

PROJECT MANUAL
CONTRACT DOCUMENTS
FOR

CONNECTICUT RESOURCES RECOVERY AUTHORITY
PBF WAREHOUSE
HOIST CRANE FRAME
RESERVE ROAD
HARTFORD, CT 06114

CONNECTICUT RESOURCES RECOVERY AUTHORITY
100 CONSTITUTION PLAZA – 6TH FLOOR
HARTFORD, CONNECTICUT 06103-1722

CRRA CONTRACT NO. 074121

URS Corporation AES
500 Enterprise Drive
Suite 3B
Rocky Hill, Connecticut 06067

March 27, 2007

PROJECT MANUAL

Table of Contents

PBF Warehouse
Hoist Crane Frame
Reserve Road
Hartford, Connecticut

Connecticut Resources Recovery Authority
100 Constitution Plaza - 17th Floor
Hartford, Connecticut 06103-1722

March 27, 2007

1. Notice to Contractors - Invitation to Bid
2. Instructions to Bidders
3. Bid/Proposal Bond
4. Bid Form
5. Affirmative Action Questionnaire
6. Affidavit of Third Party Fees
7. Notice Of Award
8. Notice To Proceed
9. Agreement
 - a) Exhibit A - Plans
 - b) Exhibit B - General Requirements
 - c) Exhibit C - Technical Specifications
 - d) Exhibit D - Project Schedule
 - e) Exhibit E - Performance Bond
 - f) Exhibit F - Construction Payment Bond
 - g) Exhibit G - Covanta Energy, Inc. - Safety Procedure No. 5B

**CONNECTICUT RESOURCES RECOVERY AUTHORITY
NOTICE TO CONTRACTORS - INVITATION TO BID
PBF WAREHOUSE
HOIST CRANE FRAME
RESERVE ROAD
HARTFORD, CONNECTICUT**

The Connecticut Resources Recovery Authority ("CRRA") is seeking bids from qualified contractors to furnish all materials, labor, equipment and incidentals thereto for the installation of two fan motor hoist cranes with steel framing on an existing mechanical platform over the PBF Warehouse Facility, Gate 20 Reserve Road, Hartford, Connecticut (the "Facility"). The work to be performed under this RFB includes, but is not limited to the following items:

- Demolish and remove designated portions of existing platform steel, steel grating, handrails, and other materials as shown.
- Furnish and erect bolted and welded structural systems as shown.
- Provide and install handrails, gratings, kick plates and other fittings which may be required to support the miscellaneous metal construction.
- Provide painting in accordance with the Contract Documents.
- Furnish and install two (2) monorails and two (2) ten ton electrified hoist with power trolleys in accordance with the Contract Documents.
- Provide the electric services and systems to support the installation of two (2) motorized hoists.
- Construction activities will take place while the Facility remains in operation.
- Construction activities shall be coordinated with Owner (CRRA) and Operator (COVANTA ENERGY) as shown and specified.
- Contractor shall attend on site a required safety training class provided by Covanta Energy prior to the beginning of the construction activities.
- Clean-up, disposal of waste and debris, and restoration of work site to original condition and to satisfaction of Owner and Engineer.
- All other related work required to complete the Project.

Sealed bids will be received at the offices of CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722 no later than 2:00 p.m., local time, on May 2, 2007. A mandatory pre-bid conference and tour of the work site will be held at CRRA's Power Block Facility, Gate 20, Reserve Road, Hartford, Connecticut on April 19, 2007 at 10:00 a.m.

Each bid shall be accompanied by one (1) of the following forms of security: a cashier's check; a certified check; or a bid bond, which security shall be made payable to CRRA and shall be in an amount equal to ten (10%) percent of the amount bid. Any bid bond submitted as security shall be in the form provided for such bid bond in the bid package documents and such bid bond shall be executed and issued by a surety company acceptable to CRRA. Any bid that does not contain the above requisite security or any bid that contains security that does not comply with the foregoing requirements shall be rejected as non-responsive.

Bids will be opened publicly at the above referenced CRRA offices at the time and date that bids are due. 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 bidding process. CRRA will base its evaluation of the bids on price, the demonstrated skill, ability and integrity of each bidder to perform the work required in the bid package documents and any other factor or criterion that CRRA deems relevant or pertinent for such evaluation. Neither CRRA nor any of its directors, officers, employees or authorized agents shall be liable for any claims or damages resulting from the evaluation, selection, nonselection or rejection of any bid submitted in response hereto. All bids shall remain open for sixty (60) days after the bid due date.

Bid package documents for this project may be obtained, as of April 11, 2007, between the hours of 8:30A.M. and 5:00 P.M. at the offices of CRRA, 100 Constitution Plaza-6th Floor, Hartford, Connecticut 06103-1722. There is no cost to the bidders for the Bid Package documents. The bid documents will also be available as of the same date, free of charge, on the World Wide Web at <http://www.crra.org> under the "Business Opportunities" page.

Anyone having questions regarding the foregoing information and project may call **Joe Burgio, Project Engineer, at (860) 757-7722.**

INSTRUCTIONS TO BIDDERS

1. Definitions: Terms used but not defined in these Instructions To Bidders shall have the same respective meanings assigned to such terms in the Agreement.
2. Scope of Work: The work to be performed under this contract includes, but is not limited to the following:
 - Demolish and remove designated portions of existing platform steel, steel grating, handrails, and other materials as shown.
 - Furnish and erect bolted and welded structural systems as shown.
 - Provide and install handrails, gratings, kick plates and other fittings which may be required to support the miscellaneous metal construction.
 - Provide painting in accordance with the Contract Documents.
 - Furnish and install two (2) monorails and two (2) ten ton electrified hoist with power trolleys in accordance with the Contract Documents.
 - Provide the electric services and systems to support the installation of two (2) motorized hoists.
 - Construction activities will take place while the Facility remains in operation.
 - Construction activities shall be coordinated with Owner (CRRA) and Operator (COVANTA ENERGY) as shown and specified.
 - Contractor shall attend on site a required safety training class provided by Covanta Energy prior to the beginning of the construction activities.
 - Clean-up, disposal of waste, and debris, and restoration of work site to original condition and to satisfaction of Owner and Engineer.
 - All other related work required to complete the Project.

The above Work is more particularly shown on certain plans entitled: “**Connecticut Resources Recovery Authority CRRA PBF Warehouse Hoist Crane Frame, Reserve Road Hartford, Connecticut, CRRA Contract No. 074121, February, 2007, URS Corporation AES Sheet No. T-001, S-001, S-002, S-003, E-101, E-102**”, which plans are set forth in Exhibit A of the Agreement. Specific instructions about how the Work is to be performed are included in Article 2 and Exhibit B (General Requirements) and Exhibit C (Technical Specifications) of the Agreement.

3. Bid Package Documents: This bid package consists of the following documents:

- Notice to Contractors - Invitation To Bid
- Instructions To Bidders
- Bid Bond
- Bid Form
- Affirmative Action Questionnaire
- Affidavit of Third Party Fees
- Notice Of Award
- Notice To Proceed
- Agreement, including:
 - Plans
 - General Requirements
 - Technical Specifications
 - Project Schedule
 - Construction Performance Bond

Construction Payment Bond
Contractors Wage Certification Form
Schedule of Prevailing Wages
Payroll Certification Forms

Complete sets of the above documents may be obtained, as of April 11, 2007, from CRRA's offices or from the World Wide Web referenced in the Notice To Contractors.

4. **Bid Procedures: Sealed bids shall be submitted no later than 2:00 p.m., local time, on May 2, 2007 at the offices of CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722. Bids received after the time and date set forth above shall be rejected.**

A mandatory pre-bid conference and tour of the Site will be held at CRRA's PBF Warehouse, Gate 20 Reserve Road, Hartford, Connecticut 06114 on April 19, 2007 at 10:00 a.m.

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.

All bids shall be enclosed in a sealed envelope, which shall be clearly marked "**Bid for CRRA PBF Warehouse Reserve Road.**"

Bids will be opened publicly at the above referenced CRRA offices at the time and date that bids are due. CRRA reserves the right to reject any or all of the bids submitted, or any part(s) thereof, and/or to waive any informality or informalities in any bid or the bidding process.

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

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.

CRRA will evaluate the bids on price, the demonstrated skill, ability and integrity of each bidder to perform the Work, and any other factor or criterion that CRRA deems relevant or pertinent for its evaluation of such bids.

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 and the Project. However, the selection of a bidder and the award of such contract, while anticipated, are not guaranteed. Neither CRRA nor any of its directors, officers, employees or authorized agents shall be liable for any claims or damages resulting from the evaluation, selection, nonselection or rejection of any bid submitted for the Work.

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.

5. Bid Security.

5.1. Each bid shall be accompanied by one (1) of the following forms of Bid Security: a cashier's check; a certified check; or a bid bond, which Bid Security shall be made payable to CRRA and shall be in an amount equal to ten (10%) percent of the amount bid. Any bid bond submitted as Bid Security shall be in the form provided for such bid bond in the bid package documents and such bid bond shall be executed and issued by a surety company acceptable to CRRA. Any bid that does not contain the above requisite Bid Security or any bid that contains Bid Security that does not comply with the foregoing requirements shall be rejected as non-responsive.

5.2. The Bid Security of the successful bidder will be retained until such bidder has executed the non-negotiable Agreement furnished the required contract security and satisfied all other conditions of the Notice Of Award, whereupon such Bid Security will be returned. If the successful bidder fails to either execute and deliver the Agreement, furnish the required contract security, or satisfy all other conditions of the Notice Of Award within ten (10) days after the issuance of such Notice Of Award, CRRA may annul the Notice Of Award and the Bid Security of that bidder shall be forfeited to CRRA. The Bid Security of other bidders whom CRRA believes to have a reasonable chance of receiving the award may be retained by CRRA until the earlier of the seventh (7th) day after the Effective Date of the Agreement or the sixtieth (60th) day after the bid due date, whereupon the Bid Security furnished by such bidders will be returned. Bid Security with bids, which are not competitive, will be returned within seven (7) days after the opening of such bids.

6. Addenda and Interpretations: CRRA may issue Addenda to this bid package which 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 written requests for interpretation or clarification received from potential bidders. Any request for interpretation or clarification of any documents included in this bid package shall be in writing and addressed to **Joseph Burgio, Project Engineer, by correspondence (CRRA, 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722) or by e-mail (jburgio@crra.org), by fax (860-757-7742). To be given consideration, any such written questions must be received by CRRA no later than noon on Thursday, April 26, 2007.**

Addenda will be mailed to all persons who have obtained copies of the bid package documents no later than three (3) days before the submittal deadline. Failure of any bidder to receive any such Addenda shall not relieve the 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.

7. Examination of Contract Documents and Site Conditions:

(a) It is the sole responsibility of each bidder before submitting a bid to:

- 1) Examine thoroughly the Contract Documents and other related data identified in the bid package documents;
- 2) Visit the Site to become familiar with and satisfy bidder as to the general, local, and Site conditions that may affect cost, progress, performance, furnishing or completion of the Work;

- 3) Consider and review any and all Laws and Regulations that may affect cost, progress, performance, furnishing or completion of the Work;
 - 4) Study and carefully correlate bidder's knowledge and observations with the Contract Documents and such other related data; and
 - 5) Promptly notify CRRA of all conflicts, errors, ambiguities or discrepancies which bidder has discovered in the Contract Documents.
- (b) Information and data, if any, shown or indicated in the Contract Documents or other documents with respect to the surface, subsurface and other conditions of the Site are based upon information and data furnished to CRRA and CRRA does not assume any responsibility for the accuracy or completeness of such information and data. The Contractor is not to rely on any plans or "As Built" given to them by CRRA.
- (c) Submission of a bid will constitute an incontrovertible representation by bidder that: (i) bidder has complied with every requirement of this Section 7;(ii) without exception the bid is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) or performance of the Work that may be shown or indicated or expressly required by the Contract Documents; (iii) 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; and (iv) 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.

8. Bidder's Qualifications: CRRA may conduct any investigation deemed necessary to evaluate any bidder who has submitted a bid for the Work. Each such bidder shall furnish CRRA with all such information as may be required for this purpose.

9. Security for Faithful Performance: As part of the Agreement to perform the Work, the successful bidder shall provide, within ten (10) days after CRRA issues the Notice Of Award, a construction performance bond and construction payment bond, each of which bonds shall be issued by a surety company acceptable to CRRA and in an amount equal to one hundred percent (100%) of the estimated total Contract Price. Such bonds shall be drawn and submitted on the forms attached to the Agreement.

10. Site Conditions: All information and data included in this bid package relating to the existing conditions of the Site are from presently available sources and are being provided only for the information and convenience of the bidders. Each 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. It is understood and agreed that any successful bidder or Contractor shall not use any information made available to it or obtained in any examination made by it 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 construction or performance of the Work. By submitting a bid for the Work, each bidder expressly waives each and every such claim and demand.

11. Contract Time: The number of days within which the Work is to be completed is set forth in the Agreement.

12. Sales and Use Taxes: CRRA, under Section 12-426-18 of the Regulations of Connecticut State Agencies, may purchase materials for the Project, which are to be physically incorporated into and become a permanent part of the Facility (including all ancillary improvements thereto), without payment of Connecticut sales and use tax. In addition, pursuant to Section 12-412 (92) of the Connecticut General Statutes the sales of any services or tangible personal property to be incorporated into or otherwise consumed in the operation of the Facility (including all ancillary improvements thereto) are exempt from Connecticut sales and use tax. CRRA is also exempt from the payment of sales and use tax under Section 22a-270 of the Connecticut General Statutes. Accordingly, any bidder who submits a bid shall not include any such tax in any of its bid prices or in any calculations thereof (see Section 7.14 of the Agreement).

13. Disclosure of Information: Bidders are hereby advised that any information contained in or submitted with or in connection with their respective bids is subject to disclosure if required by law or otherwise. By submitting a bid, each bidder expressly waives any claim(s) that such 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.

14. Bid Preparation and Other Costs: Each bidder shall be solely responsible for all costs and expenses, including but not limited to attorneys' fees, associated with the preparation and/or submission of its bid, or incurred in connection with any negotiations with CRRA, and CRRA shall have no responsibility or liability whatsoever for any such costs and expenses. Neither CRRA nor any of its directors, officers, employees or authorized agents shall be liable for any claims or damages resulting from the solicitation or collection of bids. By submitting a bid, each bidder expressly waives: (i) any claim(s) for such costs and expenses, and (ii) any such claims or damages.

15. Insurance Requirements: The successful bidder will be required to obtain and maintain throughout the term of the Agreement the following insurance for the Project [see Article 6 of the Agreement]:

- (a) Commercial general liability insurance alone or in combination with commercial umbrella insurance with a limit of five million (\$5,000,000.00) dollars 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 (including owned, hired, and non-owned autos), with a limit of not less than one million (\$1,000,000.00) dollars each accident;
- (c) Workers' compensation with statutory limits and employers' liability limits of not less than one million (\$1,000,000.00) dollars for each accident for bodily injury by accident or one million (\$1,000,000.00) dollars for each employee for bodily injury by disease.

- (d) Contractor' property and equipment insurance covering all property and equipment to be used in connection with the Work hereunder in an amount equal to one hundred (100%) percent of actual cash value.

16. Performance Security: In addition to the Bid Security (see Section 5 herein), the successful bidder will be required to furnish the following Performance Securities for the Project [See Section 7.12 of the Agreement]:

Construction Performance and Payment Bonds in the full amount of
\$ _____ Dollars [the full amount of the successful bidder's Bid Price].

17. Signing of Agreement: When CRRA issues a Notice of Award to the successful bidder, it will be accompanied by the required number of unsigned counterparts of the non-negotiable Agreement with all other written Contract Documents attached. Within ten (10) days after such issuance, the successful bidder shall: (i) execute the required number of counterparts of the non-negotiable Agreement; (ii) deliver to CRRA such executed counterparts and attached Contract Documents along with the required Bonds and any certificates of insurance required by the Contract Documents, and (iii) satisfy all other conditions of the Notice of Award. Within eleven (11) days after CRRA's receipt of such counterparts, Contract Documents, Bonds and certificates, and provided the successful bidder has satisfied all such conditions within the foregoing ten (10) day period, CRRA shall deliver one (1) fully signed counterpart of the Agreement to the successful bidder.

BID/PROPOSAL 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.

BIDDER/PROPOSER (Name and Address):

SURETY (Name and Address of 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
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BID/PROPOSAL

DUE DATE:	
AMOUNT:	
PROJECT DESCRIPTION <small>(Including Name and Location):</small>	

BOND

BOND NUMBER:	
DATE <small>(Not later than Bid/Proposal Due Date):</small>	
PENAL SUM:	DOLLARS (\$ _____)

IN WITNESS WHEREOF, Surety and Bidder/Proposer, intending to be legally bound hereby, subject to the terms printed on Page 2 hereof, do each cause this Bid/Proposal Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER/PROPOSER

SURETY

--

(SEAL)

--

(SEAL)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

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

TERMS AND CONDITIONS TO BID/PROPOSAL BOND

1. Bidder/Proposer and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder/Proposer any difference between the total amount of Bidder's/Proposer's bid/proposal and the total amount of the bid/proposal of the next lowest, responsible and responsive bidder/proposer as determined by Owner for the Work/Service required by the Contract Documents, provided that:
 - 1.1 If there is no such next lowest, responsible and responsive bidder/proposer, and Owner does not abandon the Project, then Bidder/Proposer and Surety shall pay to Owner the penal sum set forth on the face of this Bond, and
 - 1.2 In no event shall Bidder's/Proposer's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.
2. Default of Bidder/Proposer shall occur upon the failure of Bidder/Proposer to deliver within the time required by the Bid/Proposal Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement and related documents required by the Bid/Proposal Documents and any performance and payment bonds required by the Bid/Proposal Documents and Contract Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's/Proposer's bid/proposal and bidder/proposer delivers within the time required by the Bid/Proposal Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement and related documents required by the Bid/Proposal Documents and any performance and payments bonds required by the Bid/Proposal Documents and Contract Documents, or
 - 3.2 All bids/proposals are rejected by Owner, or
 - 3.3 Owner fails to issue a notice of award to Bidder/Proposer within the time specified in the Bid/Proposal Documents (or any extension thereof agreed to in writing by Bidder/Proposer and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default by Bidder/Proposer and within 30 calendar days after receipt by Bidder/Proposer and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder/Proposer, provided that the total time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid/Proposal Due Date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder/Proposer and Surety and in no case later than one year after Bid/Proposal Due Date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder/Proposer and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

BID FORM

PROJECT: CRRA
PBF Warehouse
Hoist Crane Frame
Reserve Road
Hartford, Connecticut 06114

CONTRACT NUMBER: 074121

CONTRACT FOR: CRRA
PBF Warehouse
Hoist Crane Frame

THIS BID SUBMITTED TO:

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

1. **DEFINITIONS.**

Unless otherwise defined herein, all terms that are not defined and used in this bid shall have the same respective meanings assigned to such terms in the Agreement.

2. **TERMS AND CONDITIONS.**

The undersigned (the "Bidder") accepts and agrees to all terms and conditions of the Notice To Contractors, Invitation To Bid, the Instructions To Bidders, the PBF Warehouse Hoist Crane Frame Agreement and any Addenda to any such documents. This bid shall remain subject to acceptance for sixty (60) days after the bid due date. If CRRA issues the Notice Of Award to Bidder, Bidder shall within ten (10) days after the date thereof: (i) execute the required number of counterparts of the Agreement; (ii) deliver to CRRA such executed counterparts and all other Contract Documents attached to the Notice Of Award along with the Bonds and other documents required by the Contract Documents; and (iii) satisfy all other conditions of the Notice Of Award.

3. **BIDDER'S OBLIGATIONS.**

Bidder proposes and agrees, if this bid is accepted: (i) to enter into and execute the Agreement included in the Contract Documents; and (ii) to perform, furnish and complete all Work as specified or indicated in the Contract Documents for the bid price and within the Contract Time indicated in this bid and in accordance with the other terms and conditions of the Contract Documents.

4. **BIDDER'S REPRESENTATIONS.**

In submitting this bid, Bidder represents that:

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

- (b) Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and existing Site conditions that may affect cost, progress, performance, furnishing and completion of the Work.
- (c) Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, performance, furnishing and completion of the Work.
- (d) Bidder has carefully examined the existing surface, subsurface and other conditions of the Site. Bidder acknowledges that CRRA does not assume responsibility for the accuracy or completeness of the information and data, if any, shown or indicated in the Contract Documents with respect to any such existing conditions. Bidder further acknowledges that such information and data may not be complete for Bidder's purposes. Bidder has carefully studied all such information and data, and Bidder 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 Site 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 Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for Bidder to conclusively determine, and Bidder has so determined, that the Work can be performed, furnished and completed in accordance with the terms and conditions of the Contract Documents.
- (e) Bidder is aware of the general nature of Work to be performed by CRRA and others at the Site that relates to the Work for which this bid is submitted.
- (f) Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, plans and specifications identified in the Contract Documents and all additional examinations, investigations, tests, studies and data with the Contract Documents.
- (g) Bidder has given CRRA written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by CRRA is acceptable to Bidder, and 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.

- (h) This bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation (other than CRRA). Bidder has not directly or indirectly induced or solicited any other bidder to submit a false or sham bid. Bidder has not solicited or induced any person, firm, corporation or business to refrain from bidding and Bidder has not sought by collusion to obtain for itself any advantage over any other bidder for the Work or over CRRA.

5. **BID PRICE**

Bidder will complete the Work as specified in the Contract Documents for the following lump sum bid price:

(Use Words)

\$ _____
(Use Figures)

Bidder affirms that the above lump sum bid price represents the entire cost to complete the Work in accordance with the Contract Documents, and that no claim will be made on account of any increase in wage scales, material prices, delivery delays, taxes, insurance, cost indexes or any other rates affecting the construction industry or this Project, and that each and every such claim is hereby expressly waived by Bidder.

Bidder understands that there may be changes, omissions or modifications to the Work, and that appropriate adjustment or adjustments, as the case may be, may be made to the Contract Price in accordance with the terms included in Section 2.07 of the Agreement.

6. **TIME OF COMPLETION**

Bidder agrees that the Work for the Project shall be completed and ready for CRRA's acceptance within the following time frame after the date when the Contract Time commences to run as provided in the Agreement:

Completion Date: by the sixtieth (60th) calendar day following the issuance of the Notice To Proceed by CRRA.

7. **ATTACHMENTS**

The following documents are attached to and made a part of this bid:

- (a) Required Bid Security in the form of _____.

- (b) Questions Concerning Affirmative Action, Small Business Contractors And Occupational Safety and Health.
- (c) Affidavit of Third Party Fees

8. **NOTICES**

Communications concerning this bid should be addressed to Bidder at the address set forth below:

9. **REFERENCES**

In the space below please provide the names of three (3) references who can attest to the quality of work performed by Bidder. Include job title, affiliation, address, and phone number for each reference.

10. **WORK EXPERIENCE**

In the space below please summarize work of a similar nature to that specified in the Contract Documents which has been performed by Bidder and which will enable CRRA to evaluate the experience and professional capabilities of Bidder.

11. **BID SECURITY AND ADDITIONAL REPRESENTATIONS**

Bidder acknowledges and agrees that the amount of the Bid Security submitted with this bid fairly and reasonably represents the amount of damages CRRA will suffer in the event that Bidder fails to fulfill any of its obligations set forth in the Contract Documents. Bidder hereby represents that: (i) the undersigned is duly authorized to submit this bid on behalf of the Bidder; (ii) the price or prices provided in this bid have been arrived at independently and without collusion, consultation, or communication in any way with any other bidder; (iii) the price or prices provided herein have not been disclosed to any other person, firm, corporation or business; and (iv) no attempt has been made by Bidder to solicit or induce any other person, firm, corporation or business to submit a bid.

12. **WAIVER.**

Bidder and all its affiliates and subsidiaries understand that by submitting a bid, Bidder is acting solely at its and their own risk and Bidder hereby waives, for itself and all its affiliates, subsidiaries, successors and assigns any rights it and/or any of them may have for any and all damages for any liability, claim, loss or injury resulting from: (i) any action or inaction on the part of CRRA or any of its directors, officers, employees or authorized agents with respect to the evaluation, selection, nonselection and/or rejection of any bid or bids by CRRA or any of its directors, officers, employees or authorized agents; (ii) any agreement entered into for the Work (or any part thereof) described in the Contract Documents; or (iii) or any award or non-award of a contract for the Work.

SUBMITTED ON _____, 2007

Name of Bidder _____

Signature of Bidder _____

Name and Title _____

Address _____

Telephone _____



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.



**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 "Agreement" which is the subject of this Request For Bids/Proposals/Qualifications 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.

NOTICE OF AWARD

TO:

PROJECT: PBF Warehouse
Hoist Crane Frame
Reserve Road
Hartford, Connecticut 06114

CONTRACT NO.: 074121

CONTRACT FOR: PBF Warehouse
Hoist Crane Frame

The Connecticut Resources Recovery Authority ("CRRA") has considered the bid submitted by you for the above-referenced Work, which Work is more particularly described in the PBF Warehouse Hoist Crane Frame Agreement (the "Work"), **dated -----, 2007** in response to CRRA's Notice To Contractors - Invitation To Bid and Instructions To Bidders.

You are hereby notified that your bid has been accepted for the Work totaling the amount of \$----
-----.

Within ten (10) days from the date of this Notice Of Award you are required by the Instructions To Bidders to: (i) execute the required number of counterparts of the non-negotiable Agreement attached hereto; (ii) deliver to CRRA such executed counterparts and all other attached Contract Documents along with the requisite Bonds and certificates of insurance; and (iii) 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 (i)-(iii) above, CRRA will be entitled to consider all your rights arising out of CRRA's acceptance of your bid as abandoned and terminated and the amount of your Bid Security will be forfeited to CRRA. CRRA will also be entitled to exercise and pursue such other rights and/or remedies as may be available or granted at law or in equity.

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

Dated this ____ day of _____, 2007.

Connecticut Resources Recovery Authority

By: _____
Thomas D. Kirk
Its President
Duly Authorized

ACCEPTANCE OF NOTICE

Receipt of this NOTICE OF AWARD is hereby acknowledged this ____ day of _____, 2007.

CONTRACTOR

By: _____
Title: _____

NOTICE TO PROCEED

TO:

PROJECT: PBF Warehouse
Hoist Crane Frame
Reserve Road
Hartford, Connecticut 06114

CONTRACT NO.: 074121

CONTRACT FOR: PBF Warehouse
Hoist Crane Frame

You are hereby notified to commence the Work in accordance with the Agreement, dated _____, 2007, and that the Contract Time under the Agreement will commence to run on _____, 2007. 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: _____, 2007.

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

CONNECTICUT RESOURCES RECOVERY AUTHORITY

By: _____ Date: _____
Michael P. Tracey, P.E.
Engineering Services Director

ACCEPTANCE OF NOTICE

Receipt of this NOTICE TO PROCEED is hereby acknowledged this ____ day of _____, 2007.

CONTRACTOR

By: _____
Title: _____

PBF WAREHOUSE HOIST CRANE FRAME AGREEMENT

THIS PBF WAREHOUSE HOIST CRANE FRAME AGREEMENT (the "Agreement") is made and entered into as of this ___ day of _____, 2007 ("Effective Date"), by and between the **CONNECTICUT RESOURCES RECOVERY AUTHORITY**, a body politic and corporate, constituting a public instrumentality and political subdivision of the State of Connecticut, and having its principal offices at 100 Constitution Plaza, 6th Floor, Hartford, Connecticut 06103-1722 (hereinafter "CRRA" or "Owner") and _____, a corporation, having its principal offices at _____ (hereinafter "Contractor")

PRELIMINARY STATEMENT

The Connecticut Resources Recovery Authority ("CRRA") owns a certain parcel of real property located at Reserve Road in Hartford, Connecticut (the "Property") upon which Property CRRA operates a Power Block Facility (the "Facility"). CRRA now desires to enter into this Agreement with Contractor to have Contractor install two (2) hoist crane frames at the warehouse of the Facility.

NOW, THEREFORE, in consideration of the mutual covenants, promises, and representations contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows.

ARTICLE 1 **DEFINITIONS**

Section 1.01 - Specific Terms. As used in this Agreement 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 which clarify, correct or change any or all of the Contract Documents.
- (b) Acceptance Date - the date on which CRRA determines that the Work (as defined herein) has been completed by Contractor in accordance with the Contract Documents.
- (c) Bid Security - the security required by Section 5 of the Instructions To Bidders, and submitted with each bid.
- (d) Contract Documents - this Agreement (including all exhibits attached hereto), Notice To Contractors - Invitation To Bid, Instructions To Bidders, Addenda, Contractor's bid (including the Bid Security and all other documentation accompanying such bid, all other documentation submitted in connection with

such bid, and all post-bid documentation submitted prior to the Notice Of Award, Notice Of Award, the Notice To Proceed (as defined herein), the Bonds (as defined herein), the Plans (as defined herein), any written amendments to any of the Contract Documents and any change order issued pursuant to Section 2.07 hereof.

- (e) Contract Time - the number of days or the date, as set forth in **Exhibit D** of this Agreement, to perform and complete the Work and have such Work ready for CRRA's acceptance.
- (f) Effective Date - the date set forth above in this Agreement.
- (g) Engineer - shall mean URS Corporation AES or any successor engineering firm thereto selected by CRRA to act as its representative in various matters concerning the Project.
- (h) Laws and Regulations - any and all applicable current or future 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.
- (i) Notice Of Award - written notification from CRRA to the apparent successful bidder which 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.
- (j) Owner's Designee or Owner's Representative - shall mean Engineer.
- (k) Project – shall mean all the Work associated with this Agreement.
- (l) Site - those areas of the Property upon which the Work is to be performed, furnished and completed by Contractor in accordance with the Contract Documents.

ARTICLE 2

SCOPE OF WORK

Section 2.01 – Contractor's Responsibilities. Contractor shall: (i) Demolish and remove designated portions of existing platform steel, steel grating, handrails, and other materials as shown; Furnish and erect bolted and welded structural systems as shown; Provide and install handrails, gratings, kick plates and other fittings which may be required to support the miscellaneous metal construction; Provide painting in accordance with the Contract Documents; Furnish and install two (2) monorails and two (2) ten ton electrified hoist with power trolleys in accordance with the Contract Documents; Provide the electric services and systems to support the installation of two (2) motorized hoists, all in accordance with and as required by the Contract Documents, including but not limited to the plans set forth in

Exhibit A attached hereto and made a part hereof (the "Plans" or "Contract Drawings"), the general requirements set forth in **Exhibit B** attached hereto and made a part hereof (the "General Requirements"), and the technical specifications set forth in **Exhibit C** attached hereto and made a part hereof (the Technical Specifications" or "Specifications"); (ii) furnish 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); and (iii) restore 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 subsections (ii) and (iii) of Section 4.04 hereof (hereinafter collectively referred to as the "Work").

Section 2.02 - Performance and Completion of Work. All Work shall be performed and completed by Contractor in a good workmanlike manner consistent and in accordance with: (i) any and all instructions, guidance and directions provided by CRRA or Engineer to Contractor; (ii) the Contract Documents; (iii) sound construction and installation practices; (iv) the highest industry standards applicable to Contractor and its performance of the Work hereunder; (v) the schedule for the Work set forth in **Exhibit D** attached hereto and made a part hereof; and (vi) all Laws and Regulations (hereinafter collectively referred to as the "Standards"). Contractor shall obtain any locally required building or other permits required for the Work, and Contractor shall also assist and fully cooperate with CRRA in obtaining any other applicable permits necessary to begin and complete the Work.

Section 2.03 - CRRA's Responsibilities. CRRA and/or its Engineer shall be responsible for administering this Agreement, accepting the Work that is performed and completed by Contractor in accordance with the Contract Documents, and receiving and paying invoices for such Work.

Section 2.04 - Direction of Work. CRRA and/or its Engineer may, where necessary or desired, provide Contractor with instructions, guidance and directions in connection with Contractor's performance of the Work hereunder. CRRA reserves the right to determine whether Contractor will, upon completion of any phase of the Work, proceed to any or all remaining phases of the Work. If CRRA determines that Contractor shall not proceed with the remaining Work, CRRA shall terminate this Agreement in accordance with Section 4.03 hereof.

Section 2.05 - CRRA's Inspection Rights. Contractor's performance of the Work hereunder as well as Contractor's work products resulting from such performance are subject to inspection by CRRA. Inspections may be conducted at any time by CRRA. In the event of an inspection, Contractor shall provide to CRRA any documents or other materials that may be necessary in order for CRRA to conduct the inspection. If after any such inspection CRRA is unsatisfied with Contractor's performance of the Work hereunder or any of the work products resulting therefrom, Contractor shall, at the direction of CRRA, render such performance or work products satisfactory to CRRA at no additional cost or expense to CRRA and without any extension of or addition to any Contract Time for the remaining Work. For purpose of this Section 2.05, CRRA shall mean CRRA and/or its authorized agents, including but not limited to Engineer.

Section 2.06 - Access. CRRA hereby grants to Contractor, during the Facility's normal hours of operation, access to only those areas of the Property necessary for Contractor to perform the

Work hereunder, provided that: (i) Contractor shall not interfere with any other operations or activities being conducted on the Property by either CRRA or any other person or entity; (ii) Contractor directly coordinates with CRRA on such access and Contractor's storage of any equipment or materials on the Property; and (iii) 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.

Section 2.07 - Change in Scope of Work. In the event that CRRA determines during the term of this Agreement that any revisions, modifications or changes are necessary to the scope of Work as set forth in Section 2.01 hereof, then pursuant to CRRA's request Contractor shall promptly commence and perform the work required for such revisions, modifications or changes, which work shall be performed in accordance with the Standards unless otherwise specifically agreed to in writing by CRRA and Contractor. If any adjustment(s) to the Contract Price and/or the Contract Time is required as a result of such revisions, modifications or changes, CRRA and Contractor shall mutually agree in writing on the amount of such adjustment(s) provided that the schedule of values (including the unit prices set forth therein) approved by CRRA for the Project, to the extent applicable, shall be used to determine the appropriate increase or decrease in the quantity or cost of the materials or Work necessitated by such revisions, modifications or changes. Contractor shall promptly commence and perform any work required by such revisions, modifications or changes even if CRRA and Contractor cannot agree on the amount of such adjustment(s). If Contractor determines that a change in scope is necessary to complete the Work, Contractor shall notify CRRA in writing within three (3) business days.

ARTICLE 3

COMPENSATION AND PAYMENT

Section 3.01 - Compensation. The total amount of compensation to be paid to Contractor by CRRA for the Work hereunder shall not exceed _____ (the "Contract Price"), which Contract Price shall be payable as set forth in Section 3.02 below. Contractor acknowledges and agrees that the Contract Price constitutes the full compensation to Contractor for the Work to be performed by Contractor hereunder and includes all expenses and costs to be incurred by Contractor in performing such Work.

Section 3.02 - Payment Procedure. Within ten (10) days after the end of each month during the term hereof Contractor shall submit to CRRA a written request for payment for all the Work completed by Contractor during such month. Each written request for payment shall be submitted on AIA Forms G702 and G703 and in accordance with the General Requirements, and each such request shall include the name of the Project, the contract number, and all of the other information and documentation required by the General Requirements. If CRRA determines in its sole and absolute discretion that the Work for which Contractor is requesting payment has been properly performed and completed in conformance with the Standards, Contractor is not in default hereunder and CRRA does not dispute the amount of the payment requested, then CRRA shall pay Contractor ninety-five (95%) percent of the amount requested (the "Authorized Percentage Sum") within thirty (30) days after CRRA's receipt of such written request, and CRRA shall withhold the remaining five (5%) percent of such amount as retainage ("Retainage") If, however, CRRA determines that any of the Work for which Contractor has requested payment is not in conformance with the Standards, then CRRA may in its sole and absolute discretion also

discretion also withhold all or a portion of the Authorized Percentage Sum, 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. 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. Within ten (10) days after the Acceptance Date, Contractor shall submit to CRRA a written request for payment of all Retainage, and, provided Contractor is not in default hereunder and CRRA does not dispute the amount of such requested payment, CRRA shall pay Contractor such Retainage within thirty (30) days after CRRA's receipt of such written request. CRRA shall have no obligation to pay Contractor any amounts due Contractor under this Agreement if Contractor is in default hereunder.

Section 3.03 - Accounting Obligations. Contractor shall maintain books and accounts of the costs incurred by Contractor in performing the Work pursuant to this Agreement by contract number and in accordance with generally accepted accounting principles and practices. CRRA, during normal business hours, for the duration of this Agreement, shall have access to such books and accounts to the extent required to verify such costs incurred.

ARTICLE 4 **TERM OF AGREEMENT**

Section 4.01 - Term. The term of this Agreement shall commence upon the Effective Date and shall terminate, unless otherwise terminated or extended in accordance with the terms and provisions hereof, on the first anniversary of the Acceptance Date.

Section 4.02 - Time is of the Essence. CRRA and Contractor hereby acknowledge and agree that time is of the essence with respect to Contractor's performance of the Work hereunder. Accordingly, upon CRRA's issuance to Contractor of a notice to proceed with the Work (the "Notice To Proceed"), which Notice To Proceed shall be issued after the parties hereto receive all of the local, state and federal permits required for the Work hereunder, Contractor shall immediately commence performance of the Work and continue to perform the same during the term of this Agreement in accordance with the schedule set forth in attached **Exhibit D** in order to complete all of the Work and have such Work ready for CRRA's acceptance by the **sixtieth (60th)** day following the issuance of such Notice To Proceed (the "Completion Date"). 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 five hundred and 00/100 (\$500.00) 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. **The parties further agree that liquidated damages in this Section 4.02 are reasonable and have been agreed upon and intended by the parties because the damages expected under this Section are uncertain and difficult to prove.**

Section 4.03 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 all Work, unless otherwise directed in writing by CRRA. In the event that CRRA fails to pay Contractor any payments required to be paid hereunder in accordance with Article 3 hereof, then Contractor may terminate this Agreement by providing CRRA with thirty (30) days' prior written notice of such termination. Prior to any termination of this Agreement, Contractor shall remove all of its personnel and equipment from the Property, restore any part of the Property, any of the improvements located or to be located thereon, including but not limited to any access roads, or any of the Work that requires restoration pursuant to the terms and conditions of Section 4.04 hereof. Upon termination of this Agreement pursuant to this Section 4.03, (a) CRRA shall pay Contractor for all Work performed and completed by Contractor prior to the termination date, provided: (i) such Work has been performed and completed by Contractor in conformance with the Standards, (ii) payment for such Work has not been previously made or is not disputed by CRRA, (iii) Contractor is not in default hereunder and (iv) Contractor has performed and completed all its obligations under this Section 4.03 and Section 4.04 hereof 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 in any other manner whatsoever in the event CRRA exercises its right to terminate this Agreement.

Section 4.04 - Restoration. Unless otherwise directed in writing by CRRA, Contractor shall: (i) 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 material men to the same condition existing immediately prior to such disturbance or damage; and (ii) restore or repair any completed Work so disturbed or damaged to the condition required by the Contract Documents for acceptance of such Work by CRRA.

ARTICLE 5

INDEMNIFICATION

Section 5.01. - 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, liability, workers' compensation payments and expenses (including but not limited to attorneys' fees) arising out of injuries to the person (including death), damage to property or any other damages alleged to have been sustained by: (a) CRRA or any of its directors, officers, agents, employees or other contractors, or (b) Contractor or any of its directors, officers, agents, employees, subcontractors or material men, 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, agents, employees, subcontractors or material men. Contractor further undertakes to reimburse CRRA for damage to property of CRRA caused by Contractor or any of its directors, officers, agents, employees, subcontractors or material men, or by faulty, defective or unsuitable material or equipment used by it or any of them. The existence of insurance shall in no way limit the scope of this indemnification. Contractor's obligations under this Section 5.01 shall survive the termination or expiration of this Agreement.

Section 5.02 - Workmanship and Materials Warranty; Other Warranties and Guarantees.

For a period of one (1) year following the Acceptance Date (the "Warranty Period") Contractor warrants the workmanship, equipment, and materials, including but not limited to all shrubs and plantings provided herein, furnished under this Agreement for the Project against defects. If during or at the end of the Warranty Period CRRA determines that any of such workmanship, equipment or materials is or has become defective, Contractor shall, at its own cost and expense, promptly repair or replace such defective workmanship, equipment or materials in order to render the same to the same condition as warranted above. Any repairs to or replacements of such workmanship, equipment or materials required under this Section 5.02 must be approved by CRRA before Contractor may commence performance of such repairs or replacements, and all such repairs or replacements shall be performed by Contractor in accordance with all applicable Standards. In connection therewith Contractor shall obtain all warranties and guarantees for all material and equipment furnished hereunder by Contractor that are assignable to CRRA. Contractor shall assign such warranties and guarantees to CRRA upon the Acceptance Date. Contractor's obligations under this Section 5.02 shall survive the termination or expiration of this Agreement.

ARTICLE 6
INSURANCE

Section 6.01 - Required Insurance. Contractor shall procure and maintain, at its own cost and expense, throughout the term of this Agreement and any extension thereof, the following insurance, including any required endorsements thereto and amendments thereof:

- (e) Commercial general liability insurance alone or in combination with commercial umbrella insurance with a limit of five million (\$5,000,000.00) dollars 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);
- (f) Business automobile liability insurance alone or in combination with commercial umbrella insurance covering any auto (including owned, hired, and non-owned autos), with a limit of not less than one million (\$1,000,000.00) dollars each accident;
- (g) Workers' compensation with statutory limits and employers' liability limits of not less than one million (\$1,000,000.00) dollars for each accident for bodily injury by accident or one million (\$1,000,000.00) dollars for each employee for bodily injury by disease.
- (h) Contractor' property and equipment insurance covering all property and equipment to be used in connection with the Work hereunder in an amount equal to one hundred (100%) percent of actual cash value.

Section 6.02 - Certificates. Within ten (10) days after CRRA issues the Notice Of Award, and prior to commencing work, Contractor shall submit to CRRA a certificate or certificates for each

required insurance referenced in Section 6.01 above certifying that such insurance is in full force and effect and setting forth the information required by Section 6.03 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 6.01 above, a certificate or certificates containing the information required by Section 6.03 below and certifying that such insurance has been renewed and remains in full force and effect.

Section 6.03 - Specific Requirements. All policies for each insurance required hereunder shall: (i) 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); (ii) include a standard severability of interest clause; (iii) 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; (iv) contain a waiver of subrogation holding CRRA free and harmless from all subrogation rights of the insurer; and (v) 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.

Section 6.04 - 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.

Section 6.05 - Contractor's Subcontractors. Contractor shall either have its subcontractors covered under the insurance required hereunder, or require such subcontractors to procure and maintain the insurance that Contractor is required to procure and maintain under this Agreement.

Section 6.06 - No Limitation on Liability. No provision of this Article 6 shall be construed or deemed to limit Contractor's obligations under this Agreement to pay damages or other costs and expenses.

Section 6.07 - Other Conditions. CRRA shall not, because of accepting, rejecting, approving, or receiving any certificate of insurance required hereunder, incur any liability for: (i) the existence, non-existence, form or legal sufficiency of the insurance described on such certificate, (ii) the solvency of any insurer, or (iii) the payment of losses.

ARTICLE 7

MISCELLANEOUS

Section 7.01 - Non-Discrimination. Contractor agrees to the following; (1) 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, 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, 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; (2) 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"); (3) 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; (4) 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 (5) 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.

Section 7.02 - Books and Records. Contractor shall maintain proper books and records containing complete and correct information on all Work performed by Contractor pursuant to this Agreement in accordance with generally accepted accounting principles and practices. CRRA has the right to inspect and review all such books and records during Contractor's business hours.

Section 7.03 - 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.

Section 7.04 - 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.

Section 7.05 - Assignment. This Agreement may not be assigned in whole or in part by either party without the prior written consent of the other party or such assignment shall be void.

Section 7.06 - No Waiver. Failure to enforce any provision of this Agreement or to require at any time performance of any provision hereof shall not be construed to be a waiver of such provision, or to affect the validity of this Agreement or the right of any party to enforce each and every provision in accordance with the terms hereof. No waiver of any provision of this Agreement shall affect the right of CRRA or Contractor thereafter to enforce such provision or to exercise any right or remedy, available to it in the event of any other default involving such

provision or any other provision. Making payment or performing pursuant to this Agreement during the existence of a dispute shall not be deemed to be and shall not constitute a waiver of any claims or defenses of the party so paying or performing.

Section 7.07 - Modification. This Agreement may not be amended, modified or supplemented except by a writing signed by the parties hereto that specifically refers to this Agreement. Any oral representations or letters by the parties or accommodations shall not create a pattern or practice or course of dealing contrary to the written terms of this agreement unless this Agreement is formally amended, modified, or supplemented.

Section 7.08 - Status of Contractor. CRRA and Contractor acknowledge and agree that Contractor is acting as an independent contractor in performing any Work for CRRA hereunder and that Contractor shall perform such Work in its own manner and method subject to the terms of this Agreement. Nothing in this Agreement shall be construed or interpreted as creating a partnership, a joint venture, an agency, a master-servant relationship, an employer-employee relationship or any other relationship between CRRA and Contractor other than that of an owner and an independent contractor. Contractor is expressly forbidden from transacting any business in the name of or on account of CRRA, and Contractor has no power or authority to assume or create any obligation or responsibility for or on behalf of CRRA in any manner whatsoever.

Section 7.9 - Subcontractors. Contractor shall consult with CRRA before hiring any subcontractors to perform any Work hereunder. Contractor shall require all of its subcontractors to abide by the terms and conditions of this Agreement. Moreover, Contractor's subcontracts with such subcontractors shall specifically provide that, in the event of a default by Contractor thereunder or under this Agreement, CRRA may directly enforce such sub contracts and make payments thereunder. Contractor shall provide CRRA with all contracts, amendments, books, records, accounts, correspondence and other materials necessary to enforce such subcontracts. Also Contractor's subcontracts with its subcontractors shall specifically include CRRA as a third party beneficiary and shall provide that such subcontractors shall not be excused from any of their obligations under such subcontracts by reason of any claims, setoffs, or other rights whatsoever that they may have with or against Contractor other than through such subcontracts.

Section 7.10 - Contractor's Employees. All persons employed by Contractor shall be subject and responsible solely to the direction of Contractor and shall not be deemed to be employees of CRRA.

Section 7.11 - 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 Facility 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 material men; Before any subcontractor or material men of Contractor commences any Work hereunder, Contractor shall deliver to CRRA an original waiver of mechanic's liens properly executed by such subcontractor or material men. 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.

Section 7.12 - Bonds. Within ten (10) days after CRRA issues the Notice Of Award, Contractor shall furnish CRRA with construction performance and payment bonds each in the full amount of _____) Dollars (the "Bonds"). The Bonds shall be in and drawn on the forms set forth in **Exhibits E and F** 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. 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 7.12.

Section 7.13 - Withholding Taxes and Other Payments. No FICA (social security) payroll tax, state or federal income tax, federal unemployment tax or insurance payments, state disability tax or insurance payments or state unemployment tax or insurance payments shall be paid or deposited by CRRA with respect to Contractor, nor be withheld from payment to Contractor by CRRA. No workers' compensation insurance has been or will be obtained by CRRA on account of the Work to be performed hereunder by Contractor, or any of Contractor's employees or subcontractors. Contractor shall be responsible for paying or providing for all of the taxes, insurance and other payments described or similar to those described in this Section 7.13 and Contractor hereby agrees to indemnify CRRA and hold CRRA harmless against any and all such taxes, insurance or payments, or similar costs which CRRA may be required to pay in the event that Contractor's status hereunder is determined to be other than that of an independent contractor.

Section 7.14 -State of Connecticut Taxes. Contractor agrees that, pursuant to Conn. Gen. Stat § 22a-270 (as the same may be amended or superseded from time to time) CRRA is exempt from all State of Connecticut taxes and assessments. Without limiting the generality of the preceding sentence, Contractor also agrees that, pursuant to Conn. Gen. Stat § 12-412(92) (as the same may be amended or superseded from time to time), "[t]he sales and use of any services or tangible personal property to be incorporated into or used or otherwise consumed in the operation of any project of [CRRA] . . . whether such purchases are made directly by [CRRA] or are reimbursed by [CRRA] to the lessee or operator of such project" is not subject to Connecticut Sales and Use Taxes. Accordingly, Contractor shall not charge CRRA any State of Connecticut taxes or assessments at any time in connection with Contractor performance of the installation of the Hoist Crane Frames at the PBF Warehouse Agreement, nor shall Contractor include any State of Connecticut taxes or assessments in any rates, costs, prices or other charges to CRRA hereunder. The obligations of Contractor contained in the preceding sentence are absolute and shall apply notwithstanding any payment by Contractor of any State of Connecticut taxes or assessments in connection with its performance of the installation of the Hoist Crane Frames at the PBF Warehouse Agreement. Contractor 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 RFB or other submittal or proposal to CRRA in connection with the installation of the Hoist Crane Frames at the PBF Warehouse Agreement.

Section 7.15 - Proprietary Information. Contractor shall not use, publish, distribute, sell or divulge any information obtained from CRRA by virtue of this Agreement for Contractor's own purposes or for the benefit of any person, firm, corporation or other entity (other than CRRA) without the prior written consent of CRRA. Any report or other work product prepared by Contractor in connection with the performance of the Work hereunder shall be owned solely and exclusively by CRRA and cannot be used by Contractor for any purpose beyond the scope of this Agreement without the prior written consent of CRRA.

Section 7.16 - Site and Subsurface Conditions. All information and data shown or indicated in the Contract Documents with respect to underground facilities, surface conditions, subsurface conditions or other conditions at or contiguous to the Site 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 Site 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 Site 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 the Contract Documents. In the event that the information or data shown or indicated in the Contract Documents with respect to underground facilities or surface, subsurface or other conditions at or contiguous to the Site 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 in writing to such increase and/or extension.

Section 7.17 - Notices. All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed to have been duly given if mailed via certified first class mail return receipt requested postage prepaid or overnight express mail service to the pertinent address below.

(a) If to CRRA:

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

With a copy to:

Connecticut Resources Recovery Authority
100 Constitution Plaza – 17th Floor
Hartford, Connecticut 06103-1722
Attention: Mr. Michael P. Tracey, P.E.

(b) If to CONTRACTOR:

Attention: _____

Section 7.18 - Campaign Contribution Restrictions. This Section 7.18 is included here pursuant to CGS §9-333n and, without limiting its applicability, is made applicable to State Contracts, bid solicitations, request for proposals and prequalification certificates as the context requires. This Section 7.18, without limiting its applicability, is also made applicable to State Agencies, Quasi-Public Agencies, the General Assembly, State Contractors, Prospective State Contractors and the holders of valid prequalification certificates, as the context requires.

(a) For purposes of this Section 7.18 only:

- (1) “Quasi-Public Agency” means the Connecticut Development Authority, Connecticut Innovations, Incorporated, Connecticut Health and Educational Facilities Authority, Connecticut Higher Education Supplemental Loan Authority, Connecticut Housing Finance Authority, Connecticut Housing Authority, Connecticut Resources Recovery Authority, Capital City Economic Development Authority, Connecticut Lottery Corporation, or as this definition may otherwise be modified by Title 1, Chapter 12 of the Connecticut General Statutes concerning quasi-public agencies.
- (2) “State Agency” means any office, department, board, council, commission, institution or other agency in the executive, legislative or judicial branch of State government, or as this definition may otherwise be modified by Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing.
- (3) “State Contract” means an agreement or contract with the State or any State Agency or any Quasi-public Agency, 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 fiscal year, for (A) the rendition of personal services, (B) the furnishing of any material, supplies or equipment, (C) the construction, alteration or repair of any public building or public work, (D) the acquisition, sale or lease of any land or building, (E) a licensing arrangement, or (F) a grant, loan or loan guarantee, or as this definition may otherwise be modified by Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing.

- (4) "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 the termination of said contract. "State contractor" does not include a municipality or any other political subdivision of the State or an employee in the executive, legislative or judicial 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, or as this definition may otherwise be modified by Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing.
- (5) "Prospective State Contractor" means a person, business entity or nonprofit organization that (A) submits a bid in response to a bid 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 State Contract has been entered into, or (B) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under Section 4a-100 of the Connecticut General Statutes. "Prospective State Contractor" does not include a municipality or any other political subdivision of the State or an employee in the executive, legislative or judicial 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. Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing may modify this definition, which modification shall control.
- (6) "Principal of a State Contractor or Prospective State Contractor" (collectively referred to in this Section 7.18 as "Principal") means (A) an individual who is a member of the board of directors of, or has an ownership interest in, a State Contractor or Prospective State Contractor, which is a business entity, except for an individual who (i) owns less than five per cent of the shares of any such State Contractor or Prospective State Contractor that is a publicly traded corporation, or (ii) is a member of the board of directors of a nonprofit organization qualified under Section 501 (c)(3) of the Internal Revenue Code of 1986, or any subsequent corresponding internal revenue code of the United States, as from time to time amended, (B) an individual who is employed by a State Contractor or Prospective State Contractor, which is a business entity, as president, treasurer or executive or senior vice president, (C) an individual who is chief executive officer of a State Contractor or Prospective State Contractor, which is not a business entity, (D) an employee of any State Contractor, or Prospective State Contractor who has managerial or discretionary responsibilities with respect to a State Contract, (E) the spouse or a dependent child of an individual described in this subparagraph, or (F) a political committee established by or on behalf of an individual described in this subparagraph, or as this definition may otherwise be modified by Title 9, Chapter 105 of the Connecticut General Statutes concerning campaign financing.

- (b) No State Contractor, Prospective State Contractor or Principal, with regard to a State Contract, bid solicitation or request for proposals with or from a State Agency in the executive branch or a Quasi-public Agency, and no Principal of a holder of a valid prequalification certificate, shall make a contribution to, or solicit contributions on behalf of (1) 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, (2) a political committee authorized to make contributions or expenditure to or for the benefit of such candidates, or (3) a party committee.
- (c) No State Contractor, Prospective State Contractor or Principal, with regard to a State Contract, bid solicitation or request for proposals with or from the General Assembly, and no Principal of a holder of a valid prequalification certificate, shall make a contribution to, or solicit contributions on behalf of (1) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (2) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (3) a party committee.
- (d) If a State Contractor or a Principal of a State Contractor makes or solicits a contribution prohibited under this Section 7.18, the contracting State Agency or Quasi-public Agency may void the existing contract with said contractor, and no State Agency or Quasi-public Agency shall award the State Contractor a State Contract or an extension or an amendment to a State Contract for one year after the election for which such contribution is made or solicited.
- (e) If a Prospective State Contractor or a Principal of a Prospective State Contractor makes or solicits a contribution prohibited under this Section 7.18, no State Agency or Quasi-public Agency shall award the Prospective State Contractor the contract described in the bid solicitation or request for proposals, or any other State Contract for one year after the election for which such contribution is made or solicited.

Section 7.19 - Benefit and Burden. This Agreement shall inure to the benefit of and be binding upon the heirs, personal representatives, successors and assigns of the parties hereto.

Section 7.20 - Severability. CRRA and Contractor hereby understand and agree that if any part, term or provision of this Agreement is held by any court to be invalid, illegal or in conflict with any applicable law, the validity of the remaining portions of this Agreement shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular part, term or provision held to be invalid, illegal or in conflict with any applicable law.

Section 7.21 - 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 Article, Section or Subsection unless the particular Article, Section, or) subsection is specifically referenced.

Section 7.22 - Captions. 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/or provisions of this Agreement.

Section 7.23 - Counterparts. This Agreement may be executed in any number of counterparts by the parties hereto. Each such counterpart so executed shall be deemed to be an original and all such executed counterparts shall constitute but one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals as of the day and year first written above.

CONNECTICUT RESOURCES RECOVERY AUTHORITY

By _____
Title: Thomas D. Kirk
It's President, Duly authorized

CONTRACTOR

By _____
Its _____
Duly authorized

EXHIBIT A

PLANS

The following plans are hereby incorporated by referenced and made a part of this Agreement as if such plans had been attached in their entirety to this Agreement:

“Connecticut Resources Recovery Authority CRRA PBF Warehouse Hoist Crane Frame Reserve Road, Hartford, Connecticut. CRRA Contract No. 074121 February, 2007, URS Corporation AES”.

EXHIBIT B

GENERAL REQUIREMENTS

<u>Section</u>	<u>Title</u>
01010	Summary of Work
01025	Measurement and Payment
01039	Coordination and Meetings
01300	Submittals
01340	Shop Drawings
01400	Quality Control (QC)
01410	Testing Laboratory Services
01600	Material and Equipment
01700	Contract Closeout
01740	Warranties and Bonds

SECTION 01010
SUMMARY OF WORK

Part 1 GENERAL

1.1 SECTION INCLUDES

- A. Project Description
- B. Work covered by Contract Documents
- C. Work Site Location
- D. Contractor use of site and premises
- E. Work Sequence
- F. Owner Occupancy

1.2 PROJECT DESCRIPTION

A. Connecticut Resources Recovery Authority (CRRA), of Hartford, Connecticut is issuing a construction contract to install two (2) fan motor hoist cranes with steel framing on an existing mechanical platform over the PBF Warehouse Facility, Gate 20 Reserve Road, Hartford, Connecticut (the "Facility"). . The work to be performed under this RFB includes, but is not limited to the following items:

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Furnish labor, material and equipment for the following:
 - Demolish and remove designated portions of existing platform steel, steel grating, handrails, and other materials as shown.
 - Furnish and erect bolted and welded structural systems as shown
 - Provide and install handrails, gratings, kick plates and other fittings which may be required to support the miscellaneous metal construction.
 - Provide painting in accordance with the Contract Documents.
 - Furnish and install two (2) monorails and two (2) ten ton electrified hoist with power trolleys in accordance with the Contract Documents.
 - Provide the electric services and systems to support the installation of two (2) motorized hoists.
 - Construction activities will take place while the Facility remains in operation.
 - Construction activities shall be coordinated with Owner (CRRA) and Operator (COVANTA ENERGY) as shown and specified.
 - Contractor shall attend on site a required safety training class provided by Covanta Energy prior to the beginning of the construction activities.
 - Clean-up, disposal of waste, and debris, and restoration of work site to original condition and to satisfaction of Owner and Engineer.
 - All other related work required to complete the Project.

1.4 WORK SITE LOCATION

- A. Connecticut Resources Recovery Authority
Power Block Facility Warehouse
Gate 20, Reserve Road
Hartford, Connecticut

1.5 CONTRACTOR USE OF WORK SITE AND PREMISES

- A. Limit use of work site and premises to allow Owner occupancy and to maintain facilities operations.

1.6 WORK SEQUENCE

- A. The total contract time will be 60 days, beginning at a date to be specified in the Notice to Proceed.

1.7 OWNER OCCUPANCY

- A. The Owner will occupy the site and premises during the entire period of construction.
- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations. The contractor shall ensure that all of his action(s) do not, in any manner, unnecessarily delay and/or impede the day to day operations of this facility.
- C. Schedule the Work to accommodate this requirement. This may require off-hour and weekend work.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Schedule of Values
- B. Format
- C. Preparation of Applications
- D. Submittal Procedures
- E. Substantiating Data

1.2 RELATED SECTIONS

- A. Agreement
- B. Standard General Conditions
- C. Supplementary Conditions
- D. Section 01700 - Contract Closeout

1.3 SCHEDULE OF VALUES

- A. Submit Schedule of Values in duplicate within ten (10) days after Effective Date of Agreement or date established in Notice to Proceed.
- B. Submit at least the following:
 - 1. Mobilization
 - 2. Progress Schedule
 - 3. Demolition and removal of designated portions of existing platform steel.
 - 4. Furnish and install two (2) monorails and two (2) ten ton electrified hoist with power trolleys in accordance with the Contract Documents.
 - 5. Provide the electric services and systems to support the installation of two (2) motorized hoists.
 - 6. Miscellaneous Work
 - 8. Clean-up
 - 9. Contract Closeout
- C. Include within each line item, a directly proportional amount of the Contractor's overhead and profit.
- D. Revise schedule to list approved Change Orders, with each Application for Payment.

1.4 FORMAT

- A. Form AIA G702 and G703 (or approved substitute) Application for Payment (included at the end of this section).

- B. Utilize Schedule of Values for listing items in Application for Payment.
- C. Provide a column for listing each of the following items. Items Number; Description of Work; Scheduled Value; Previous Applications; Work in Place and Stored Materials under this Application; Authorized Change Orders; Total Completed and Stored to Date of Application; Percentage of Completion; Balance to Finish; and Retainage.

1.5 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed.
- D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- E. Application for Final Payment: as specified in Section 01700.

1.6 SUBMITTAL PROCEDURES

- A. Submit three (3) copies of each Application for Payment.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Payment Period: at intervals stipulated in the Agreement.
- D. Submit under transmittal letter specified in Section 01300.

1.7 SUBSTANTIATING DATA

- A. When ENGINEER requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one (1) copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01039
COORDINATION AND MEETING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination.

- B. Field engineering.
- C. Preconstruction meeting.
- D. Progress meetings.
- E. Preinstallation meeting.

1.2 RELATED SECTIONS

A. Section 01300 - Submittals.

1.3 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual and Plans to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.
- C. Coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents to minimize disruption of Owner's activities.

1.4 FIELD ENGINEERING

- A. Confirm drawing dimensions and elevations.
- B. Submit a copy of as-built drawings in conformance with the Contract Documents.

1.5 PRE-CONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required: Owner, Engineer, and Contractor.
- C. Agenda:
 - 1. Submission of executed bonds and insurance certificates.
 - 2. Distribution of Contract Documents.
 - 3. Submission of list of Subcontractors, list of Products, Schedule of Values, and Progress Schedule.
 - 4. Designation of personnel representing parties in Contract.

5. Procedures and processing of field decisions, submittals, substitutions, Applications for Payments, proposal request, Change orders and Contract Closeout procedures.
6. Scheduling.

D. Record minutes and distribute copies within three (3) days after meeting to participants and those affected by decisions made.

1.6 PROGRESS MEETINGS

A. OWNER will schedule and administer meetings throughout progress of the Work.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: CONTRACTOR, major Subcontractors and Suppliers, OWNER, and ENGINEER, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems, which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to the Work.

E. Record minutes and distribute copies within two (2) days after meeting to participants and those affected by decisions made.

1.7 PREINSTALLATION MEETING

A. When required in individual specification sections, convene a preinstallation meeting at work site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify OWNER five (5) days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review conditions of installation, preparation and installation procedures.
2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants and those affected by decisions made.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Manufacturer's certificates

1.2 RELATED SECTIONS

- A. Section 01340 - Shop Drawings
- B. Section 01400 - Quality Control
- C. Section 01410 - Testing Laboratory Services
- D. Section 01700 - Contract Closeout
- E. Section 01740 - Warranties and Bonds

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with a transmittal letter, except Shop Drawings which will be submitted as specified in Section 01340.
- B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- C. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite the Project, and deliver to Engineer with a copy to Owner. Coordinate submission of related items.
- E. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- F. Provide space for Contractor and Engineer review stamps.
- G. Revise and resubmit, identify all changes made since previous submission.
- H. Distribute copies of reviewed submittals as appropriate.
Instruct parties to promptly report any inability to comply with provisions.
- I. Submittals not requested will not be recognized or processed.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 10 days after date established in Notice to Proceed.
- B. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version. Progress Reports shall include the following:
 - 1. Listing of target delivery dates for material.
 - 2. A narrative of any problem experienced by the Contractor that could impact progress.
- D. Submit a horizontal bar chart with separate line for each section of Work, identifying first work day of each week.

1.5 MANUFACTURER CERTIFICATES

- A. Submit certifications by manufacturer to Engineer for all materials required on the project, in quantities specified for Product Data.,
- B. Indicate material of Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certification as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01340
SHOP DRAWINGS

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDE

- A. Shop drawing submittal procedures.
- B. Engineer's review.
- C. Shop drawing schedule.
- D. Number of copies.
- E. Project record documents.

1.2 RELATED SECTIONS

- A. Standard General Conditions.
- B. Supplementary Conditions
- C. Section 01300 - Submittals.

1.3 SHOP DRAWING SUBMITTAL PROCEDURES

- A. Coordinate and check all Shop Drawings furnished by suppliers and Subcontractors for accuracy and for conformance with requirements of the Contract Documents.
- B. Attach a copy of a Shop Drawing Transmittal form to each group of Shop Drawings, manufacturer's literature, equipment data and samples submitted. Use a sufficient number of Shop Drawing Transmittal forms to provide for the following:
 - 1. Items on a single transmittal form pertain to the same Specification Section.
 - 2. Items on a single transmittal form are either all original submittals or the same number resubmittal.
 - 3. Each material sample is listed on a separate transmittal form.
- C. Number each submittal consecutively and insert the number in the space provided on the transmittal form. Assign resubmittals the same transmittal number as the original with a suffix of a sequential letter to indicate the resubmittal. For example, the first resubmittal or submittal 25 would be number 25A.
- D. Insert the applicable Specification Section number in the space provided.
- E. Enter the number of each item Submitted.
- F. Indicate whether the submittal is an original submittal, a first resubmittal or a higher numbered resubmittal by checking the proper box.

- G. Indicate the number of resubmittal for second or higher number resubmittals.
- H. Complete the information required under the column headings "Manufacturer", "Manufacturer's Number", "Revision Number" and "Subject". Select a brief title under "Subject" which clearly distinguishes the equipment or material covered by the transmittal from other equipment and material furnished under the Contract.
- I. Complete the certification at the bottom of the Shop Drawing Transmittal form indicating whether or not the submittal is in strict accordance with the Contract Documents. Specifically note all deviations, if any, from the Contract Documents and reasons therefore in the space provided on the Shop Drawing Transmittal form or in a referenced serial letter.
- J. Sign and date the Shop Drawing Submittal form.
- K. Submittals which do not have a fully completed Shop Drawings Transmittal form will be returned along with unreviewed attachments. Such submittals, even though incomplete, will be counted as a submittal. See Supplementary Conditions.

1.4 ENGINEER'S REVIEW

- A. ENGINEER'S review will be completed within a reasonable time after receipt by ENGINEER of each submittal in proper sequence and will be returned to CONTRACTOR with one of the following markings:
 - 1. "No Exception Taken" indicates submittal has been reviewed and appears to be in conformance with requirements of the Contract Documents. CONTRACTOR may proceed with construction shown on the submittal.
 - 2. "Make corrections noted" indicates submittal appears to be in conformance with requirements of the Contract Documents. CONTRACTOR shall incorporate the corrections noted and may proceed with construction shown on the submittal. No resubmittal is required.
 - 3. "Revise and Resubmit" indicates submittal does not appear to be in conformance with the Contract Documents. ENGINEER'S comments will be noted on the submittal or in a separate letter. CONTRACTOR shall recheck, make necessary revisions and resubmit.
 - 4. "Reference" indicates submittal gives general information incidental to but not required for construction.
- B. Review of conformance with design concepts and compliance with Contract Documents does not require ENGINEER to review features solely related to construction or all dimensions, quantities and other data. CONTRACTOR shall not rely on ENGINEER'S approval as a verification or check of all such items in the submittal or of satisfactory and safe installation and construction. CONTRACTOR shall verify all fabrication and installation requirements, quantities and dimensions.

1.5 SHOP DRAWING SCHEDULE

A. Include the following:

1. Description of each submittal.
2. Date by which each submittal will be delivered to ENGINEER.
3. Date by which each submittal must be approved to maintain construction schedule.
4. Relevant Specification Section Reference.

B. Allow reasonable time for ENGINEER to review Shop Drawings and for possible resubmittal.

1.6 NUMBER OF COPIES

A. Submit the following:

1. Four (4) copies in addition to the number the CONTRACTOR wants returned of each Shop Drawing which has been specifically prepared for the Work.
2. Five (5) copies in addition to the number the CONTRACTOR wants returned of all pre-printed manufacturer's data, brochures, Suppliers, information and other information submitted as Shop Drawings.
3. Five (5) samples except as otherwise specified.

1.7 PRESENTATION

- A. Present in a clear and thorough manner.
- B. Identify field dimensions, show relation to adjacent or critical features or Work.
- C. Provide space for CONTRACTOR and ENGINEER review stamps.
- D. Use sheet size of not less than 8% by 11 inches and not more than 28 by 40 inches.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance - control of installation.
- B. Tolerances.
- C. References.
- D. Inspecting and testing laboratory services.
- E. Manufacturers, field services and reports.

1.2 RELATED SECTIONS

- A. Section 01300 Submittals: Submission of manufacturers' instructions and certificates.
- B. Section 01410 Testing Laboratory Services.

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from ENGINEER before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce workmanship of specified quality.

1.4 TOLERANCES

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

1.5 REFERENCES

- A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. The contractual relationship, duties, and responsibilities of the parties to the agreement nor those of the Engineer shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 INSPECTION AND TESTING SERVICES

- A. Contractor will appoint and employ services of an independent firm to perform inspecting and testing as specified in Section 01410.
- B. The independent firm will perform inspections, tests, and other services as required by the Engineer or the Owner.
- C. Inspecting, testing, and source quality control may occur on or off the project site. Perform off-site inspecting or testing as required by the Engineer or the Owner.
- D. Reports will be submitted by the independent firm to the Engineer in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E. Cooperate with independent firm, furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements-with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing or inspecting does not relieve Contractor to perform Work to contract requirements.
- G. If any work is found to be defective in any respect because of a fault of the Contractor, or if any work has been covered over without the approval or consent of the Owner (whether or not it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including labor, material, services or required consultants, additional supervision, and the Owner's administration costs. Said costs

will be charged to the Contractor by deducting inspection and testing charges from the contract price.

PART 2 PRODUCTS

Not used

PART 3 EXECUTIONS

Not used

END OF SECTION

SECTION 01410
TESTING LABORATORY SERVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selection and payment.
- B. Contractor submittals.
- C. Laboratory responsibilities.
- D. Laboratory reports.
- E. Limits on testing laboratory authority.
- F. Contractor responsibilities.
- G. Schedule of inspections and tests.

1.2 RELATED SECTIONS

- A. General Conditions: Inspections, testing, and approvals required by public authorities.
- B. Section 01300 - Submittals: Manufacturer's certificates.'
- C. Section 01400 - Quality Control
- D. Section 01700 - Contract Closeout: Project record documents.
- E. Contract Drawing Specification Requirements: Inspections and tests required, and standards for testing.

1.3 REFERENCES

- A. ASTM C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- B. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- C. ASTM E329 - Practice for Use in the Evaluation of Inspection and Testing Agencies as Used in Construction.
- D. ASTM E543 - Practice for Determining the Qualification of Nondestructive Testing Agencies.
- E. ASTM E548 - Practice for Preparation of Criteria for Use in the Evaluation of Testing Laboratories and Inspection Bodies.
- F. ASTM E699 - Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM-Committee E6.

1.4 SELECTION AND PAYMENT

- A. Employment and payment for services of an independent testing laboratory to perform specified inspecting and testing, by Contractor
- B. Employment - of testing laboratory in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

1.5 QUALITY ASSURANCE

- A. Comply with requirements of ASTM C1077, ASTM D3740, ASTM D4561, ASTM E329, ASTM E543, ASTM E548, and ASTM E699.
- B. Laboratory: Authorized to operate in State in which Project is located.
- C. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
- D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.6 CONTRACTOR SUBMITTALS

- A. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.
- B. Submit copy of report of laboratory facilities inspection made by materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.7 LABORATORY RESPONSIBILITIES

- A. Test samples of mixes submitted by Contractor.
- B. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
- C. Perform specified inspecting, sampling, and testing of Products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or Products.
- F. Perform additional inspection and tests required by Engineer.

1.8 LABORATORY REPORTS

- A. After each inspection and test, promptly submit three (3) copies of laboratory report to Engineer, and to Contractor.
- B. Include:
 - 1. Date issued,
 - 2. Project title and number,
 - 3. Name of inspector,
 - 4. Date and time of sampling or inspection,
 - 5. Identification of product and specifications section,
 - 6. Location on the site,
 - 7. Type of inspection or test,
 - 8. Date of test,
 - 9. Results of tests,
 - 10. Conformance with Contract Documents.
- C. When requested by Engineer or owner, provide interpretation of test results.

1.9 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop the Work.

1.10 CONTRACTOR RESPONSIBILITIES

- A. Deliver to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
- B. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers, facilities.
- C. Provide incidental labor and facilities:
 - 1. to provide access to Work to be tested,
 - 2. to obtain and handle samples at the site or at source of Products to be tested,
 - 3. to facilitate tests and inspections,
 - 4. to provide storage and curing of test samples.
- D. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring inspecting and testing services.

1.11 SCHEDULE OF INSPECTIONS AND TESTS

- A. Provide supervision, labor, equipment, materials to conduct the tests and inspection.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals.
- B. Section 01400 – Quality Control: Product quality monitoring.

1.3 PRODUCTS

- A. Product: Means new material, -machinery, components, fixtures and systems forming the work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the work. Product may also include existing materials or components required for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacture for components being replaced.

1.4 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.5 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.

- C. Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product.
- D. For exterior storage of fabricated Products, place on sloped supports above ground.
- E. Provide off -site storage and protection when site does not permit on-site storage or protection.
- F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of-Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.
- J. After receipt of products, the Contractor assumes responsibility for loss and damage including but not limited to breakage, corrosion, weather damage and distortion.
- K. Notify Owner and Engineer in writing upon acceptance of a shipment.

1.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.7 SUBSTITUTIONS

- A. Engineer will consider requests for Substitutions only within 15 days after date established in Notice to Proceed.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating Compliance of proposed Substitution with Contract Documents.

- D. A request constitutes a representation that the Contractor:
1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 2. Will provide the same warranty for the Substitution as for the specified Product.
 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Will reimburse owner and Engineer for review or redesign services associated with re-approval by authorities.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
 3. The Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Project record documents.
- D. As-built and conformed to Construction Record Drawings.
- E. Warranties and Bonds.

1.2 RELATED SECTIONS

- A. Standard General Conditions
- B. Supplementary Conditions
- C. Section 01025 - Measurement and Payment
- D. Section 01300 - Submittals
- E. Section 01340 - Shop Drawings
- F. Section 01740 - Warranties and Bonds

1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Provide submittals to Engineer and Owner that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and balance due.

1.4 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- C. Clean site; sweep paved areas.
- D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by owner.
- C. Store record documents separate from documents, used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured elevations of buried piping.
 - 2. Measured locations of existing buried utilities and appurtenances encountered during the progress of the work.
 - 3. Field changes of dimension and detail.
 - 4. Details not on original Contract drawings.

1.6 AS-BUILT AND CONFORMED TO CONSTRUCTION RECORD DRAWINGS

- A. As-built for products: In accordance with Section 01340.
- B. Conformed to construction Record Drawings: One complete set of full size prints marked to show changes and revisions to date of the project completion.

1.7 WARRANTIES AND BONDS

- A. Submit in accordance with Section 01740.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01740
WARRANTIES AND BONDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparation and submittal.
- B. Time and schedule of submittals.

1.2 RELATED SECTIONS

- A. Instruction to Bidders
- B. General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- C. Section 01700 - Contract Closeout.
- D. Contract Drawing Specifications: Warranties required for specific Products or Work.

1.3 FORM OF SUBMITTALS

- A. Bind in commercial quality 8-1/2 x 11 inch three ring binders with durable plastic covers.
- B. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and supplier; and name of responsible company principal.
- C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.
- D. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1.4 PREPARATION OF SUBMITTALS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner' s

permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals' when required.
- D. Retain warranties and bonds until time specified for submittal.

1.5 TIME OF SUBMITTALS

- A. Make submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
- B. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

EXHIBIT C

TECHNICAL SPECIFICATIONS

POWER BLOCK FACILITY WAREHOUSE

HOIST CRANE FRAME

SECTION

TITLE

02020	Selective Building Demolition
05120	Structural Steel
05500	Miscellaneous Metal Fabrication
09900	Painting
14500	Monorail Hoist System
16010	General Requirements for Electrical work
16050	Basic Electrical Materials and Methods
16100	Raceways, Boxes and Cabinets
16120	Conductors and Cables
16195	Electrical Identifications
16452	Grounding
16475	Fuses
16476	Disconnect Switches and Circuit Breakers

SECTION 02020 – SELECTIVE BUILDING DEMOLITION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Provisions of the Contract, including the General Conditions and Supplementary General Conditions, apply to the work specified in this Section.
- B. Section 05120 – Structural Steel.

1.2 WORK INCLUDED

- A. Demolition and Removal of designated portions of existing platform steel, steel grating, handrails, and other materials as shown, specified and required to complete work.
- B. Remove of unsuitable materials from site.

1.3 SUBMITTALS

- A. Submit for approval proposed methods, equipment, operating sequence for demolition and removal procedures including coordination for shut-off, capping, temporary services, continuation of utility services and other applicable items to ensure no interruption of Owner's operation.
- B. Submit record documents.

1.4 JOB CONDITIONS

- A. Conduct demolition to minimize interference with adjacent structures to remain and so as not to interfere with Owner's operation.
- B. Provide, erect and maintain temporary railings or barriers as required to protect adjacent Owners work areas.
- C. Conduct operations with minimum interference to facilities. Maintain and protect egress and access at all times.
- D. Do not close or obstruct areas adjacent to the work by the placement or storage of materials. All operations shall be conducted with a minimum interference to adjacent areas.
- E. Repair damage to facility to remain, or to any property belonging to the Owner or occupants of the facility.
- F. Schedule work to be carried out in this operation so as to avoid interference with Owner's operations and work in the existing facility.

- G. Notify the Owner in writing of proposed schedule at least 48 hours prior to commencement of a demolition or removal. Do not start removals without permission of the Owner.

PART 2 – PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL

- A. All materials removed from existing work shall become the property of Contractor, except for those which Owner has identified and marked for his use. All materials marked by the Owner to remain his shall be carefully removed by the Contractor, so as not to be damaged, and shall be cleaned and stored on or adjacent to the site in a protected place specified by the Engineer or loaded onto trucks provided by the Owner.
- B. Contractor shall dispose of all demolition materials, debris and all other items not marked by the Owner to remain as his, off the site and in conformance with all existing applicable laws and regulations.
- C. Surfaces which are exposed or damaged by any of the removals specified herein, and which will remain as exposed surfaces shall be repaired and refinished by the Contractor with the same or matching materials as the existing adjacent surface or as may be otherwise approved by the Engineer.
- D. Pollution Controls: Use temporary enclosures, and other suitable methods to limit the amount of dust, dirt, and debris rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection. Under no circumstances shall such conditions be allowed to interfere with Owner's operations.
 - 1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
 - 2. If water is used in these activities, the usage shall be strictly controlled to confine liquids within the construction area and prevent runoff into the surrounding PBF warehouse areas.
 - 3. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

3.2 REMOVALS

- A. Remove existing grating, handrails and steel members as shown and specified unless otherwise directed by the Engineer. Removal beyond these limits shall be at the Contractor's expense and these excess removals shall be reconstructed to the satisfaction of the Engineer with no additional compensation to the Contractor.

- B. All structural or miscellaneous metals, and other items contained in or upon the existing platform shall be removed and taken from the site, unless otherwise approved by the Engineer.
- C. After removal of work which will tie into new work or existing work, the point of junction shall be neatly repaired so as to leave only finished edges and surface exposed.
- D. Where new anchoring materials including bolts, nuts, hangers, welds, and reinforcing steel, are required to attach new work to the existing work, they shall be included under this Section, except where specified elsewhere.

3.3 INSPECTION

- A. Contractor shall examine the conditions under which work is to be performed and notify Engineer in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Engineer.

3.4 CLEAN-UP

- A. Contractor shall remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste, and debris of every sort shall be removed and premises shall be left clean, neat, and orderly.

END OF SECTION 02020

SECTION 05120 – STRUCTURAL STEEL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and General Provisions of the Contract, including the General Conditions and Supplementary General Conditions, apply to the work specified in this Section.

1.2 SCOPE OF WORK

- A. The work under this Section consists of furnishing all labor, materials, equipment, services and transportation required to complete structural steel and connection work shown on drawings, as specified herein, or both. Structural steel work is that work defined in AISC “Code of Standard Practice” plus steel work listed below and shown on the structural drawings.

1. Furnishing and erection (including bolted and welded connections) of base plates, columns, tubes, channels, struts, beams, girders, bracing (temporary and permanent), brackets, anchors, angles, stiffeners or plates affixed to structural steel for structures.
2. Furnishing and application of shop paint and field touch-up paint for designated structural steel items.
3. Design of bolted/welded structural connections.
4. Furnishing of structural steel items shown in structural drawings required to be built into or form part of work specified under other Sections.
5. Unless specifically excluded, furnishing and installation of any other items of structural steel work indicated on drawings, specified or obviously needed to make work of this Section complete.

1.3 RELATED WORK

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 14500 Monorail Hoist System

1.4 REFERENCES/QUALITY ASSURANCE

- A. Except as otherwise specified herein, perform work in accordance with specifications noted below, including latest editions of applicable specifications, codes, and standards cited therein, and latest applicable addenda and supplements.

1. 2000 International Building Code with Connecticut Supplements.

2. "Specification for Structural Steel Buildings – Allowable Stress Design and Plastic Design", American Institute of Steel Construction (AISC), 1989.
 3. "Code of Standard Practice for Steel Buildings and Bridges", American Institute of Steel Construction, (AISC) 1992 except as modified herein by deletion of the following sentences: Paragraph 4.2 "The fabricator includes a maximum allowance of fourteen (14) calendar days in his schedule for the return of shop drawings." Paragraph 4.2.1 "Approval by the Owner of shop drawings prepared by the fabricator indicates that the fabricator has correctly interpreted the Contract requirements. This approval constitutes the Owner's acceptance of all responsibility for the design adequacy of any connections designed by the fabricator as a part of his preparation of these shop drawings. Approval does not relieve the fabricator of the responsibility for accuracy of detail dimensions on shop drawings, nor the general fit-up of parts to be assembled in the field."
 4. "Structural Welding Code – Steel (AWS D1.1-96)", American Welding Society.
 5. "Specifications for Structural Joints Using ASTM A325 or A490 Bolts", Research Council on Structural Connections of the Engineering Foundation (RCSC) 2000.
 6. "Painting Manual, Vol. 1, Good Painting Practice" and "Painting Manual, Vol. 2, Systems and Specifications", Steel Structures Painting Council.
 7. American Society for Testing Materials (ASTM) Standards referenced in this Section.
- B. Any material or operation specified by reference to published specifications of manufacturer or published standard shall comply with said specification or standard. In case of conflict between referenced specifications, most stringent requirement shall govern. In case of conflict between referenced specifications and Project Specifications, Project Specifications shall govern.
- C. Qualified Welders
1. All shop and field welding shall be done by certified welders.
- D. Erector Qualifications: Engage an experienced erector who has completed structural steel work similar in material, design, and extent to that indicated for this project and with a 5 year record of successful in-service performance.
- E. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the work.
1. Fabricator must participate in the AISC Quality Certification Program and be designated an AISC-Certified Plant as follows:

- a. Category: Category Sbd, conventional steel structures.

1.5 SUBSTITUTIONS

- A. Substitutions for member sizes, type(s) of steel, connection details or any other modifications proposed by Contractor will be considered by Engineer only under following conditions:
1. That request has been made and accepted prior to submission of Shop Drawings.
 2. That there is a substantial cost advantage or time advantage to Owner, or that proposed revision is necessary to obtain required materials or methods at proper times to accomplish work in time scheduled.
 3. That sufficient sketches, engineering calculations, and other data have been submitted to facilitate checking by Engineer, including cost reductions or savings in time to complete work.

1.6 COORDINATION AND MEASUREMENTS

- A. Prior to submitting shop drawings, the Contractor shall field verify all dimensions and elevations to assure proper fabrication and erection.
- B. The work in this Section shall be closely coordinated with work of other trades.

1.7 SUBMITTALS

- A. Shop Drawings:
1. Standard Shop Details and Connection Design Calculations: Submit to Engineer prior to submitting detailed Shop Drawings, design calculations and details for connections not shown on the Drawings. Calculations shall be prepared under supervision of registered professional engineer in the State of Connecticut.
 2. The Contractor shall submit to the Engineer for review of shop and erection drawings showing all structural steel members and connections, including anchor bolts. Any work begun before drawings are reviewed by the Engineer will be at the Contractor's own risk.
 3. Erection drawings shall clearly show the following: Sizes, locations and elevations of all members; grades of steel; standard connections according to AISC Manual fully identified for all beam support points; details of non-standard and eccentric connections indicated on Structural Drawings; notes on connectors and fasteners; shop painting instructions; erection notes and field painting instructions.
 4. Detailed shop drawings showing all members shall be submitted for review. Such drawings shall show size, length, connections and connection locations.
 5. Acceptance will be for size and arrangement for principal and auxiliary members.

Any error in dimensions will be the responsibility of the Contractor.

6. Certificates

1. Mill certificates covering any portion of the steel shall be furnished if requested by the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Structural steel shapes shall conform to requirements of ASTM A992 or ASTM 572 Grade 50. All steel shall be newly rolled steel.
- B. Structural plates and bar shapes shall be ASTM A36.
- C. All hollow structural square or rectangular steel sections (HSS) shall conform to requirements of ASTM A-500, Grade B ($f_y = 46$ ksi), or Grade C manufactured by seamless or continuous weld process with rounded corners and outside sizes shown.
- D. All structural steel pipe shall conform to HSS requirements of ASTM A-500, Grade B ($f_y = 42$ ksi) for thickness equal to or less than 0.625 in. Round shapes thicker than 0.625 in. shall conform to ASTM A-53, Grade B ($f_y = 35$ ksi).
- E. Welding electrode types shall conform to AWS requirements.
- F. Shop primer paint shall be a zinc rich paint, Tnemec Co. No. 90-97, Porter 308 Zinc Look, Keeler and Long Methane Zinc Rich or an approved equal.
- G. High Strength Bolts: ASTM A325 with ASTM A563, Grade A Hex Style Nuts and compatible washers. Bolts shall be cold-forged with rolled threads. Bolts with torque control snap-off ends may be used, except where DTIs are required. Where indicated as galvanized, provide units that are zinc coated, either mechanically deposited complying with ASTM B695, Class 50, or hot dip galvanized complying with ASTM A153.

PART 3 - EXECUTION

3.1 FABRICATION

- A. Fabricate and assemble structural steel in shop to greatest extent possible. Fabricate structural steel according to AISC specifications referenced in this Section and in Shop Drawings.
 1. Camber structural steel members where indicated.
 2. Mark and match-mark materials for field assembly.

3. Fabricate for delivery a sequence that will expedite erection and minimize field handling of structural steel.
 4. Complete structural steel assemblies, including welding of units, before starting shop-priming operations.
 5. Comply with fabrication tolerance limits of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded.
- C. Finishing: Accurately mill ends of columns and other members transmitting loads in bearing.

3.2 CONNECTIONS

- A. Shop, install and tighten high strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts".
- B. Design of end connections shall be in accordance with the AISC "Manual of Steel Construction". Field connections may be bolted using ¾ inch bolts, except where noted welded. A minimum of two (2) bolts per member connection is required.
- C. Connections shall be consistent with Type "2" construction as described in the AISC Specifications, unless otherwise indicated on the Structural Drawings.
- D. Fillet welds shall be ¼ inch minimum unless otherwise noted.

3.3 SHOP PRIMING

- A. Shop prime steel surfaces, except the following:
 1. Surfaces to be field welded.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Prepare surfaces according to SSPC specifications as follows:
 1. SSPC-SP 2 "Hand Tool Cleaning"- Provide where standard shop primer is specified.
 2. SSPC-SP 6 "Commercial Blast Cleaning" – Provide where steel is to be exposed.
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

3.4 EXAMINATION

- A. Before erection proceeds, and with the steel erector present, verify elevations of existing steel bearing surfaces and locations of anchorages for compliance with requirements.
- B. Do not proceed with erection until unsatisfactory conditions have been corrected.

3.5 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.6 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC specifications referenced in this Section.
- B. Base and Bearing Plates: Clean bottom surface of base and bearing plates.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges".
 - 1. Maintain erection tolerances or architecturally exposed structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges".
- D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structures.
 - 2. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
- E. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.
 - 1. Comply with AISC specifications referenced in this Section for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
 - 2. Assemble and weld built-up sections by methods that will maintain true alignment of

axes without warp.

- F. The Contractor shall accept full responsibility for design strength, safety and adequacy of all temporary bracing and sequencing of structural steel erection to brace the structure. Provide all temporary braces, guys, connections and work platforms required to safely resist all loads, including storms, to which the structure may be subjected.
- G. The Contractor shall guy, plumb, and align framing in accordance with limits defined in the AISC "Code of Standard Practice"
- H. Any corrections required in the field to make members fit shall be brought to the attention of the Engineer for approval.

3.7 FIELD CONNECTIONS

- A. Plate connections shall be in accordance with the AISC "Manual of Steel Construction".
 - 1. Welds that do not pass visual inspection are to be tested again using either Magnetic Particles or dye penetration test methods.
- B. Fabricator and Erector to provide Testing and Inspection Agency and the Special Inspector safe access to the site throughout the duration of the steel erection. Fabricator to notify the Testing Agency and the Special Inspector a minimum of 48 hours prior to the erection.

3.8 QUALITY CONTROL

- A. Contractor will engage an independent testing to perform shop and field inspections and tests and to prepare test reports.
 - 1. Testing agency will conduct and interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.
- C. Additional testing, at Contractor's expense, will be performed to determine compliance with corrected work with specified requirements.
- D. Connections will be inspected and tested according to AWS D1.1 and the inspection procedures listed below:
 - 1. Inspect and test shop fillet welds as follows:
 - a. Visually inspect 50% of all fillet welds prior to the application of a shop primer. The percentage of welds inspected may be modified by the Structural Engineer of record, depending on initial results.

- b. Witness the actual welding procedures and perform magnetic particle tests on a minimum of 5 percent of shop fillet welds.
 - c. Welds that do not pass visual inspection are to be tested again using either Magnetic Particle or dye penetration test methods.
2. Perform ultrasonic testing (ASTM E164) on 100 percent of all full and partial penetration welds. The percentage of welds inspected may be modified by the Structural Engineer of record, depending on initial results.
3. Inspect and test field fillet welds as follows:
- a. Visually inspect 100% of all fillet welds.
 - b. Witness the actual welding procedures and perform magnetic particle test on a minimum of 15 percent of all fillet fields.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection.
- G. Finish sections thermally cut during erection equal to a sheared appearance.
- H. Do not enlarge unfair holes in members by burning or by using drift pins. Ream holes that must be enlarged to admit bolts.

3.9 CLEANING

- A. Touch-Up Painting: Immediately after erection, clean field welds, and abraded areas of shop paint. Apply paint to exposed areas using same materials as used for shop painting.
- 1. Apply by brush or spray to provide a minimum dry film thickness of 1.5 mils.

END OF SECTION 05120

SECTION 05500 – MISCELLANEOUS METAL FABRICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and General Provisions of the Contract, including the General Conditions and Supplementary General Conditions, apply to the work specified in this Section.

1.2 SCOPE OF WORK

- A. Provide all materials, labor, equipment and services necessary to furnish, deliver and install miscellaneous metals and related work required by the drawings and/or herein specified.
- B. The work of this Section shall include all:
- Handrails and Railings
 - Gratings
 - Kick Plates
 - And other fittings which may be required to support the miscellaneous metals construction, whether or not indicated on the drawings. Such information shall be shown on shop drawings submitted for approval.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 05120 - Structural Steel.

1.4 SUBMITTALS

- A. The Contractor shall prepare and submit to the Engineer for review complete shop drawings of the work included herein and he shall not proceed with any work for which such drawings are required until they have been approved. Shop drawings shall be coordinated with related work of other trades and Sections.
- B. Shop drawings shall show all details of fabrication and erection, including the kinds of materials, size and gauges of members, details of parts worked out with due reference to their position, method of securing same together and connections to supporting construction, and the execution of the work in relation to other trades.
- C. The approval of shop drawings shall not relieve the Contractor from the responsibility for the correctness of details and dimensions, for the proper fabrication and installation of the work, nor from the obligation to provide all materials and work required by the Contract even though they are incorrectly shown or not indicated on the approved shop drawings.

1.5 APPLICABLE STANDARDS

- A. Applicable Building Code and OSHA requirements shall be followed as if specifically noted herein.
- B. Handrails and railings shall be capable of withstanding structural required by ASCE 7 without exceeding allowable design working stresses of materials and connections.
- C. In case of any conflict between the referenced Standards, the Contract Drawings and these Specifications, the more stringent requirements shall prevail.

1.6 COORDINATION AND MEASUREMENTS

- A. The work of this Section shall be closely coordinated with the work of other trades wherever such work affects or is affected by the work included herein.
- B. All anchors, inserts, supports, etc., shall be delivered and installed sufficiently in advance so as to avoid delay and to assist the general progress of construction.
- C. The Contractor shall take all necessary measurements at the building and verify all dimensions figured on the drawings to assure proper fabrication and erection.

1.7 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Provide handrails and railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures be preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials shall be subject to approved by the Engineer and shall be carefully handled and adequately protected against damage before, during and after erection.
- B. Materials for the work included herein shall be new and the best quality of the respective kinds and of the dimensions, types and details shown or required to produce the work according to the true intent of the drawings and these Specifications.

- C. Stock materials, patterns, products or fabricated items of manufacturers meeting the general requirements of the drawings and these Specifications will be considered, but substitutions of any nature must be submitted for approval by the Engineer.

2.2 STEEL

- A. Rolled shapes and plates shall conform to the requirements of ASTM A-36 or ASTM A-572, Grade 50. Wide flange shades shall conform to ASTM A992.
- B. Steel pipe railing shall be 1-1/2 inch diameter, welded and seamless. Steel shall conform to ASTM A-53, Type "F", with a black finish.
- C. All exterior steel elements shall be hot dip galvanized that complies with ASTM A 123.

2.3 GRATING

- A. Steel grating to be Irving welded rectangular design, Type IWC as manufactured by IKG Industries, Division of Harsco Corporation. Main bearing bars to be 1-1/2" x 1/8", spaced 0.915 inches center to center. Cross bars to be resistance welded at right angles to bearing bars and have a hexagonal cross section. They shall be spaced 4 inches center to center. No notching or cutting of bearing or cross bars before welding is permissible. Grating is to safely sustain a uniformly distributed load of 150 lbs. per square foot on a 60 inch span and deflect 1/4 inches. Grating shall be galvanized. Overall dimensions, details, and direction of bearing bars in accordance with plans.
- B. Acceptable Manufacturer: McNichols Co.

PART 3 - EXECUTION

3.1 GENERAL

- A. **Fastening to In-Place Construction:** Provide anchorage devices and fasteners where necessary for securing miscellaneous metals, grating to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. **Cutting, Finishing, and Placement:** Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free from rack.
- C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations and/or attachment to existing elements. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- E. Defective work of any character, whether in materials or workmanship, may be rejected. All rejected work shall be repaired or replaced to the satisfaction of the Engineer without additional cost to the Owner.

- F. All work shall be fabricated and erected in a neat, substantial and workmanlike manner, assembled carefully and accurately, finished straight, smooth and even, with tight and inconspicuous joints.
- G. Supplementary steel framing, brackets, hangers, struts and supports and all anchors, brackets, slips, inserts, lugs and the like shall be provided to support and connect the work together and to supporting construction in a rigid manner throughout. Temporary bracing shall be provided during construction as required and removed when no longer needed.
- H. Connections shall be of approved design and shall be concealed wherever possible. Unless otherwise shown or approved, use rivet or weld shop assembled connections and weld or bolt field connections. Exposed welds shall be ground smooth.
- I. All parts, accessories and connections shall be adequate to safely sustain and withstand the loads and stresses to which they will normally be subjected.
- J. During construction, exposed surfaces shall be adequate to protected against damage and defacements, accumulation of paint, mortar and the like. Railings shall be wrapped with heavy paper or other suitable protective covering. At no time shall the stairs be overloaded in any manner during construction period by any of the Contractor's activities.
- K. Upon completion and when all danger of damage is past, protection shall be removed and all surfaces thoroughly cleaned.
- L. Railings shall be fabricated with balusters of Schedule 40, 1-1/2 inch diameter welded pipe. Vertical posts shall be welded to stringers as detailed. All exposed welds shall be ground smooth.
- M. Wall mounted handrails shall be supported on angle brackets spaced not more than ten inches (10") from ends of handrails, and 30 inches on center. Provisions shall be made for fastening handrails to brackets.

3.2 INSTALLING METAL BAR GRATINGS

- A. General: Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.
- B. Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.
- C. Attach non-removable units to supporting members by welding where both materials are the same; otherwise, fasten by bolting as indicated above.

END OF SECTION 05500

SECTION 09900 – PAINTING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplemental Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included: Provide painting in accordance with the Contract Documents. The work of this Section shall include, but not be limited to, the following:
 - 1. Exposed steel and primed metal equipment.
 - 2. Where existing items or surfaces are painted, paint the new surfaces or material the same as similar adjacent existing materials or areas.

1.3 RELATED SECTIONS

- A. Shop priming is included in Sections for structural steel, metal fabrications, and similar metal items.
- B. Shop priming of shop fabricated or factory-built products is included under other Sections.
- C. Mechanical and electrical equipment applied paint finish; refer to Divisions 14 and 16.

1.4 WORK NOT INCLUDED

- A. Labels: Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.

1.5 QUALITY ASSURANCE

- A. Single Source: Provide primers and undercoats produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.
- B. Coordination of Work: Review other sections of these specifications for shop primers, to ensure compatibility of total coatings system. Upon request from other trades, furnish information on finish materials, to ensure that compatible prime coats are used.
- C. Applicator: A firm with not less than 5 years of successful experience in the application of specified materials.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material.
1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
 3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- B. Samples: 4 weeks prior to painting, submit samples for review of each required color and texture. Identify materials used on samples. Samples shall have each coat of paint exposed the same amount and tinted slightly different than other coats.
1. On 6" x 6" hardboard, submit one sample of each color, material and texture, until sheen, color, and texture until acceptable to Architect.
- C. Submit product specifications and material data (MSD) safety sheets for each product.

1.7 DELIVERY AND STORAGE

- A. Deliver materials in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:
- 1 Name or title of material.
 - 2 Fed. Spec. number, if applicable.
 - 3 Manufacturer's name, stock number and date of manufacture.
 - 4 Contents by volume, for major pigment and vehicle constituents.
 - 5 Thinning and application instructions.
 - 6 Color name and number.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.
1. Protect materials from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from use of paints.

1.8 JOB CONDITIONS

- A. Apply water-base paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50 deg. F and 90 deg. F, unless otherwise permitted by paint manufacturer's instructions.
- B. Apply solvent thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 deg. F and 95 deg F., unless otherwise permitted by paint manufacturer's instructions.
- C. Do not apply paint when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer.
- D. Provide for safety precautions and coordination with other trades for application of epoxy finishes. No delays or extras will result from lack of coordination with the application of these materials.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering paint products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Con-Lux Coatings, Inc.
 - 2. Glidden Coatings and Resins, Div. of SCM Corp.
 - 3. Benjamin Moore and Co.
 - 4. PPG Industries, Pittsburgh Paints.
 - 5. The Sherwin-Williams Company.
 - 6. Devoe.
 - 7. Tnemec.
- B. Proprietary names of colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.

2.2 MATERIALS

- A. Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.
- B. Volatile Organic Materials: Provide paint and coating products to comply with applicable environmental regulations and authorities. Federal numbers, where specified, are for guidelines only.
- C. Primers and Undercoaters: Provide primers and undercoaters recommended by the finish coating manufacturer for suitability with the substrate and compatibility with finish coats.
- D. Color Pigments: Pure, non-fading, to suit substrates and service.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions of work and notify Contractor in writing of conditions detrimental to proper painting. Proceed with work after unsatisfactory conditions have been corrected.
- B. Starting of painting work will be construed as applicator's acceptance of surfaces and conditions within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, or conditions detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION

- A. General: Perform preparation and cleaning in accordance with paint manufacturer's instructions and as herein specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime as required. Notify in writing of any anticipated problems with substrates primed by others.
 - 2. Remove hardware, accessories, lighting fixtures, and similar items not to be field painted, or provide suitable protection. Remove items if necessary, for painting of items or adjacent surfaces. Reinstall removed items on completion of painting.
 - 3. Clean surfaces to be painted. Remove oil and grease prior to other cleaning. Be sure that cleaning materials do not fall onto newly painted surfaces.
- B. Ferrous Metals; Clean unfinished ferrous surfaces of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning and in accordance with SSPC-SP3 and SSPC-SP6, Power Tool Cleaning and Commercial Blast Cleaning, respectively, where specified. Touch-up defective prime coats with shop primer.

3.3 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Remove surface film and, if necessary, strain material before using.

3.4 APPLICATION

- A. General: Apply paint in accordance with manufacturer's directions. Use techniques best suited for substrate and type of material being applied.
 - 1. Provide primer and 2 full finish coats on all painted surfaces, unless otherwise indicated. Omit field primer on all shop primed items, except for touch-up. First coat shall be slightly different shade (lighter) than the final coat.
 - 2. Apply additional coats when undercoats show through final coat of paint, until paint film is of uniform finish, color and appearance, including edges, corners, crevices, welds, and fasteners.
 - 3. Sand lightly between each succeeding coat per manufacturer's recommendations.
- B. Scheduling Painting: Apply first coat material to surfaces that have been prepared for painting as soon as practicable after preparation. Allow sufficient time for proper drying. Do not recoat until paint feels dry and firm.
- C. Minimum Coating Thickness: Apply materials to establish a total dry film thickness (DFT) as indicated or, if not indicated, as recommended by coating manufacturer.
- D. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces.
- E. Prime Coats: Apply prime coats on material which is required to be painted or finished, and which has not been prime coated by others. Recoat primed and sealed surfaces where there is evidence of defects in first coat, to assure a finish coat without defects.
- F. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.
- G. Completed Work: Match approved samples for color and texture. Repaint work not in compliance with specified requirements.

3.5 CLEAN-UP AND PROTECTION

- A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans, and rags at end of each work day.
 - 1. Upon completion of painting work, clean paint spattered surfaces. Remove spattered paint by proper methods, with care not to scratch or otherwise damage finished surfaces.
- B. Protection: Protect work of other trades against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to:

1. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
2. At completion of work of other trades, touch-up and restore all damaged or defaced surfaces.

3.6 EXTERIOR PAINT SCHEDULE

A. General: Provide the following exterior paint systems by Benjamin Moore, or equal by other specified manufacturers of colors as selected by the Architect. General Contractor to submit Architect approved colors to Owner for review and final approval.

B. Metal, Ferrous:

1. High Gloss Alkyd Enamel:
 - a. Prime Coat: IronClad Alkyd Low Lustre Metal & Wood Enamel (C163).
 - b. Two Coats: Impervo Alkyd High Gloss Metal & Wood Enamel (C133).

END OF SECTION 09900

SECTION 14500 – MONORAIL HOIST SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplemental Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. The work specified herein includes the materials and labor for installation of exterior monorail hoist systems as shown on the Contract Documents.
- B. Work Included: Perform exterior crane hoist system in accordance with requirements of the Contract including the following:
 - 1. Furnish monorail, trolley rail, beams, end stops.
 - 2. Motor driven underhung trolleys.
 - 3. Motorize cable hoists complete with hook.
 - 4. Web mounted electrification.
 - 5. Controls.

1.3 REFERENCES

- A. Perform work in accordance with:
 - 1. MMA – Monorail Manufacturers Association.
 - 2. OSHA – Occupational Safety & Health Act.
 - 3. AISC – American Institute of Steel Construction

1.4 SUBMISSION

- A. Product data for each material and product indicated.
- B. Operation and maintenance manuals.

PART 2 – PRODUCTS

- 2.1 Provide electric two (2) ten ton electricized hoist with power trolleys complete.
- A. Electricized Hoist System should be water and weather tight.
 - B. Include steel beam required for track of monorail hoist system.

- C. Hand operating pendant push button station with independent operating traveling cable, tow trolley saddle assembly, tow, junction boxes, supports and tow truck.

PART 3 – EXECUTION

3.1 INSTALLATION OF MONORAIL HOIST SYSTEM

- A. Install power monorail systems in accordance with MMA standards.
- B. Test monorail system while owner present prior to providing operation and maintenance manual to the Owner.
- C. Install steel member track for monorail hoist system.

END OF SECTION 14500

SECTION 16010 – GENERAL REQUIREMENTS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.1 REFERENCES

- A. This Section covers the general requirements for electrical work; examine all Contract Drawings and all other Sections of the Specifications for additional work related to the work of this Division.
- B. Refer to the General Conditions, Supplementary General Conditions and applicable parts of Division 1 for other general requirements.
- C. Refer to other Sections of this Division for detailed specifications on the work of this Division.
- D. Related Sections include the following:
 - 1. Section 01019 “Contract Considerations” for allowances.
 - 2. Section 01631 “Equals and Substitutions
 - 3. Section 01740 “Warranties & Bonds”.

1.2 SCOPE

- A. The intent of this project is to provide electric services and systems to support the installation of two (2) motorized hoists. All wiring, raceway, fixtures and equipment shall be new throughout unless specifically mentioned otherwise in the Contract Documents.
- B. Provide labor, materials, services, equipment and transportation necessary for installation of electrical systems as indicated on Contract Drawings and specified herein, including but not limited to following:
 - 1. Power and control circuits to hoists.
 - 2. Festoon power and control systems.
 - 3. Grounding system.
 - 4. Hangers and supports.
 - 5. System identification and labeling.
 - 6. Record drawings.
 - 7. Other systems as indicated on the drawings.

1.3 RELATED WORK UNDER OTHER DIVISIONS

- A. Related work specified in other Divisions of the Specifications includes, but is not limited to:
 - 1. Concrete, masonry and ceramic tile work, including cutting and patching of same.
 - 2. Caulking, flashing and waterproofing.
 - 3. Finish painting: Division 9.
 - 4. Mounting hoist equipment having electrical connections: Division 14.
 - 5. Electrical controls and starters integral with hoist equipment: Division 14.

1.4 SHOP DRAWING SUBMITTALS

- A. Prepare and submit Shop Drawings through the Architect to the Engineer for review.
- B. The selection and intention to use a product specified by name shall NOT exceed the need for timely submission of shop drawings for that product.
- C. Contractor shall submit (30 days after award of Contract) a preliminary list of intended or proposed manufacturers for all items for which shop drawings are required.
- D. Submission of shop drawings of unnamed manufacture or shop drawings at variance with the Contract Documents is NOT a proper request for substitution.
- E. Samples that are submitted in lieu of shop drawings shall be clearly identified and shall be submitted in duplicate. Only one sample will be returned and that accepted sample shall be kept available at appropriate job site office. Accepted sample retained by Architect/Engineer will be kept available at Architect's/Engineer's home office.
- F. Upon completion of shop drawing review, shop drawings will be returned, marked with one of the following notations: No Exceptions Noted, Exceptions Noted, Revise and Resubmit, Not Accepted for Review. Only products whose shop drawings are marked "No Exceptions" or "Exceptions Noted" shall be used on the project.
- G. Submittals shall be clearly marked for the following:
 - 1. Specification Section and Paragraph under which equipment is specified.
 - 2. Equipment or fixture identification corresponding to that used in Contract Documents.
 - 3. All sizes to be used.
 - 4. Accessories and special or non-standard features and materials which are being furnished.

5. Failure to comply with the above shall result in submittal being returned marked "Not Acceptable For Review".

H. Submittals shall include the following information:

1. Separate cover sheet with information from paragraphs 1.4.G.1 and 1.4.G.2 on it.
2. Descriptive and product data necessary to verify compliance with Contract Documents.
3. Manufacturer's specifications including materials of construction, metal gauge, thickness and finish.
4. Certified dimensional drawings including clearances required for maintenance or access.
5. Performance data, ratings, operating characteristics and operating limits.
6. Electrical ratings and characteristics.
7. Wiring and control diagrams, where applicable.
8. Certifications requested, including UL label or listing.
9. Riser diagrams, where applicable.
10. List of accessories which are required but are NOT being provided by the product manufacturer or are NOT being furnished under this Section. In the latter case, identify the Section(s) under which the accessories are being furnished.

I. Submit the following items for review in accordance with paragraphs 1.4.G and 1.4.H.

1. O&M Manuals.
2. Guarantees/Warranties

1.5 PRODUCT SELECTION

A. Contractor's options for selecting products are limited by Contract Document requirements and governing regulations and are NOT controlled by industry traditions or procedures experienced by Contractor on previous construction projects. Required procedures include, but are NOT necessarily limited to, following various methods of specifying:

1. Single Product Manufacturer Named: Provide product indicated. Advise Architect and Owner, and obtain instructions before proceeding, when named product is shown to be unacceptable or NOT feasible.
2. Two or more Manufacturer's Products Named: Provide one of the named products, at

Contractor's option, but excluding products which do NOT comply with requirements. Do NOT provide, nor offer to provide, an unnamed product unless named products do NOT comply with requirements or are OR feasible.

3. "Or Equal": Where named products are accompanied by the term "or equal" or words of similar effect, provide one of named products or propose substitute product according to paragraph on Substitutions.
4. Standards, Codes and Regulations: Where specification requires only compliance with a standard, code or regulation, Contractor may select any product which complies with requirements of that standard, code or regulation.
5. Performance Requirements: Provide products which comply with specific performances indicated and which are recommended by manufacturer (in published product literature or by individual certification) for application intended. Overall performance of product is implied where product is specified with only certain specific performance requirements.
6. Prescriptive Requirements: Provide products which have been produced in accordance with prescriptive requirements using specified material and components, and complying with specified requirements for fabricating, finishing, testing and other manufacturing processes.
7. Visual Matching: Where matching with an established material is required, Architect's judgement of whether proposed product matches established material shall be final. Where product specified does NOT match established material, propose substitute product according to paragraph on Substitutions. Follow requirements for Change Orders, also, if matching product within cost category of specified product is NOT available.
8. "Color as Selected by Architects": Unless otherwise noted, where specified product requirements include "color as selected by Architect" or words of similar effect, the selection of manufacturer and basic product shall comply with Contract Documents and selection of color is Architect's option and shall include "custom" colors or finishes and need not be specifically noted in equipment specs.

1.6 SUBSTITUTIONS

- A. Contractor's request for substitution may be submitted to the Engineer only after award of Contract. Requests shall be in writing from the Contractor on his letterhead and shall include:
 1. Contractor's details comparison of significant qualities between specified item and proposed substitution.
 2. Statement of effect on construction time, coordination with other affected work, and cost information or proposal.

SECTION 16010
GENERAL REQUIREMENTS FOR ELECTRICAL WORK
PAGE 5 OF 14

3. Contractor's statement to the effect that proposed substitution will result in overall work equal to, or better than, work originally intended.
- B. Substitution requests will be considered if 1) extensive revisions to Contract Documents are NOT required; 2) changes are in keeping with general intent of Contract Documents; 3) requests are submitted in timely and proper manner, fully documented; and 4) one or more of the following conditions is satisfied; all as judged by Engineer;
1. Where request is directly related to "or equal" clause or words of similar effect in Contract Documents.
 2. Where specified product, material or method can NOT be provided within Contract Time; but NOT as a result of Contractor's failure to pursue the work promptly to coordinate various activities properly.
 3. Where specified product, material or method can NOT be provided in manner which is compatible with other materials of the work and where Contractor certifies that proposed substitution is compatible.
 4. Where specified product, material or method can NOT be properly coordinated with other materials of work and where Contractor certifies that proposed substitutions can be properly coordinated.
 5. Where specified product, material or method can NOT be warranted as required and where Contractor certifies that proposed substitution can be so warranted.
 6. Where specified product, material or method can NOT be used without adversely affecting Owner's insurance coverage on completed work and where Contractor certifies that proposed substitution can be so used.
 7. Where specified product, material or method will encounter other substantial non-compliances which are NOT possible to otherwise overcome except by using proposed substitutions.
 8. Where specified product, material or method can NOT receive required approval by governing authority and proposed substitution can be so approved.
 9. Where substantial advantage is offered Owner; in terms of cost, time, energy conservation or other valuable considerations. Contractor proposing substitution shall be required to bear all additional compensation to Engineer or Architect for redesign and evaluation services, increased cost of other work by Owner or changes in the work of separate contractors, and similar considerations.
- C. The burden is upon the Contractor, to satisfy Engineer that:
1. Proposed substitute is equal to, or superior to, the item specified.

SECTION 16010
GENERAL REQUIREMENTS FOR ELECTRICAL WORK
PAGE 6 OF 14

2. Intent of the Contract Documents, including required performance, capacity, efficiency, quality, durability, safety, function, appearance, space clearances and delivery date, will be equaled or bettered.

D. Submission of shop drawings of unspecified manufacture or shop drawings at variance with the Contract Documents is NOT a proper request for substitution.

1.7 SAMPLES

A. Submit samples as requested by the Engineer or Architect.

1.8 RECORD DRAWINGS

A. Contractor shall furnish and keep on the job at all times, one complete and separate set of blackline prints of the electrical work. As work progresses, Contractor shall record changes, revisions and additions to architectural and electrical work clearly, neatly, accurately and promptly.

B. Indicate daily progress on these prints by coloring in the various lines, fixtures, apparatus, and associated appurtenances as they are erected.

C. Approval of requisition for payment for work installed will NOT be given unless supported by record prints as required above.

D. At completion of project, Contractor shall submit "as-built" drawings in AutoCAD Revision 2000 or later compatible format reflecting all changes made to Contract Documents by Addendum, RFI's, field coordination, or by Change Orders. The changes shall be explicitly highlighted (bubbled).

1.9 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Furnish 2 days of instruction in the proper operation and maintenance of electrical systems and parts, to personnel designated by Owner. Instruction shall be made at times and places as convenient and designed by Owner, at least two weeks after acceptance of manuals. Instruction periods specified under other Sections of this Division shall be in addition to this general instruction period.

B. Submit for review operating and maintenance manuals for each system or piece of equipment, at least 2 weeks prior to request for acceptance of same. Upon acceptance, furnish 4 copies of each manual to Architect for transmittal to Owner. Operating and maintenance manual shall include;

1. Description of Unit (System) and Component Parts, including function, normal operating characteristics and limiting conditions, performance curves, engineering data and testes, and complete nomenclature and manufacturer's number for replaceable parts.

2. Operating Procedures, including start-up, break-in, routine and normal operating instructions; regulations, control, stopping, shutdown and emergency instructions; summer and winter operating instructions; and any special operating instructions.
3. Maintenance Procedures, including routine operations, guide to trouble-shooting; disassembly, repair and re-assembly; alignment, adjusting and checking; servicing and lubrication schedule, and list of lubricants; manufacturer's installation and maintenance bulletins and related information.
4. Sequence of Operation and Control Diagrams, corrected for as-built conditions.
5. Parts List, including illustrations, assembly drawings and diagrams required for maintenance, predicted life of parts subject to wear, and recommendations for stocking spare parts.
6. Copies of accepted shop drawings, charts and diagrams.
7. Names, addresses and telephone numbers of manufacturer's representative and service company.
8. Other data, as required under pertinent Sections of these Specifications.

1.10 GUARANTEE

- A. Furnish standard manufacturer's guarantees for equipment and installation, when done by factory authorized installers, under this Division. Such guarantees shall be in addition to, and NOT in lieu of, other liabilities under the law or by other provisions of the Contract Documents.
- B. Materials, equipment and workmanship shall carry the standard warranty against defects in material and workmanship. Failure which may develop due to defective or improper material, equipment, workmanship or design shall be made good, forthwith, by and at the expense of the Contractor, including damage done to areas, materials and other systems resulting from this failure.
- C. Guarantee that all materials and equipment is installed in a substantial manner in accordance with manufacturer's recommendations and good practice. Fix all defects that occur in the installation within the specified guarantee period including all subsequent damage to other areas due to the failure.
- D. Guarantee that all elements of the systems are of sufficient capacity to meet the specified performance requirements as set forth in Contract Documents.
- E. Upon receipt of notice from Owner of a failure of system(s) or component(s) during the guarantee period, replace affected components within reasonable time period at no additional cost.
- F. Guarantee period shall extend a minimum of 2 years from Date of Acceptance of project by Owner. Owner shall be advised of manufacturer's guarantees that exceed 2 years.

- G. Before final request for payment, furnish written guarantee covering above requirements.

1.11 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Before submitting prices or beginning work, Contractor shall thoroughly examine the site and the Contract Documents.
- B. No claim for extra compensation will be recognized if difficulties are encountered which would have been revealed by examination of site conditions and Contract Documents prior to executing Contract.
- C. No claims for extra compensation will be recognized if coordination drawings are not prepared and delivered to the Engineer prior to start of work.
- D. Where discrepancies occur within Information (RFI) Form, of the discrepancy and request a clarification. Until notified of Engineer's decision, electrical work within that area shall be suspended. Contract Documents, notify Engineer, using a Request for
- E. Notify Engineer, using an RFI Form, of materials and apparatus believed to be omitted; inadequate; unsuitable; or in violation of laws, ordinances, rules or regulations of authorities having jurisdiction. In absence of such written notice, it is mutually agreed that the Contractor's bid price for work under each Section has included the cost of all materials, labor and services required for an acceptable and satisfactory functioning system.
- F. Contract Documents have been prepared using Owner's record drawings and have been field verified for general scope of work. They may not be entirely accurate in every detail. Contractor shall be responsible for field verification and include all work necessary to satisfy the intent of the Contract Documents.

1.12 DEFINITIONS

- A. The following terms are used in this Division and are defined as follows:
 - 1. "Provide": To furnish and install (ready for safe and regular operation) the item, materials or service under discussion.
 - 2. "Furnish": To purchase, acquire and deliver to the site, complete with related accessories.
 - 3. "Install": To erect, mount, connect and test completely, by acceptable methods.
 - 4. "Work": Labor, materials, equipment, apparatus, controls and accessories required for proper and complete installation.
 - 5. "Concealed": Embedded in masonry or other construction; or installed in furred spaces, trenches or crawl spaces; or installed within double partitions or hung ceilings; or in enclosures.

6. "Exposed": Visible to building occupants, excluding mechanical room and utility tunnel locations.
 7. "Equal": Of weight, size, design, capacity and efficiency to meet requirements specified and shown, and of acceptable manufacture, as determined in the opinion of the Architect.
 8. "Acceptable": Acceptable, as determined in the opinion of the Engineer.
 9. "Contractor": General Contractor.
 10. "Named" Product: Manufacturer's name for product, as recorded in published documents of latest issue as of date of Contract Documents. Obtain Architect's permission before using products of later or earlier model.
 11. "NIC": Denotes section, paragraph or subparagraph as "Not in Contract".
- B. Standards, specifications and tests of following technical societies, organizations and governmental bodies, as referenced in Contract Documents, are hereby made part of Contract Documents.
1. NEC: National Electrical Code.
 2. ANSI: American National Standards Institute.
 3. ASTM: American Society for Testing and Materials.
 4. IEEE: Institute of Electrical and Electronics Engineers.
 5. NEMA: National Electrical Manufacturers Association.
 6. NFPA: National Fire Protection Association.
 7. UL: Underwriters Laboratories.
 8. CODE: Codes and regulations of the Federal, State and local governments and of utility companies having jurisdiction, as appropriate.
 9. ETL: Electrical Testing Laboratory
 10. ICEA: Insured Cable Engineers Association
 11. NBFU: National Board of Underwriters
 12. NESC: National Electric Safety Code
 13. BOCA: Building Officials and Code Administrators

- C. Use of singular or plural reference form in these Contract Documents shall not be construed to limit number of units required. Contract Documents are intended to define quality and performance characteristics; quantity of units supplied shall be needed to meet requirements as specified and as shown on Contract Drawings.

1.13 PERMITS, LAWS, ORDINANCES, CODES AND STANDARDS

- A. Obtain and pay for permits, inspections, licenses and certificates required for work under this Division.
- B. Comply with laws, ordinances, rules and regulations of Local, State and Federal authorities having jurisdiction; rules and regulations of National Board of Fire Underwriters, National Electrical Code and local utility companies. Include for payment of all utility back charges.
- C. Contract Documents shall govern whenever they are more stringent than Code requirements.
- D. All work of this Division shall conform to following standards:
 - 1. NEMA standards.
 - 2. ANSI Standard CI: National Electrical Code (NFPA 70), 1999 edition.
 - 3. ANSI Standard C50: Rotating Electrical Machinery.
 - 4. ANSI Standard C50-1: Construction and guide for selection, installation and use of electrical motors.
 - 5. ANSI Standard C52.1: Motors and generators (NEMA MGI).

1.14 UNDERWRITERS LABORATORIES LABELS

- A. Electrical equipment, materials and components, for which there are listings in UL Product Directories, shall bear UL labels.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT REQUIREMENTS

- A. Products shall be undamaged and unused at time of installation and shall be complete with accessories, mounting hardware, trim, finish, safety guards and other devices and details needed for complete and ready to use installation.
- B. Where available, products shall be standard products of types which have been produced and used previously and successfully on other projects and in similar applications.
- C. Where products by their nature and their use are likely to need replacement parts on a future date, for maintenance and repair or replacement work, products shall be standard domestically produced products likely to have such parts available to Owner in future.

- D. Labels and stamps which are required for observation after installation shall be located on accessible surfaces which, in occupied spaces, are NOT conspicuous. Other labels and stamps shall be located on concealed surfaces.
- E. Suppliers of major electrical parts and services shall be within 100 miles of project site.

PART 3 - EXECUTION

3.1 ARRANGEMENT OF WORK

- A. Contract Drawings are diagrammatic and indicate general arrangement of the work. Where final locations are not given in sufficient detail, the Contractor shall coordinate final locations with the structural drawings and the Owner in the field.
- B. Modify (and document on coordination and record drawings) work as necessary to:
 - 1. Provide maximum possible headroom and space clearances on each side.
 - 2. Provide adequate clearance and ready access to all parts of the work, for inspection, operation, safe maintenance and repair, and code conformance.
 - 3. Coordinate and arrange work to avoid conflicts with work of other trades and as needed for satisfactory space conditions shown on coordination drawing submittals.
 - 4. Where space appears inadequate, consult with Engineer (via an RFI) before proceeding with installation.

3.2 COORDINATION

- A. Furnish services of experienced electrical superintendent who shall be constantly in charge and responsible for the proper installation of electrical work, together with skilled laborers required to unload, transfer, erect, connect, adjust, start, operate and test each system.
- B. Examine Contract Documents and coordinate with other trades as necessary to facilitate the progress of the work.
- C. It is the responsibility of this Contractor to be fully informed as to shape, size, and locations of openings, chases, equipment and panels required by other trades so that coordination may be completed in advance. This Contractor shall extend the same courtesy to other trades as it relates to his/her equipment, chase, openings, etc. If information is not furnished in proper and timely fashion, the trade(s) responsible for the delays shall bear the cost of any subsequent Change Orders and completion penalties.
- D. Do NOT install a system until critical components of that system and applicable shop drawings have been accepted.

- E. Investigate special wiring requirements of equipment supplied by others and connect as necessary.

3.3 WORKMANSHIP

- A. Work covered under this Division shall be constructed and finished in every respect in a workmanship and substantial manner.
- B. Equipment and materials shall be new, of first quality, selected and arranged to fit properly into spaces indicated.
- C. It is not intended that these Contract Drawings show every wire, conduit, box fitting and appurtenances. However, such parts as may be necessary to complete the systems in accordance with tested trade practice and Code requirements and to the satisfaction of the Engineer shall be understood and mutually agreed to be included.
- D. Obtain detailed information from manufacturer as to proper methods for installation and connections. This includes all tests the equipment manufacturer recommends.
 - 1. Notify the Engineer (via an RFI) of conflicts between manufacturer's recommendations and Contract Documents requirements.
- E. Where equipment, piping, conduit, etc. is exposed, color of finish or paint shall be as selected by Architect.

3.4 PROTECTION

- A. Contractor shall be responsible for work and equipment until it has been fully inspected, tested and accepted. Carefully store materials and equipment which are not immediately installed after delivery to site. Close open ends of work with temporary covers or plug during construction to prevent entry of obstructing material or damaging water.
- B. Contractor shall endeavor to protect work and material of other trades from damage that might be caused by electrical work and shall make good on damage thus caused.

3.5 ACCESS

- A. Locate equipment which must be serviced, including motor starters, switches, panels, and junction boxes, in accessible locations.

3.6 PAINTING

- A. Unless otherwise specified, materials furnished under this Division shall have prime coat and standard manufacturer's finish.
- B. Finish painting of exposed work and equipment is covered under Division 9.

- C. Paint electrical equipment and appurtenances in concealed and unfinished areas with one coat of rust-inhibiting paint or with appropriate bitumastic protective product designed for the intended application. Asphalt paint is NOT acceptable. Items to be painted shall include, but not be limited to: non-insulated hangers, supports, piping, conduits, tanks and other ferrous metal work, which are concealed or inaccessible but not galvanized.
- D. Special care shall be taken to avoid painting or spattering equipment nameplates.
- E. Cooperate in identifying systems for painters. Identification and labeling are described in Section 16195.

3.7 WATERPROOFING

- A. Where any work pierces waterproofing, including waterproof concrete, submit method of installation to Architect for review prior to start of work.
- B. Provide necessary sleeves, caulking and flashing required to make opening waterproof. See Division 7 on Waterproofing.

3.8 TESTS

- A. Furnish all labor, materials, instruments, supplies and services necessary for testing required under this Division. Correct all defects appearing during tests, and repeat tests until no defects are disclosed. Engineer reserves the right to witness final tests and shall be notified three (3) days prior to the scheduled final test.
- B. Each piece of electrical equipment, including lighting fixtures, motors and controls shall be operated continuously for minimum test period of one hour.
- C. Perform tests required by legal authorities and by agencies having jurisdiction over this work.
- D. Upon completion of tests, document and submit to the Engineer the following:
 - 1. Equipment is installed and operating in accordance with manufacturer's specifications and instructions and with Contract Documents.
 - 2. Systems are operating as specified.
 - 3. Systems are properly cleaned and free of contaminants.
 - 4. Systems are properly phase balanced.

SECTION 16010
GENERAL REQUIREMENTS FOR ELECTRICAL WORK
PAGE 14 OF 14

5. Circuits and motorized equipment are equipped with proper overload protection and are not operating under overload.
6. Instruments are recording properly.

END OF SECTION 16010

SECTION 16050 – BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 and Specification Section 16010, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following electrical materials and methods:
 - 1. Supporting devices for electrical components.
 - 2. Concrete equipment bases.
 - 3. Touch-up painting.

1.3 SUBMITTALS

- A. Submit each item in this Article according to the Conditions of the Contract, Division 1 and Specification Section 16010.
 - 1. Product Data for each type of product specified.
 - 2. Shop Drawings detailing fabrication and installation of supports and anchorage for electrical items.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70 for components and installation.
- B. Listing and Labeling: Provide products specified in this Section that are listed and labeled as defined in the National Electrical Code, Article 100.

PART 2 - PRODUCTS

2.1 SUPPORTING DEVICES

- A. Channel and angle support systems, hangers, anchors, sleeves, brackets, fabricated items, and fasteners are designed to provide secure support from the building structure for electrical components.
 - 1. Material: Steel, except as otherwise indicated, protected from corrosion with zinc coating or with treatment of equivalent corrosion resistance using approved alternative finish or inherent material characteristics.
 - 2. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.

- B. Steel channel supports shall have 9/16-inch diameter holes at a maximum of 8 inches o.c., in at least 1 surface.
 - 1. Fittings and accessories mate and match with channels and are from the same manufacturer.
- C. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring steel clamps or "click"- type hangers.
- D. Sheet-Metal Sleeves: 0.0276 inch or heavier galvanized sheet steel, round tube, closed with welded longitudinal joint.
- E. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
- F. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for non-armored electrical cables in riser conduits. Plugs shall have number and size of conductor gripping holes as required to suit individual risers. Body shall be constructed of malleable iron casting with hot-dip galvanized finish.
- G. Expansion Anchors: Carbon-steel wedge or sleeve type.
- H. Toggle Bolts: All-steel springhead type.
- I. Powder-Driven Threaded Studs: Heat-treated steel.

2.2 TOUCH-UP PAINT

- A. For Equipment: Provided by equipment manufacturer and selected to match equipment finish.
- B. For Non-equipment Surfaces: Matching type and color of undamaged, existing adjacent finish.
- C. For Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION REQUIREMENTS

- A. Install support systems to provide the maximum possible headroom. Refer to Section 16010 – Coordination Drawings paragraph.
- B. Install support systems and concrete pads level, plumb, and parallel and perpendicular to other building systems and components, except where otherwise indicated.
- C. Install equipment to facilitate service, maintenance, and repair or replacement of components.

- D. Give right of way to raceways and piping systems installed at a required slope.
- E. Work shall present a neat, coordinated appearance.

3.2 ELECTRICAL SUPPORTING METHODS

- A. Damp Locations and Outdoors: Provide hot-dip galvanized materials or nonmetallic system components.
- B. Dry Locations: Provide steel materials.
- C. Conform to manufacturer's recommendations for selecting supports.
- D. Strength of Supports: Adequate to carry all present and future loads, times a safety factor of at least 4; 200 lb. minimum design load.

3.3 INSTALLATION

- A. Raceway Supports: Comply with NFPA 70 and the following requirements:
 - 1. Conform to manufacturer's recommendations and Section 16160 for selecting and installing supports.
 - 2. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U bolts, clamps, attachments, and other hardware necessary for hanger assembly and for securing hanger rods and conduits.
 - 3. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
 - 4. Spare Capacity: Supports for multiple conduits shall be sized so capacity can be increased by 25 percent in the future.
 - 5. Support individual horizontal raceways with separate, malleable iron pipe hangers or clamps.
 - 6. Hanger Rods: Provide 1/4-inch diameter or larger threaded steel rods.
 - 7. In vertical runs, arrange support so the load produced by the weight of the raceway and the enclosed conductors is carried entirely by the conduit supports, with no weight load on raceway terminals.
- B. Miscellaneous Supports: Install metal channel racks for mounting cabinets, disconnects, control enclosures, pull boxes, junction boxes, transformers, and other devices (except where components are mounted directly to structural features of adequate strength).
- C. Sleeves: Install for cable and raceway penetrations of concrete slabs and walls, except where core-drilled holes are used. Install for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during

erection of concrete and masonry walls.

- D. Firestopping: Apply to cable and raceway penetrations of fire-rated floor and wall assemblies. Perform firestopping as specified in Division 7 to reestablish the original fire-resistance rating of the assembly at the penetration.
- E. Fastening: Unless otherwise indicated, securely fasten electrical items and their supporting hardware to the building structure. Perform fastening according to the following:
 - 1. Fasten by means of wood screws or screw-type nails on wood; toggle bolts on hollow masonry units; concrete inserts or expansion bolts on concrete or solid masonry; and by machine screws, welded threaded studs, or spring-tension clamps on steel.
 - 2. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts, machine screws, or wood screws.
 - 3. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or any other items.
 - 4. In partitions of light steel construction use sheet-metal screws.
 - 5. Drill holes in concrete so holes more than 3/4 inch deep do not cut main reinforcing bars.
 - 6. Fill and seal holes drilled in concrete and not used.
 - 7. Select fasteners so the load applied to any fastener does not exceed 25 percent of the proof-test load.

3.4 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for electrical installations. Perform cutting by skilled mechanics of the trades involved.
- B. Repair disturbed surfaces to match adjacent undisturbed surfaces.

3.5 TOUCH-UP PAINTING

- A. Thoroughly clean damaged areas and provide primer, intermediate, and finish coats to suit the degree of damage at each location.
- B. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.

END OF SECTION 16050

SECTION 16100 – RACEWAYS, BOXES AND CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 and Specification Section 16010, apply to this Section.

1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. Raceways include the following:
 - 1. Rigid metal conduit.
 - 2. Intermediate metal conduit.
 - 3. Electrical metallic tubing (EMT).
 - 4. Flexible metal conduit.
 - 5. Liquidtight flexible metal conduit.
 - 6. Rigid non-metallic conduit.
 - 7. Wireway.
- C. Boxes, enclosures, and cabinets include the following:
 - 1. Device boxes.
 - 2. Outlet boxes.
 - 3. Pull and junction boxes.
 - 4. Floor boxes
 - 5. Cabinets and hinged cover enclosures.
- D. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. All Sections.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with the Conditions of the Contract, Division 1 and Specification Section 16010:

1. Product data for conduit, conduit bodies and fittings, pull and junction boxes, hinged cover enclosures, and cabinets.
2. Shop drawings for nonstandard boxes, enclosures, and cabinets. Include layout drawings showing dimensions, components and wiring.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70 "National Electrical Code" for components and installation.
- B. Listing and Labeling: Provide products specified in this Section that are "Listed and Labeled" as defined in the National Electrical Code, Article 100.
- C. Comply with NECA "Standard of Installation."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering Products that may be incorporated in the Work include, but are not limited to, the following:
 1. Metal Conduit and Tubing:
 - a. Monogram Co., AFC.
 - b. Alflex Corp.
 - c. Allied Tube and Conduit, Grinnell Co.
 - d. Anamet, Inc., Anaconda Metal Hose.
 - e. Anixter Brothers, Inc.
 - f. Carol Cable Co., Inc.
 - g. Cole-Flex Corp.
 - h. Flexcon, Inc., Coleman Cable Systems, Inc.
 - i. Spiraduct, Inc.
 - j. Triangle PWC, Inc.
 - k. Wheatland Tube Co.
 2. Conduit Bodies and Fittings:
 - a. Scott Fetzer Company, Adalet-PLM.
 - b. American Electric, Construction Materials Group.
 - c. Emerson Electric Co., Appleton Electric Co.
 - d. Carlon.
 - e. Hubbell, Inc., Killark Electric Manufacturing Co.
 - f. General Signal, O-Z/Gedney Unit.
 - g. Spring City Electrical Manufacturing Co.
 3. Non-Metallic Conduit:
 - a. American International.

- b. Anamet Electrical, Inc.; Anaconda Metal Hose.
- c. Amco Corp.
- d. Cantex, Inc.
- e. Certainteed Corp.; Pipe & Plastics Group.
- f. Condux International.
- g. ElecSYS, Inc.
- h. Electric-Flex Co.
- i. Lamson & Sessions; Carlon Electrical Products.
- j. Manhattan/CDT/Cole-Flex.
- k. RACO; Division of Hubbell, Inc.
- l. Spiralduct, Inc./AFC Cable Systems, Inc.
- m. Thomas & Betts Corporation.

4. Wireway:

- a. Hoffman Engineering Co.
- b. Keystone/Rees, Inc.
- c. Square D Co.
- d. Wiremold

5. Boxes, Enclosures, and Cabinets:

- a. Scott Fetzer Company, Adalet-PLM.
- b. Butler Manufacturing Co., Walker Division.
- c. Cooper Industries, Midwest Electric.
- d. Electric Panelboard Co., Inc.
- e. American Electric, FL Industries.
- f. Hoffman Engineering Co., Federal-Hoffman, Inc.
- g. Hubbell Inc., Killark Electric Manufacturing Co.
- h. General Signal, O-Z/Gedney.
- i. Raco, Inc., Hubbell Inc.
- j. Square D Co.
- k. Thomas & Betts Corp.
- l. Wiremold.
- m. Appleton.
- n. Crouse-Hinds

2.2 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Intermediate Metal Conduit: ANSI C80.6.
- C. Electrical Metallic Tubing and Fittings: ANSI C80.3 with steel set-screw type fittings.
- D. Flexible Metal Conduit: Zinc-coated steel.
- E. Liquidtight Flexible Metal Conduit: Flexible steel conduit with PVC jacket.

- F. Fittings: NEMA FB 1, compatible with conduit/tubing materials (Die-cast fittings are not acceptable).

2.3 WIREWAYS

- A. Material: Sheet metal.
- B. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireway as required for complete system.
- C. Select features where not otherwise indicated, as required to complete wiring system and to comply with NEC.
- D. Wireway Covers: Hinged and screwed type.
- E. Finish: Manufacturer's standard enamel finish.

2.4 OUTLET AND DEVICE BOXES

- A. Sheet Metal Boxes: NEMA OS 1.
- B. Cast Metal Boxes: NEMA FB 1, type FD, cast ferrous alloy box with gasketed cover.

2.5 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1.
- B. Cast Metal Boxes: NEMA FB 1, cast aluminum with gasketed cover.

2.6 CABINETS AND ENCLOSURES

- A. Hinged Cover Enclosures: NEMA 250, steel enclosure with continuous hinge cover and flush latch. Finish inside and out with manufacturer's standard enamel.
- B. Cabinets: NEMA 250, type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Include metal barriers to separate wiring of different systems and include accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive raceways, boxes, enclosures, and cabinets for compliance with installation tolerances and other conditions affecting performance of the raceway system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 WIRING METHODS

- A. Outdoors: Use the following wiring methods:
 - 1. Exposed: Rigid metal conduit.
 - 2. Connection to Vibrating Equipment (including hydraulic, pneumatic, or motor-driven equipment): Liquidtight flexible metal conduit.
 - 3. Underground: Rigid non-metal conduit. Stub-ups to concrete slab or grade including sweeps shall be galvanized rigid conduit. Galvanized rigid conduit shall be used in or below slabs.

- B. Indoors: Use the following wiring methods:
 - 1. Connection to Vibrating Equipment (including hydraulic, pneumatic, or motor-driven equipment): Flexible metal conduit, except in wet or damp locations use liquidtight flexible metal conduit.
 - 2. Damp or Wet Locations: Rigid steel conduit.
 - 3. Exposed: Rigid steel conduit.
 - 4. Concealed: Electrical metallic tubing.

3.3 INSTALLATION

- A. Install raceways, boxes, enclosures, and cabinets as indicated, according to manufacturer's written instructions.

- B. Conceal conduit and EMT, unless otherwise indicated, within finished walls, ceilings, and floors.

- C. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot water pipes. Install horizontal raceway runs above water and steam piping. Refer to Coordination Drawings paragraph in Section 16010.

- D. Install raceways level and square and at proper elevations. Provide adequate headroom.

- E. Complete raceway installation before starting conductor installation.

- F. Support raceway as specified in Section 16050 "Basic Electrical Materials and Methods."

- G. Use temporary closures to prevent foreign matter from entering raceway.

- H. Make bends and offsets so the inside diameter is not reduced. Unless otherwise indicated, keep the legs of a bend in the same plane and the straight legs of offsets parallel.

SECTION 16100
RACEWAYS, BOXES AND CABINETS
PAGE 6 OF 7

- I. Use raceway fittings compatible with raceway and suitable for use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings.
- J. Run concealed raceways with a minimum of bends in the shortest practical distance considering the type of building construction and obstructions, except as otherwise indicated. Refer to Coordination Drawing paragraph in Section 16010.
- K. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much as practical.
 - 1. Run parallel or banked raceways together, on common supports where practical.
 - 2. Make bends in parallel or banked runs from same center line to make bends parallel. Use factory elbows only where they can be installed parallel; otherwise, provide field bends for parallel raceways.
- L. Join raceways with fittings designed and approved for the purpose and make joints tight.
 - 1. Make raceway terminations tight. Use bonding bushings or wedges at connections subject to vibration. Use bonding jumpers where joints cannot be made tight.
 - 2. Use insulating bushings to protect conductors.
 - 3. Expansion Fittings: Provide appropriately sized fittings for all conduits at each building expansion joint.
- M. Tighten set screws of threadless fittings with suitable tool.
- N. Terminations: Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely, and install the locknuts with dished part against the box. Where terminations cannot be made secure with one locknut, use two locknuts, one inside and one outside the box.
- O. Where terminating in threaded hubs, screw the raceway or fitting tight into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align the raceway so the coupling is square to the box, and tighten the chase nipple so no threads are exposed.
- P. Flexible Connections: Use a maximum of 6 feet of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for all motors. Use liquidtight flexible conduit in wet or damp locations. Install separate ground conductor across flexible connections.
- Q. Install hinged cover enclosures and cabinets plumb. Support at each corner.
- R. Provide grounding connections for raceway, boxes, and components as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals according to tightening torques specified in UL Standard 486A.

3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, to ensure that coatings, finishes, and cabinets are without damage or deterioration at Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to paint finishes with matching touch-up coating recommended by the manufacturer.

3.5 CLEANING

- A. Upon completion of installation of system, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

END OF SECTION 16100

SECTION 16120 – CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 and Specification Section 16010, apply to this Section.

1.2 SUMMARY

- A. This Section includes building wires and cables and associated splices, connectors, and terminations for wiring systems rated 600 volts and less.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 7 "Firestopping."
 - 2. Section 16195 "Electrical Identification".
- C. Festoon System cables shall be UL approved for exterior use and as recommended by the Festoon System manufacturer.

1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract, Division 1 and Specification Section 16010:
 - 1. Product data for each product specified.
 - 2. Field test reports indicating and interpreting test results relative to compliance with performance requirements of testing standard.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70 "National Electrical Code" for components and installation. Specifically comply with the requirements of Article 610.
- B. Listing and Labeling: Provide products specified in this Section that are listed and labeled as defined in the "National Electrical Code," Article 100.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wire and cable according to NEMA WC-26.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Wires and Cables:
 - a. AFC Cable Systems
 - b. American Insulated Wire Corporation, Leviton Manufacturing Co.
 - c. Brand-Rex Cable Systems, Brintec Corp.
 - d. Carol Cable Company, Inc.
 - e. Senator Wire & Cable Co.
 - f. Southwire Co.

2.2 BUILDING CONDUCTORS AND CABLES

- A. UL-listed building wires and cables with conductor material, insulation type, cable construction, and rating for 600V.
- B. Refer to Part 3 "Conductors and Insulation Applications" Article for insulation type, cable construction, and ratings.
- C. Conductor Material: Copper complying with NEMA WC 5 or 7; stranded conductor, solid conductor for No. 14 AWG and smaller, stranded for No. 12 AWG and larger.
- D. Conductor Insulation Types: Type THHN-THWN, XHHW and SO complying with NEMA WA 5 or 7.
- E. Multi-Conductor Cable: Metal Clad cable, Type MC and Type SO with ground wire.
- F. Solid conductor for 16 AWG and smaller; stranded conductor for larger than 16 AWG.

2.3 CONNECTORS AND SPLICES

- A. UL-listed factory-fabricated wiring connectors of size, ampacity rating, material, and type and class for application and for service indicated. Select to comply with Project's installation requirements and as specified in Part 3 "Applications" Article.
- B. Available Manufacturers:
 - 1. AFC Cable Systems, Inc.
 - 2. AMP Incorporated/Tyco International.
 - 3. Hubbell/Anderson.
 - 4. O-Z/Gedney; EGS Electrical Group LLC.

- 5. 3M Company; Electrical Products Division.
- C. Description: Factory fabricated connectors and splices of size, ampacity rating, material, type and class for application and service indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine raceways and building finishes to receive wires and cables for compliance with installation tolerances and other conditions. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 CONDUCTOR AND INSULATION APPLICATIONS

- A. Exposed Feeders: Type THHN/THWN, single conductors in raceway.
- B. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceways.
- C. Feeders Concealed on Concrete, below Slabs-on-Grade, and in Crawl Spaces: Type THHN-THWN, single conductors in raceways.
- D. Exposed Branch Circuits, including in Crawl Spaces: Type THHN-THWN, single conductors in raceway.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceways, metal clad cable, Type MC.
- F. Branch Circuits Concealed in Concrete and Below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.
- G. Class 1 Control Circuits: Type THHN-THWN in raceway.
- H. Class 2 Control Circuits: Type THHN-THWN in raceway, power limited tray cable in cable tray.
- I. Homeruns: Type THHN-THWN, single conductors in raceway. Homeruns shall include circuiting between the source panel and the area in which the circuit(s) feed.
- J. Festoon System: In accordance with NEC Article 610 and the manufacturers recommendations.

3.3 INSTALLATION

- A. Install wires and cables as indicated, according to manufacturer's written instructions and the NECA "Standard of Installation."

- B. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- C. Use manufacturer approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Division 16 Section "Basic Electrical Materials and Methods".
- G. Seal around cables penetrating fire-rated elements according to Division 7 Section "Through-Penetration Firestop Systems".
- H. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification".
- I. Single phase circuits shall not share a common neutral but shall have a dedicated neutral of equal size as the ungrounded conductor. Use of Type MC cable does not preclude need to dedicated neutral on all circuits requiring a neutral.
- J. De-rating of conductors shall be in accordance with the approved version of the National Electrical Code (NEC) Article 310, Note 8 of Ampacity Tables of 0 to 2000 Volts.

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque value are not indicated, use those specified in UL 486A and UL 386B.
- B. Make splices and tapes that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches (300mm) of slack.

3.5 FIELD QUALITY CONTROL

- A. Testing: Perform the following field quality control testing:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test for compliance with requirements.

2. Visual and Mechanical Inspection.
 - a. Compare cable data with drawings and specifications.
 - b. Inspect exposed sections of cables for physical damage and correct connection in accordance with single-line diagram.
 - c. Inspect all bolted electrical connections for high resistance using one of the following methods.
 - 1). Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.
 - d. Inspect compression-applied connectors for correct cable match and indentation.
 - e. Verify cable color coding with applicable specifications and the National Electrical Code.

END OF SECTION 16120

SECTION 16195 – ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Condition, Division 1 and Specification Section 16010, apply to this Section.

1.2 SUMMARY

- A. This Section includes identification of electrical materials, equipment, and installations.

1.3 SUBMITTALS

- A. General: Submit for review each item in this Article according to the Conditions of the Contract, Division 1 and Specification Section 16010.
 - 1. Product Data for each type of product specified.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70.

1.5 SEQUENCING AND SCHEDULING

- A. Coordinate installing electrical identification after completion of finishing where identification is applied to field-finished surfaces.
- B. Coordinate installing electrical identifying devices and markings prior to installing acoustical ceilings and similar finishes that conceal such items.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. American Labelmark Co.; Labelmaster Subsidiary.
 - 2. Brady USA, Inc.; Industrial Products Div.
 - 3. Carlton Industries, Inc.
 - 4. D&G Sign and Label.
 - 5. Markal Corp.

6. National Band & Tag Co.
7. Ready Made Sign Co.; Cornerstone Direct Corp. Div.
8. Seton Name Plate Co.

2.2 RACEWAY AND CABLE LABELS

- A. **Manufacturer's Standard Products:** Where more than one type is listed for a specified application, selection is Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. Conform to ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway or cable size.
 1. Color: Black legend on orange field.
 2. Legend: Indicates voltage and service.
- C. **Adhesive Labels:** Preprinted, flexible, self-adhesive vinyl. Legend is over-laminated with a clear, weather- and chemical-resistant coating.
- D. **Colored Adhesive Tape:** Self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- E. **Underground Line Warning Tape:** Permanent, bright-colored, continuous-printed, vinyl tape with the following features:
 1. Size: Not less than 6 inches wide by 4 mils thick.
 2. Compounded for permanent direct-burial service.
 3. Embedded continuous metallic strip or core.
 4. Printed Legend: Indicates type of underground line.

2.3 ENGRAVED NAMEPLATES AND SIGNS

- A. **Manufacturer's Standard Products:** Where more than one type is listed for a specified application, selection is Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. **Engraving stock, melamine plastic laminate, 1/16-inch minimum thick for signs up to 20 sq. in., 1/8 inch thick for larger sizes.**
 1. Engraved Legend: Black letters on white face.
- C. **Fasteners for Plastic-Laminated Signs:** Self-tapping stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.4 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties with the following features:
 - 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength: 50 lb minimum.
 - 3. Temperature Range: Minus 40 to 185 deg F (Minus 4 to 85 deg C).
 - 4. Color: As indicated where used for color coding.
- B. Paint: Alkyd-urethane enamel over primer as recommended by enamel manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install identification devices according to manufacturer's written instructions.
- B. Install labels where indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.
- C. Lettering, Colors, and Graphics: Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations used in the Contract Documents or required by codes and standards. Use consistent designations throughout the Project.
- D. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work.
- E. Self-Adhesive Identification Products: Clean surfaces of dust, loose material, and oily films before applying.
- F. Install painted identification as follows:
 - 1. Clean surfaces of dust, loose material, and oily films before painting.
 - 2. Prime Surfaces: For galvanized metal, use single-component, acrylic vehicle coating formulated for galvanized surfaces. For concrete masonry units, use heavy-duty, acrylic-resin block filler. For concrete surfaces, use clear, alkali-resistant, alkyd binder-type sealer.
 - 3. Apply one intermediate and one finish coat of silicone alkyd enamel.
 - 4. Apply primer and finish materials according to manufacturer's instructions.

- G. Install Circuit Identification Labels on Boxes: Label externally as follows:
1. Exposed Boxes: Pressure-sensitive, self-adhesive plastic label on cover.
 2. Identify all boxes used for emergency circuits with permanent labels such that the box is readily identified as part of an emergency circuit or system.
- H. Color-Code Conductors: Secondary service, feeder, and branch circuit conductors throughout the secondary electrical system.
1. 208/120-V System: As follows:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - d. Neutral: White.
 - e. Ground: Green.
 2. 480/277-V System: As follows:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
 - d. Neutral: White with colored strips.
 - e. Ground: Green.
 3. Factory-apply color the entire length of the conductors, except the following field-applied, color-coding methods may be used in lieu of factory-coded wire for sizes larger than No. 6 AWG. Conform to NEC Articles 200-6 and 250-119 for coding of grounded conductors.
 - a. Colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply the last 2 turns of tape with no tension to prevent possible unwinding. Use 1 inch wide tape in colors as specified. Adjust tape bands to avoid obscuring cable identification markings.
 - b. Colored cable ties applied in groups of 3 ties of specified color to each wire at each terminal or splice point starting 3 inches from the terminal and spaced 3 inches apart. Apply with a special tool or pliers, tighten to a snug fit, and cut off excess length.
- I. Apply identification to conductors as follows:
1. Multiple Power or Lighting Circuits in the Same Enclosure: Identify each conductor with source, voltage, circuit number, and phase. Use color coding for voltage and phase indication of secondary circuit.
 2. Multiple Control and Communications Circuits in the Same Enclosure: Identify each conductor by its system and circuit designation. Use a consistent system of tags, color coding, or cable marking tape.

- J. Apply warning, caution, and instruction signs and stencils as follows:
1. Install warning, caution, and instruction signs where indicated or required to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved, plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install butyrate signs with metal backing for outdoor items.
 2. Emergency-Operating Signs: Install engraved laminate signs with white legend on red background with minimum 3/8 inch high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.
- K. Install identification as follows:
1. Apply equipment identification labels of engraved plastic laminate on each major unit of equipment, including central or master unit of each system. This includes communication, signal, and alarm systems, unless units are specified with their own self-explanatory identification. Except as otherwise indicated, provide a single line of text with $\frac{1}{8}$ inch high lettering on 1-1/2 inch high label; where 2 lines of text are required, use lettering 2 inches high. Use white lettering on black field. Apply labels for each unit of the following categories of equipment.
 - a. Electrical cabinets, and enclosures.
 - b. Disconnect switches.
 - c. Motor starters.
 - d. Push-button stations.
 - e. Power transfer equipment.
 - f. Remote-controlled switches.
 2. Apply designation labels of engraved plastic laminate for disconnect switches, breakers, push buttons, pilot lights, motor control centers, and similar items for power distribution and control components above, except panelboards and alarm/signal components where labeling is specified elsewhere. For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker.

END OF SECTION 16195

SECTION 16452 - GROUNDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Section 16010, apply to this Section.

1.2 SUMMARY

- A. This Section includes the provision for grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits, and systems including bonding of existing structures to remain. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 13100 "Lightning Protection".
 - 2. Section 16120 "Wires and Cables".
 - 3. Section 16210 "Electric Utility Service".

1.3 SUBMITTALS

- A. General: Submit for review each item in this Article according to the Conditions of the Contract, Division 1 and Specification Section 16010:
- B. Qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- C. Field tests and observation reports certified by the testing organization and indicating and interpreting the test reports for compliance with performance requirements.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70 – Specifically comply with the requirements of Article 610.
- B. Comply with UL 467.
- C. Listing and Labeling: Provide products specified in this Section that are listed and labeled as defined in the National Electrical Code, Article 100.

1.5 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of surge suppressors that fail in materials or workmanship within five years from date of Substantial Completion.

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:
 - 1. Chance: A. B. Chance Co.
 - 2. Erico Inc.; Electrical Products Group.
 - 3. Heary Brothers Lightning Protection Co.
 - 4. Kearney.
 - 5. O-Z/Gedney Co.
 - 6. Raco, Inc.
 - 7. Thomas & Betts, Electrical.

2.2 GROUNDING AND BONDING PRODUCTS

- A. Governing Requirements: Where types, sizes, ratings, and quantities indicated are in excess of National Electrical Code (NEC) requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.

2.3 WIRE AND CABLE GROUNDING CONDUCTORS

- A. Comply with Section 16120 "Wires and Cables." Conform to NEC Table 8, except as otherwise indicated, for conductor properties, including stranding.
- B. Equipment Grounding Conductors: Insulated with green color insulation.
- C. Grounding-Electrode Conductors: Stranded cable.
- D. Bare Copper Conductors: Conform to the following:

1. Solid Conductors: ASTM B 3.
2. Assembly of Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.

2.4 MISCELLANEOUS CONDUCTORS

- A. Braided Bonding Jumpers: Copper tape, braided No. 30 AWG bare copper wire, terminated with copper ferrules.
- B. Bonding Straps: Soft copper, 0.05 inch thick and 2 inches wide, except as indicated.

2.5 CONNECTOR PRODUCTS

- A. Pressure Connectors: High-conductivity-plated units.
- B. Bolted Clamps: Heavy-duty type.
- C. Exothermic-Welded Connections: Provided in kit form and selected per manufacturer's written instructions for specific types, sizes, and combinations of conductors and connected items.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Equipment Grounding Conductors: Comply with NEC Article 250 and 610 for types, sizes, and quantities of equipment grounding conductors, except where specific types, larger sizes, or more conductors than required by NEC are indicated.
 1. Install equipment grounding conductor with circuit conductors for the items below in addition to those required by Code:
 - a. Feeders and branch circuits.
 - b. Three-phase motor or appliance branch circuits.
 - c. Flexible raceway runs.
 - d. Festoon Systems.
- B. Separately Derived Systems: Where NEC requires grounding, ground according to NEC Paragraph 250-26.

3.2 INSTALLATION

- A. General: Ground electrical systems and equipment according to NEC requirements, except where Drawings or Specifications exceed NEC requirements.
- B. Grounding Conductors: Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

3.3 CONNECTIONS

- A. General: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
1. Use electroplated or hot-tin-coated materials to assure high conductivity and to make contact points closer in order of galvanic series.
 2. Make connections with clean, bare metal at points of contact.
 3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- B. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding-Wire Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- D. Non-Contact Metal Raceway Terminations: Where metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically non-continuous conduits at both entrances and exits with grounding bushings and bare grounding conductors, except as otherwise indicated.
- E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.
- F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by manufacturer of connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- G. Moisture Protection: Where insulated grounding conductors are connected to grounding rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

END OF SECTION 16452

SECTION 16475 - FUSES

PART 1. - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Fuses.

1.3 SUBMITTALS

- A. General: Submit each item in this Article in accordance with the Conditions of the Contract, Division 1 and 16010 Specification Sections.

- 1. Product Data for each fuse type specified. Include the following:
 - a. Descriptive data and time-current curves.
 - b. Let-through current curves for fuses with current-limiting characteristics.
 - c. Coordination charts and tables and related data.
- 2. Field test reports indicating and interpreting test results.
- 3. Maintenance data for tripping devices to include in the operation and maintenance manual specified in Division 1.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fuses from one source and by a single manufacturer.
- B. Comply with NFPA 70 for components and installation.
- C. Listing and Labeling: Provide fuses specified in this Section that are "Listed and Labeled", as defined in the National Electrical Code, Article 100.

1.5 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.

- 1. Spare Fuses: Furnish quantity equal to 20 percent of each fuse type and size installed, but not less than 1 set of 3 of each type and size.

PART 2. - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering fuses that may be incorporated into the Work include, but are not limited to, the following:
1. Cooper Industries, Inc.; Bussmann Div.
 2. Eagle Electric Mfg. Co., Inc.
 3. Ferraz Corp.
 4. General Electric Co.; Wiring Devices Div.
 5. Gould Shawmut.
 6. Tracor, Inc.; Littelfuse, Inc. Subsidiary.

2.2 CARTRIDGE FUSES

- A. Characteristics: NEMA FU 1, non-renewable dual element cartridge fuse; class as specified or indicated; current rating as indicated; voltage rating consistent with circuit voltage.

PART 3. - EXECUTION

3.1 EXAMINATION

- A. Examine utilization equipment nameplates and installation instructions to verify proper fuse locations, sizes, and characteristics.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

- A. Main Service Switch: Class L.
- B. Motor Branch Circuits: Class RK1, time delay.
- C. Other Branch Circuits: Class RK5, non-time delay.

3.3 INSTALLATION

- A. Install fuses in fusible devices as indicated. Arrange fuses so fuse ratings are readable without removing fuse.

3.4 IDENTIFICATION

- A. Install typewritten labels on inside door of each fused switch to indicate fuse replacement information.

END OF SECTION 16475

SECTION 16476 - DISCONNECT SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes individually mounted switches and circuit breakers used for the following:
 - 1. Motor disconnect switches.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 16140 "Wiring Devices".
 - 2. Section 16475 "Fuses".

1.3 SUBMITTALS

- A. General: Submit each item in this Article in accordance with the Conditions of the Contract, Division 1 and 16010 Specification Sections.
- B. Product Data for disconnect switches, circuit breakers, and accessories specified in this Section.
- C. Wiring diagrams detailing wiring for power and control systems and differentiating between manufacturer-installed and field-installed wiring.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain disconnect switches and circuit breakers from one source and by a single manufacturer.
- B. Comply with NFPA 70 for components and installation.
- C. Listing and Labeling: Provide disconnect switches and circuit breakers specified in this Section that are "Listed and Labeled", as defined in the National Electrical Code, Article 100.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering disconnect switches and circuit breakers that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Fusible Switches:
 - a. Square D Co.
 - b. Eaton Corp.; Cutler-Hammer Products.
 - c. General Electric Co.; Electrical Distribution and Control Division.
 - d. Siemens Energy & Automation, Inc.
 - e. Westinghouse Electric Corp.; Distribution & Control Business Unit.

2.2 DISCONNECT SWITCHES

- A. Enclosed, Non-Fusible Switch: NEMA KS 1, Type HD, with lockable handle.
- B. Enclosed, Fusible Switch, 800 A and Smaller: NEMA KS 1, Type HD, clips to accommodate specified fuses, enclosure consistent with environment where located, handle lockable with 2 padlocks, and interlocked with cover in CLOSED position.
- C. Enclosure: NEMA KS 1, Type 1, unless otherwise specified or required to meet environmental conditions of installed location.
 - 1. Outdoor Locations: Type 3R.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install disconnect switches and circuit breakers in locations as indicated, according to manufacturer's written instructions.
- B. Install disconnect switches and circuit breakers level and plumb.
- C. Install wiring between disconnect switches, circuit breakers, control, and indication devices.
- D. Connect disconnect switches and circuit breakers and components to wiring system and to ground as indicated and instructed by manufacturer.
 - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- E. Identify each disconnect switch and circuit breaker according to requirements specified in Section 16195 "Electrical Identification."

3.2 FIELD QUALITY CONTROL

- A. Testing: After installing disconnect switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
 - 1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.5 for disconnect switches. Certify compliance with test parameters.
- B. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units and retest.

3.3 ADJUSTING

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

END OF SECTION 16476

EXHIBIT D

PROJECT SCHEDULE

Completion Date: A total of sixty (60) days are allowed to complete the Work and have such Work ready for acceptance by CRRA. Contractor shall commence performance of the Work upon CRRA's issuance to Contractor of the Notice To Proceed pursuant to Section 4.02 of the Agreement.

EXHIBIT E
PERFORMANCE BOND

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):

--	--

OWNER (Name and Address):

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

AGREEMENT

DATE:	
AGREEMENT NUMBER:	
AMOUNT:	
PROJECT DESCRIPTION <small>(Including Name and Location):</small>	

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 F
CONSTRUCTION PAYMENT BOND

CONSTRUCTION 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:	
AGREEMENT NUMBER:	
AMOUNT:	
PROJECT DESCRIPTION <small>(Including Name and Location):</small>	

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 CONSTRUCTION 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.
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 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.
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 G

COVANTA ENERGY, INC.

SAFETY PROCEDURE NO. 5B

Covanta Energy, Inc.

Safety Procedure No. 5B
Contractor Safety Requirements
For Contractors with Limited Facility Access and Scope

(A Covanta Energy, Inc. Facility)

**Contractor Safety Requirements for Contractors
with Limited Facility Access and Scope**

Issued by: _____

John M. Klett
John Klett, SVP, Operations

November 11, 2005

Date

Acknowledged by: _____

Facility Manager

Date

Safety Procedure No. 5B
Contractor Safety Requirements
For Contractors with Limited Facility Access and Scope

The following minimum safety requirements apply to Contractors contracted by Covanta Energy, Inc. (CE, Inc.) to conduct work involving limited¹ Facility access and work scope at a CE, Inc. owned and/or operated Facility, including all Contractor personnel, their Subcontractors, and any hiring hall and temporary employees hired and supervised by the Contractor and not supervised by CE, Inc. It is the Contractor's responsibility to notify and enforce all aspects of this document and all local, state and federal regulations pertaining to safe work practices of any and all of its employees while conducting work under contract to CE, Inc. at the Facility. CE, Inc. will not act as the "controlling" employer with respect to the Contractor under OSHA Directive CPL 2-0.124 – Multi-Employer Citation Policy. **Non-compliance by the Contractor with conditions of the contract or with CE, Inc. health and safety policies may be documented to the Contractor by CE, Inc. Facility management using the form contained in the Appendices.** Additionally, failure of any Contractor, temporary employee or Subcontractor employee to be in compliance with the federal/state/local regulations and CE, Inc. procedures as stated in this document and its appendices shall result in CE, Inc. removing any and all individuals/Contractors from the site, at CE, Inc.'s sole discretion. Further disregard of the requirements of this contract by any Contractor or Subcontractor may result in the termination of the contract with CE, Inc.

As a condition of contract award, an officer of the Contractor's company must sign, date and return this page to CE, Inc. management before work can commence. If at any time the Contractor's work changes such that work within the operating areas of the Facility becomes necessary (including potential exposure to fall hazards, energized equipment, heavy metals, confined spaces and/or respiratory protection concerns), Contractor shall be asked to review, sign and train its employees on Covanta Energy Safety Procedure No. 5 that addresses these additional workplace hazards.

By signing this page, the Contractor certifies they have read and agree to administer the rules and regulations as outlined in the balance of this document. The contractor foreman or owner shall attend an initial safety briefing prior to commencement of work where the contents of this document will be reviewed (per the checklist in Appendix D) and shall sign on the space provided. This signature page shall be kept on file at the Facility for one year from the date signed below and apply to all future contracts.

_____	_____
<i>CE, Inc. Facility Representative</i>	<i>Date</i>
_____	_____
<i>CE, Inc. Facility Name</i>	<i>Date</i>
_____	_____
<i>Contractor Representative</i>	<i>Date</i>
_____	_____
<i>Contractor Company Name</i>	<i>Date</i>

¹ Examples of contractors performing work with limited Facility access and work scope would include janitorial service companies; consultants hired for design, research, consultation, oversight and packaging of engineering and construction or other job scopes; all administrative/office responsibilities not requiring work in the operating boundaries of the Facility; and limited general exterior work, i.e., landscaping and yard maintenance.

Table of Contents

I. General Safety Procedures.....3

- A. Entering Facility
- B. Change Rooms
- C. Hearing Protection
- D. Eye Protection
- E. Fire Alarms/Evacuation
- F. Accident Reporting and First Aid Locations
- G. Hazard Communication (HAZCOM)
- H. Bloodborne Pathogens
- I. Chemical Processes
- J. Work Clothing Requirements
- K. Energized Equipment

II. Worker Conduct.....5

- A. General Facility Rules
- B. Sexual Harassment

III. Guidelines for Evaluating Contractor Health and Safety Performance and Programs.....5

IV. Initial Contractor Safety Briefing - Checklist and Signature Page.....5

Appendix A - Other Site-Specific Requirements6

Appendix B - Contractor Contract Violation Notification Form.....7

Appendix C – Prospective Contractor Health and Safety Questionnaire.....8

Appendix D – Initial Contractor Briefing - Checklist and Signature Page9

Appendix E – Contractor Accident Report Form – OSHA 301 Equivalent.....10

Safety Procedure No. 5B
Contractor Safety Requirements
For Contractors with Limited Facility Access and Scope

I. General Safety Procedures

- A. **Entering Facility:** All Contractor personnel shall enter the Facility through the front entrance or the designated Contractor's entrance; and shall both sign in upon entering Facility and sign out when departing from the Facility, using the visitors or contract employee log. *No one should enter through the boiler house or air pollution control (APC) area when reporting to work, unless specifically instructed by CE, Inc. management.*
- B. **Change Rooms:** Contractor personnel requiring change/clean rooms shall provide their own facilities, unless arrangements are made in advance.
- C. **Hearing Protection:** Hearing protection devices shall be worn by all personnel throughout the Facility while any of the process equipment is in operation, exclusive of the administrative offices, control room, crane cab, outside grounds away from operating equipment, maintenance shop and break rooms, while any of the process equipment is in operation. Also, regardless of the Facility status, all personnel engaging in or around any activities which generate noise above Federal or State Occupational Safety and Health Administration (OSHA) regulatory limits shall wear hearing protection devices at all times.
- D. **Eye Protection:** Eye protection gear shall be worn by all personnel throughout the Facility, exclusive of the administrative offices, control room, crane cab and break rooms. All personnel wearing prescription glasses must also wear side shields or safety goggles over their glasses at all times, except as noted above. All protective eyewear should meet ANSI Z87.1.
- E. **Fire Alarms/Evacuation:** The Facility is equipped with a fire alarm and/or evacuation system. In the event of a fire or a forced evacuation, all personnel must leave their work areas and meet in the Administration Building parking lot or other designated area for a head count. A Contractor representative shall maintain records of Contractor personnel on site and will bring that information to the evacuation area in the event of an emergency. Exits are marked throughout the plant. **In the event of a fire no one shall use the elevator.** The Control Room operator will announce an "All Clear" or "False Alarm" if there is no danger.
- F. **First Aid Locations:** Contractor must establish first aid kits throughout its assigned work area suitable for addressing the needs of Contractor's employees. First aid kits are located throughout the existing Facility and may be used by Contractor on an emergency basis only. Contractor will immediately notify the Facility of usage and will restock any materials used from an existing Facility first aid kit. Certain facility personnel are also trained in CPR and first aid procedures and are prepared to provide emergency assistance if required. Contractor must establish a relationship with a local hospital or clinic to provide emergency medical services to Contractor employees and provide CE, Inc evidence thereof prior to the commencement of any work activities. Minor injuries may be treated by Contractor's trained personnel on the Facility site. More serious injuries should be directed to the Contractor's associated clinic or local hospital.

If a Contractor's employee has an accident or they witness an accident, it must be reported to the CE, Inc. Shift Supervisor immediately. For all OSHA recordable injuries, an OSHA 301 report or equivalent must be completed. Please refer to Appendix E for a sample form.

Safety Procedure No. 5B
Contractor Safety Requirements
For Contractors with Limited Facility Access and Scope

G. Hazard Communication (HAZCOM): Material Safety Data Sheets (MSDS) for all chemicals in the Facility are kept on file in books located in the Facility control room and/or Administration area. This information is to be maintained on site and made available to any individual(s) requesting to see it. The Shift Supervisor may review this information prior to initiating work involving such chemicals. All Contractors are required to provide MSDS for all materials (welding rods, paints, lubricants, solvents, acids, compressed gasses, sandblast materials, etc.) brought to the Facility which they may use during the course of their work. This information must be presented to and reviewed by the CE, Inc. management prior to the commencement of any work.

H. Bloodborne Pathogens: Contractor personnel engaged in activities where uncombusted refuse or bottom ash/riddling residue is present should avoid physical contact with this material. Although not hazardous in nature, this material may contain a limited amount of sharps or other products that may have been exposed to blood or bodily fluids. These items may contain microorganisms, which are the carriers of diseases such as Hepatitis B Virus (HBV) or Human Immunodeficiency Virus (HIV).

If Contractor personnel discover or come in contact with bloodstained products, sharps such as needles, or have a blood/body fluids exposure from an injured individual (e.g., as a result of rendering first aid), CE, Inc. management should be contacted immediately for appropriate action. No Contractor personnel should work in any area containing this material without protective gear such as gloves and coveralls. Contractor personnel should avoid activities such as physically handling or walking through piles of loose material.

I. Chemical Processes: The Facility may contain a limited amount of highly hazardous chemicals that have the potential for fire, explosion or toxic release. Access to these areas is strictly limited and regulated by CE, Inc. management. Any Contractors working in these areas shall be provided by CE, Inc. management with information regarding these chemicals in the form of MSDS and must train their employees working in or near the chemical hazard area. Additionally, the Contractor must provide the Facility with MSDS and other PSM details for all chemicals or material that will be used in the course of the Contractor work before the commencement of this activity. Note: The solvent methylene chloride is not allowed on site, due to the substance-specific OSHA requirements that apply.

J. Work Clothing Requirements: ANSI Z89.1-approved Class B or E hard hats are to be worn with the bill forward in all non-administrative/non-office areas at all times. Durable, sturdy work shoes/boots are expected, preferably leather and steel or composite toed. Reflective safety vests, per Covanta S.P. No. 32 are required for entrance onto the tipping floor. All personnel who may enter the boiler, ash handling and/or chemical handling/storage areas are expected to be in 100% cotton pants and 100% long sleeve shirts and should not wear either outer or undergarments with synthetic fiber content. Contractor and Covanta personnel are expected to refer to Covanta S.P. No. 23A-1 for additional clothing requirements for job tasks potentially subject to electrical arc flash hazards. In these instances, it shall be the responsibility of both the Contractor and all Covanta personnel to ensure that involved personnel comply with the provisions of S.P. 23A-1, including the training requirements.

K. Lockout Tagout: Contractor personnel may be involved in lockout tagout under this Contract only to a limited extent, i.e., Contractor may be required to hang their own personal lock on the Covanta lockout board, per S.P. No. 15, to observe or witness a job function or piece of equipment. Any intent to perform a more detailed or rigorous job function shall require the Contractor to revert to S.P. No. 5 and its contents and requirements, prior to continuing the more rigorous work.

II. Worker Conduct

- A. **General Facility Rules:** The Contractor is responsible for the conduct of their employees. See Appendix A for major site-specific rules. The possession or use of alcohol, illegal substances/drugs and, firearms are strictly prohibited. Fighting or attempting bodily injury to another, being under the influence of alcohol and/or illegal drugs, conduct which violates the common decency or morality of the community, stealing, scavenging or pilfering any waste materials waiting to be processed, malicious mischief which results in the injury or destruction of company or employee property is also prohibited. Any persons found to be involved in any of the above activities, shall be disciplined by the Contractor management and may be removed or banned from the Facility by CE, Inc. Management. Other reasons for being removed or banned from working at Covanta include lack of safe work practices, failure to follow safety procedures, or poor, disruptive, problematic worker performance.

No Smoking Policy: Smoking is prohibited in company offices and facilities are non-smoking except for designated smoking areas. This policy applies to all employees, contractors, sub-contractors, temporary labor and visitors.

- B. **Sexual Harassment:** CE, Inc. prohibits the unlawful harassment of its employees. Actions, words, jokes or comments based on an individual's sex will not be tolerated. Sexually-oriented materials on site, i.e., books, photos, will not be tolerated. Likewise unwelcome sexual advances, requests for sexual favors and all other verbal or physical conduct of a sexual or otherwise offensive nature is prohibited.

Any personnel, who are found to be involved in any of the above activities, may be removed from the Facility by CE, Inc. Management.

III. Guidelines for Evaluating Contractor Health and Safety Performance and Programs

Just as CE, Inc. solicits bids from only those Contractors that are technically qualified, it also determines whether a Contractor has appropriate Health & Safety programs and procedures in place to comply with the specific work available for bid. The one page "Prospective Contractor Health and Safety Questionnaire" in the appendices is used for that purpose. It is to be completed by the contractor prior to commencement of work. Additionally, CE, Inc. may follow-up periodically regarding specific health and safety programs and practices.

IV. Initial Contractor Safety Briefing

Contractors are responsible for training their own personnel. Therefore, at the time of contract signing a CE employee will review Appendix D which is a checklist covering site-specific rules, hazards and the contents of this document with the contractor foreman/owner. The contractor will use this information to train their own employees before work commences.

Other Site Specific Requirements²

(Facility to Insert Site Specific Considerations in this Section)

² This form can be found in S.P. 5 – Contractor Safety Requirements, Appendix E.

**Appendix C
Prospective Contractor
Health & Safety Questionnaire Prior to Selecting a Contractor⁴**

Due to the nature of the work you may be bidding on in the future, Covanta Energy, Inc. (CE, Inc.) asks that you fill out this brief questionnaire regarding your company and return it to your Facility contact. These questions are asked so that we may be in compliance with all Local, State and Federal regulations.

Please answer the questions applicable to the work you would be doing.

-
1. Does your company have a written safety program?
Yes ___ No ___
 2. Do you have a designated Safety Manager who is in charge of Safety oversight for your company?
Yes ___ No ___ Name/Title and Phone if Yes _____
 3. Who is in charge of safety on the Facility site (Name/ Title and Phone)? _____
 4. Does your company have a written and enforced disciplinary procedure for employees regarding safety violations?
Yes ___ No ___
 5. If you use a subcontractor are they required to adhere to your company's safety policies and practices?
Yes ___ No ___
 6. What is your company's OSHA incident index for the last calendar year? _____ Year _____.
-

Company Name: _____

Print Name: _____ Title: _____

Signature

Date Signed

⁴ This form can be found in S.P. No. 5 – Contractor Safety Requirements, Appendix G.

Appendix D
Contractor Safety Briefing - Checklist and Signature Page⁵

(This checklist is to be reviewed with the Contractor Foreman or owner prior to the commencement of work.)

Contractor Name and Signature _____ Date: ____ / ____ / ____

I. General Safety Procedures

- Entering Facility
- Protective Work Clothing
- Housekeeping
- Personal Hygiene Practices
- Non-smoking policy
- Administrative Areas
- Hearing Protection
- Eye Protection
- Fire Alarms/Evacuation
- Fire Prevention
- Accident Reporting/First Aid Locations
- Hazard Communication (HAZCOM)
- Blood borne Pathogens
- Chemical Processes

- Work Clothing Requirements (a)
- Lockout Tagout

II. Worker Conduct

- General Facility Rules
- Sexual Harassment
- Contractor Ban Policy – Appendix B
– Contractor Violation Notification
Form
- Other Site Specific Requirements

III. Evaluating Contractor Health and Safety Performance – Appendix C - Prospective Contractor Questionnaire

(a) Work involving exposure to greater hazards shall revert to the more rigorous requirements contained in S.P. 5.

⁵ This form can be found in S.P. No. 5 – Contractor Safety Requirements, Appendix I.

Appendix E
ACCIDENT REPORT FORM - OSHA 301
(Use this or an equivalent OSHA 301 form to report all recordable accidents.)⁶

Facility: _____ Date: _____ Time of Injury: _____ a.m./p.m.

Name of Employer: _____ Type of Service: _____

Address of Employer: _____

Phone Number of Employer: _____

Injured Employee Name: _____ Title: _____

Home Address: _____ Home Phone #: _____

Supervisor's Name: _____ Title: _____

Did Injury Require: _____ First Aid _____ Medical Attention

If Medical Attention Required Name and Address of Medical Facility:

Location at Facility Where Injury Occurred: _____

Injured Employee Statement:

(Signature) Date: _____

Witness 1 - Name: _____ Witness 1 - Title: _____

Witness 1 - Statement: _____

(Signature) Date: _____

⁶ This form can be found in S.P. No. 4 - Accident Prevention Program, Appendix D.

Witness 2 – Name: _____ Witness 2 – Title: _____

Witness 2 – Statement: _____

(Signature) Date: _____

Corrective Action Taken: _____

TPA GL Claim#: _____

Phoned in by: _____ Date: _____

Report Reviewed By: _____

(Covanta Representative Signature) Date: _____

(Contractor Representative Signature) Date: _____

(Facility Manager or Chief Engineer) Date: _____

Please Attach Any Relevant Documents, Information, or other Accounts of Accident