this Notice Of Award by signing below and returning the same to CRRA.

Dated this [DAY] day of [MONTH], [YEAR].

Connecticut Resources Recovery Authority

By: _____
[NAME OF CRRA OFFICIAL]
Title: [TITLE OF CRRA OFFICIAL]

ACCEPTANCE OF NOTICE

Receipt of this NOTICE OF AWARD is hereby acknowledged this _____ day of _____, 200_.

By:

Signature: _____

Name (print/type): _____

Title: _____

ATTACHMENT A

To

NOTICE OF AWARD

**CONTRACTORS CERTIFICATION CONCERNING
GIFTS**



**CONTRACTOR'S CERTIFICATION
CONCERNING GIFTS**

**REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT AT THE CHILDREN'S
GARBAGE MUSEUM**

(This CERTIFICATION is to be signed by an authorized officer of the Contractor
or the Contractor's managing general partner.)

Section 4-252 of the *Connecticut General Statutes* requires that a Contractor (i.e., the successful bidder/proposer for an Agreement) complete and properly execute this Certification Concerning Gifts at the same time that the Contractor executes the Agreement. If the Contractor fails to make the required certifications, the Contractor shall be disqualified for the Agreement.

I, _____, a duly authorized officer and/or representative
of _____ (firm name)
(the "Contractor"), being duly sworn, hereby depose and say that:

1. I am over eighteen (18) years of age and believe in the obligations of an oath; and
2. The Contractor has submitted a bid/proposal for the Replacement Of The 2nd Floor Rooftop HVAC Unit At The Children's Garbage Museum Agreement (the "Agreement") to the Connecticut Resources Recovery Authority ("CRRRA"), has been selected by CRRRA as the successful bidder/proposer for the Agreement and is prepared to enter into the Agreement with CRRRA; and
3. No gifts were made between June 1, 2007 and the date of execution of the Agreement, by
 - (a) The Contractor,
 - (b) Any principals and key personnel of the Contractor who participated substantially in preparing the Contractor's bid/proposal for or the negotiation of the Agreement, or
 - (c) Any agent of the Contractor or principals and key personnel who participated substantially in preparing the Contractor's bid/proposal for or the negotiation of the Agreement

to

- (1) Any public official or employee of CRRRA who participated substantially in the preparation of the bid/proposal solicitation for or the negotiation or award of the Agreement (such CRRRA employees are listed in Table 2 below), or
- (2) Any public official or state employee of any state agency who has supervisory or appointing authority over CRRRA (such public officials and state employees are listed in Table 3 below); and

4. No such principals and key personnel of the Contractor or agent of the Contractor or principals and key personnel knows of any action by Contractor to circumvent the prohibition on gifts by providing for any other principals and key personnel, official, employee or agent of the Contractor to provide a gift to any such public official or state employee; and
5. The Contractor made the bid/proposal for the Agreement without fraud or collusion with any person;
6. The information set forth herein is true, to the best of my knowledge and belief, subject to the penalties of false statement.

TABLE 2: CRRA Substantial Participants in the Preparation of the Request for Bids/Proposals for the Agreement

Michael Tracey, Operations Manager, Construction Management
George Carlson, Facilities Manager

TABLE 3: Public Officials and State Employees of State Agencies Who Have Supervisory or Appointing Authority over CRRA

Governor M. Jodi Rell
Senator Donald E. Williams, Jr., President Pro Tempore of the Senate
Senator John McKinney, Minority Leader of the Senate
Representative James A. Amann, Speaker of the House of Representatives
Representative Lawrence F. Cafero, Jr., Minority Leader of the House of Representatives

Signature: _____

Name (type/print): _____

Title: _____

State Of: _____

County Of: _____

_____, being fully sworn, deposes and says that

he/she is the _____ (Title) of

_____ (Firm Name), the Contractor

herein, that he/she has read the foregoing statement concerning gifts, and, under the penalty of perjury, certifies that each and every part of said statement is true to his/her best knowledge and belief.

Sworn to before me this _____ day of _____ 200__

Notary Public/Commissioner of the Superior Court

For the purposes of this Certification Concerning Gifts, the following terms are defined as follows:

"Gift" means anything of value, which is directly and personally received, unless consideration of equal or greater value is given in return. "Gift" shall not include:

- (1) A political contribution otherwise reported as required by law or a donation or payment as described in subdivision (9) or (10) of subsection (b) of section 9-333b of the *Connecticut General Statutes*;
- (2) Services provided by persons volunteering their time, if provided to aid or promote the success or defeat of any political party, any candidate or candidates for public office or the position of convention delegate or town committee member or any referendum question;
- (3) A commercially reasonable loan made on terms not more favorable than loans made in the ordinary course of business;
- (4) A gift received from (A) an individual's spouse, fiancé or fiancée, (B) the parent, brother or sister of such spouse or such individual, or (C) the child of such individual or the spouse of such child;
- (5) Goods or services (A) which are provided to the state (i) for use on state property, or (ii) to support an event or the participation by a public official or state employee at an event, and (B) which facilitate state action or functions. As used in this Affidavit Concerning Gifts, "state property" means (i) property owned by the state, or (ii) property leased to an agency in the Executive or Judicial Department of the state;
- (6) A certificate, plaque or other ceremonial award costing less than one hundred dollars;
- (7) A rebate, discount or promotional item available to the general public;
- (8) Printed or recorded informational material germane to state action or functions;
- (9) Food or beverage or both, costing less than fifty dollars in the aggregate per recipient in a calendar year, and consumed on an occasion or occasions at which the person paying, directly or indirectly, for the food or beverage, or his representative, is in attendance;
- (10) Food or beverage or both, costing less than fifty dollars per person and consumed at a publicly noticed legislative reception to which all members of the General Assembly are invited and which is hosted not more than once in any calendar year by a lobbyist or business organization. For the purposes of such limit, (A) a reception hosted by a lobbyist who is an individual shall be deemed to have also been hosted by the business organization which he owns or is employed by, and (B) a reception hosted by a business organization shall be deemed to have also been hosted by all owners and employees of the business organization who are lobbyists. In making the calculation for the purposes of such fifty-dollar limit, the donor shall divide the amount spent on food and beverage by the number of persons whom the donor reasonably expects to attend the reception;
- (11) Food or beverage or both, costing less than fifty dollars per person and consumed at a publicly noticed reception to which all members of the General Assembly from a region of the state are

invited and which is hosted not more than once in any calendar year by a lobbyist or business organization. For the purposes of such limit, (A) a reception hosted by a lobbyist who is an individual shall be deemed to have also been hosted by the business organization which he owns or is employed by, and (B) a reception hosted by a business organization shall be deemed to have also been hosted by all owners and employees of the business organization who are lobbyists. In making the calculation for the purposes of such fifty-dollar limit, the donor shall divide the amount spent on food and beverage by the number of persons whom the donor reasonably expects to attend the reception. As used in this subdivision, "region of the state" means the established geographic service area of the organization hosting the reception;

- (12) Gifts costing less than one hundred dollars in the aggregate or food or beverage provided at a hospitality suite at a meeting or conference of an interstate legislative association, by a person who is not a registrant or is not doing business with the state of Connecticut;
- (13) Admission to a charitable or civic event, including food and beverage provided at such event, but excluding lodging or travel expenses, at which a public official or state employee participates in his official capacity, provided such admission is provided by the primary sponsoring entity;
- (14) Anything of value provided by an employer of (A) a public official, (B) a state employee, or (C) a spouse of a public official or state employee, to such official, employee or spouse, provided such benefits are customarily and ordinarily provided to others in similar circumstances; or
- (15) Anything having a value of not more than ten dollars, provided the aggregate value of all things provided by a donor to a recipient under this subdivision in any calendar year shall not exceed fifty dollars.

"Participated substantially" means participation that is direct, extensive and substantive, and not peripheral, clerical or ministerial.

"Principals and key personnel" means officers, directors, shareholders, members, partners and managerial employees.

**REQUEST FOR BIDS
FOR
REPLACEMENT OF THE 2ND FLOOR ROOFTOP HVAC UNIT
AT THE CHILDREN'S GARBAGE MUSEUM**

**SECTION 9
NOTICE TO PROCEED**

NOTICE TO PROCEED

TO: [NAME OF SUCCESSFUL BIDDER/PROPOSER]
PROJECT: Bridgeport Project
CONTRACT NUMBER: [To be entered later by CRRA]
CONTRACT FOR: Replacement Of The 2nd Floor Rooftop HVAC Unit At The Children's Garbage Museum

You are hereby notified to commence the [DESCRIPTION OF THE WORK FOR WHICH THE BIDDER IS SELECTED] Work in accordance with the Agreement, dated [DATE OF AGREEMENT], and that the Contract Time under the Agreement will commence to run on [DATE CONTRACT TIME STARTS]. By this date, you are to start performing the Work required by the Contract Documents. Pursuant to the Agreement, the date for completing all of the Work and having such Work ready for CRRA's acceptance is as follows:

Completion Date: [COMPLETION DATE]

You are required to acknowledge your receipt of this Notice To Proceed by signing below and returning such receipted Notice To Proceed to CRRA.

Dated this [DAY] day of [MONTH], [YEAR].

Connecticut Resources Recovery Authority

By:

[NAME OF CRRA OFFICIAL]

Title: [TITLE OF CRRA OFFICIAL]

[Remainder of Page Intentionally Left Blank]

[Acceptance Of Notice Follows]

ACCEPTANCE OF NOTICE

Receipt of this NOTICE TO PROCEED is hereby acknowledged this _____ day of _____, 200_.

By:

Signature: _____

Name (print/type): _____

Title: _____