PROJECT MANUAL

FOR

GENERATOR INSTALLATIONS IN RESIDENCE HALLS, STUDENT CENTERS & WESTSIDE CLASSROOM BUILDING DCS PROJECT NO. 289

BID NO. 2016-ERB-0312

MARCH 2016



FACILITIES PLANNING & ENGINEERING

WESTERN CONNECTICUT STATE UNIVERSITY 181 WHITE STREET DANBURY, CONNECTICUT 06810

WESTERN CONNECTICUT STATE UNIVERSITY GENERATOR INSTALLATIONS IN RESIDENCE HALLS, STUDENT CENTERS & WESTSIDE CLASSROOM BUILDING; DCS PROJECT NO. BI-RD 289

BID NO. 2016-ERB-0312

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INVITATION TO BID

Notice is hereby given that **WESTERN CONNECTICUT STATE UNIVERSITY** will accept bids for the following:

GENERATOR INSTALLATIONS FOR RESIDENCE HALLS, STUDENT CENTERS & WESTSIDE CLASSROOM BUILDING; DCS PROJECT NO. BI-RD 289

WCSU BID NO. 2016-ERB-0312

<u>Please Note</u>: This Invitation to Bid is reserved for contractors currently holding a certificate, with a General Building Construction – Group B Classification, issued through Connecticut's Department of Administrative Services' Prequalification Program. Bidders are advised that both the DAS Prequalification Certificate and Update (Bid) Statement must accompany the bid proposal; failure to do so will result in rejection of the bid. For information regarding the program, please contact the Construction Contractor Prequalification Program at 860-713-5280, or visit the State of Connecticut's Department of Administrative Services' web site at www.das.state.ct.us.

Western Connecticut State University is seeking bid proposals for the supply of all labor, materials, equipment and services required for the installation of six standby generator systems with associated transfer switches, purchased under a separate contact and supplied by the Owner. Generally, the project scope shall include plumbing and electrical work, welding, painting, patching, carpentry, site work, the installation of fences, gates, and plantings. Please note: <u>The CT Dept. of Labor's Prevailing Wage Rates shall apply to this project.</u>

The bidding contractor <u>must</u> possess the following qualifications: Not less than five years' experience in the installation of mechanical systems and equipment similar in scope and complexity to those required for the project, <u>and</u> successful completion of at least ten comparable scale projects.

Beginning April 11, 2016, plans and specifications will be available on the State of Connecticut's DAS Contracting Portal. Reference Bid No.: 2016-ERB-0312.

All contractors are required to visit the site and verify existing conditions. A mandatory pre-bid meeting is scheduled for Thursday, April 14, 2016 at 10:00 a.m., beginning in Room 202A of the Midtown Student Center, located on WCSU's Midtown Campus. The meeting will be followed with a walk-through of all installation site locations on both the Midtown and Westside Campuses. Free parking will be provided at WCSU's White Street Parking Garage on 181 White Street, Danbury, CT.

Any questions or discrepancies should be submitted in writing no later than Thursday, April 21, 2016 by 5:00 p.m., to the WCSU's Administrative Services/Purchasing Office, located on the lower level of University Hall, WCSU,181 White Street, Danbury, CT 06810; Attn: Esther Boriss; fax no. 203-837-8659. Responses to any and all inquiries shall be issued via addenda, no later than 5:00 p.m., Thursday, April 28, 2016. <u>Any and all addenda shall be posted on the DAS contracting portal.</u>

Sealed bids should be submitted to Ms. Esther Boriss, Associate Director, Administrative Services/Purchasing, University Hall, Lower Level, Western Connecticut State University, 181 White Street, Danbury, CT 06810. Bids should be submitted <u>on or before Thursday, May 5, 2016 by 2:30 p.m.</u> Bids will be opened publicly at the aforementioned time in the Purchasing Office. Bids received after that time will not be accepted. Interested parties are invited to attend. Bidders should submit bids in a sealed envelope with words, "<u>Sealed Bid No.</u> 2016-ERB-0312," and the due date on the lower left-hand corner of the envelope.

Bids are to be based on the work called for on the drawings and specifications for the subject project, as well as any addenda issued during the bid process. Bids showing informalities, qualifications or conditions may be rejected at the option of the University. Each bidder <u>must</u> note receipt of any Addenda or bulletins when submitting a bid. All bidders shall verify dimensions and conditions at the site and be responsible for satisfying himself as to all requirements of the contract.

Bids must be held for a period of 90 calendar days following the date of the bid opening. Following 90 calendar days, if attempted negotiations with the lowest bidder fail to result in a contract, the University reserves the right to re-bid the project.

All work shall commence within one week of issuance of contract or letter of intent; all shop drawings must be submitted to Owner within two weeks of issuance of contract. All preparation work must be completed no later than August 15, 2016. Final installation of generators, pending delivery, will be operational no later than thirty (30) days after delivery.

The University reserves the right to waive any technical defects in the bids, to reject any bids that do not conform to the terms described herein, and to accept or reject any part of any bid, and to reject all bids and, again, invite bids.

END

Campus Maps & Directions



Road Classroom Building Ives Concert Park Í Visual & Performing Arts Center S University Boulevard SHITTLE BUS Sallery Lake Avenu Campus Center Ġ. am 1 Observatory Centennial Hall nic puș 🛃 🄬 🕽 Grasso Hall One Way → Pinney Hall suminus Parking Garage CRASSC RESIDEN PWIKIN ٩ ۲ PINNEY

Wheelchair Access 🌖 Emergency Callbox 🛛 🛃 Handicapped Parking

To Midtown campus (181 White Street)

From the East: Take Exit 5 off I-84 to first traffic light (Clapboard Ridge Road); turn right and continue on Main Street to White Street (fifth traffic light); turn left onto White Street and continue one half mile to campus on left.

From the West: Take Exit 5 off I-84 to first traffic light (Main Street); turn right and continue on Main Street to White Street (fourth traffic light); turn left onto White Street and continue one half mile to campus on left. Visitor parking is available in the lot adjacent to Old Main on the Midtown campus.

To Westside campus (43 Lake Ave. Extension)

Take Exit 4 off I-84; turn right onto Lake Avenue. Travel approximately one mile to campus entrance on right.

Campus-to-Campus

Map is not to scale

Midtown to Westside: Follow White Street and take a right onto Main Street (third traffic light). Follow Main Street to third traffic light (Main Street becomes Clapboard Ridge). Turn left onto I-84 West. Take Exit 4 off I-84. Turn right onto Lake Avenue. Travel approximately one mile. Campus entrance is on the directly across from Stop & Shop. General parking is available along University Boulevard.

Westside to Midtown: Turn left onto Lake Avenue for approximately one mile. Turn left onto I-84 East (third traffic light). Take Exit 5 off I-84 to first traffic light (Main Street). Turn right and continue on Main Street to White Street (fourth traffic light). Turn left onto White Street and continue one half mile. The campus is on the left.



INSTRUCTIONS TO BIDDERS

A. Bids are to be based on the work called for on the drawings and specifications for the subject project, as well as any addenda issued during the bid process. Bids showing informalities, qualifications or conditions may be rejected at the option of the University.

The University reserves the right to waive any technical defects in the bids, to reject any bids that do not conform to the terms described herein, and to accept or reject any part of any bid, and to reject all bids and again invite bids.

- B. Time limits will be as here-in-forth set:
 - 1. All work shall commence within one week of issuance of contract or letter of intent.
 - 2. All shop drawings must be submitted to the Owner within two weeks of issuance of contract.
 - 3. All preparation work must be completed no later than August 15, 2016.
 - 4. Final installation of generators, pending delivery, will be operational no later than thirty (30) days after delivery.
- C. <u>Addenda</u> Any addenda issued to this bid will be posted on the State of Connecticut Department of Administrative Services' website bid portal, under Western Connecticut State University's (WCSU) bid postings. The DAS website address is <u>www.das.state.ct.us</u>. Each bidder <u>must</u> note receipt of any Addenda or bulletins when submitting a bid.
- D. The bidding documents are as follows:
 - 1. Project Manual entitled "Generator Installations in Residence Halls, Student Centers & Westside Classroom Building" dated March 2016.
 - 2. Drawings entitled "Generator Installation at Western Connecticut State University" dated March 31, 2016.
- E. The Project Manual contains the following:

<u>WCSU</u> Bid Form – This will contain the costs to provide all of the work shown or called for in the contract documents.

<u>Required Forms</u> – All other required documentation must be submitted, as per the "Bid Submission Checklist Form."

<u>Technical Specifications</u> – prepared by CHA (Clough Harbour Assoc.)

- F. Bids must be held for a period of 90 calendar days following the date of the bid opening. Following 90 calendar days, if attempted negotiations with the lowest bidder fail to result in a contract, the University reserves the right to re-bid the project.
- G. All bidders will verify dimensions and conditions at the site and be responsible for satisfying himself as to all requirements of the contract.
- H. All bids will assume that any and all electrical work shall be executed by licensed electricians, in accordance with current codes.
- I. <u>Inquiry Period</u> Any questions or discrepancies should be submitted in writing by 5:00 p.m., Thursday, April 21, 2016, to the Dept. of Administrative Services/Purchasing Office, located on the lower level of University Hall, WCSU,181 White Street, Danbury, CT 06810; Attn: Esther Boriss; fax no. 203-837-8659.
- J. <u>Addenda Deadline</u>: Responses to any and all inquiries shall be issued via addenda, no later than 5:00 p.m, Thursday, April 28, 2016. <u>Any and all addenda shall be posted on the DAS contracting portal.</u>
- K. <u>Bid Opening</u> Sealed bids should be submitted to Ms. Esther Boriss, Associate Director, Administrative Services/Purchasing, University Hall, Lower Level, Western Connecticut State University, 181 White Street, Danbury, CT 06810. Bids should be submitted <u>on or before Thursday, May 5, 2016 by 2:30 p.m.</u> Bids will be opened publicly at the aforementioned time in the Purchasing Office. Bids received after that time will not be accepted. Interested parties are invited to attend. Bidders should submit bids in a sealed envelope with words, "Sealed Bid No. 2016-ERB-0312," and the due date.

END

WESTERN CONNECTICUT STATE UNIVERSITY BID SUBMISSION CHECKLIST FORM

Project: Generator Installations in Residence Halls, Student Centers & Westside Classroom Building Bid No.: 2016-ERB-0312

Listed below are the following forms/documentation that <u>must</u> be completed and submitted in the bid package before the official bid opening. Failure to comply may result in the disqualification of the bid submission.

| WCSU Bid | Form |
|----------|------|
| | |

- DAS Contractor Prequalification Certificate
-] DAS Contractor Prequalification Update (Bid) Statement
- OPM Ethics Form 5 Consulting Agreement Affidavit
- OPM Ethics Form 6 Affirmation of receipt of State Ethics Laws Summary
- OPM Ethics Form 7 Iran Certification
- CHRO Contract Compliance Regulations Notification to Bidders
- CHRO Form of Proposal Set-Aside Worksheet
- State Elections Enforcement Commission SEEC Form 10
- Bidders Qualification Statement
- Bid Bond

Certificate of Insurance

CT Dept. of Labor - Prevailing Wage Rates Forms

- CT Dept. of Labor Contractors Wage Certification Form
- CT Dept. of Labor Contracting Agency Certification Form

Below are the following forms/documentation that are to be submitted at time of Contract Execution:

-] OPM Ethics Form 1 Gift and Campaign Contribution Certification
- OPM Ethics Form 5 Consulting Agreement Affidavit
- OPM Ethics Form 6 Affirmation of Receipt of State Ethics Laws Summary
- OPM Nondiscrimination Certification Form C Affidavit by Entity
-] OPM Nondiscrimination Certification Form D or Form E (as applicable)
- Performance Bond
- Labor and Materials Payment Bond
- Contractor's proposed construction schedule in format acceptable to the University

WESTERN CONNECTICUT STATE UNIVERSITY

BID FORM

| BIDDER: | | |
|---------|---------|---------------|
| | | |
| | Address | Telephone No. |

BID PROPOSAL FOR:

GENERATOR INSTALLATIONS IN RESIDENCE HALLS, STUDENT CENTERS & WESTSIDE CLASSROOM BUILDING; DCS PROJECT NO. BI-RD 289 BID NO. 2016-ERB-0312

ADDRESSED TO:

Ms. Esther Boriss Associate Director of Administrative Services/Purchasing Western Connecticut State University, 181 White Street, Danbury, CT 06810

In preparing this Bid, we have carefully examined the Bidding Documents for this Work. We have visited the site and noted the conditions affecting the Work.

The Bidding Documents referred to include Drawings and Project Manual prepared by Western Connecticut State University and entitled:

"Generator Installations in Residence Halls, Student Centers & Westside Classroom Building; DCS Project No. 289; March 2016"

We acknowledge receiving the following Addenda issued by the Architect:

No. 1 dated _____ No. 2 dated _____ No. 3 dated _____ No. 4 dated _____

BASE BID:

We propose to perform the Work described in the Bidding Documents, in keeping with the definitions of Article 1 of the Instructions to Bidders, for the Base Bid Sum of :

_____ \$____

Dollars

TIME OF COMPLETION:

We agree that all preparation work will be completed no later than August 15, 2016.

We agree that final installation of generators, pending delivery, will be operational no later than thirty (30) days after delivery.

BID ACCEPTANCE:

We agree that this proposal shall not be withdrawn for a period of ninety calendar days after date of submittal. We understand that Owner reserves the right to accept any Bid, reject any or all Bids, and to waive any informality in the Bidding. At the time of execution of the contract, we shall furnish all required documentation as listed on the Bid Submission Checklist Form.

| Firm Name: | |
|-----------------------------------|---|
| Address: | |
| By: | Title: |
| (Name Typed) Signature: | Date: |
| The Bidder is a/an (individual) (| (nartnership) (corporation) Names and titles of other offic |

The Bidder is a/an (individual) (partnership) (corporation). Names and titles of other officers or partners are:

(For corporation, give State of incorporation and affix corporate seal.)

State of Connecticut

Department of Administrative Services

Construction Contractor Prequalification Program

The DAS Contractor Prequalification Program (C.G.S §4a-100) requires all contractors to prequalify before they can bid on a contract or perform work pursuant to a contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or any other public work by the state or a municipality, estimated to cost more than \$500,000 and which is funded in whole or in part with state funds, except a public highway or bridge project or any other construction project administered by the Department of Transportation.

Construction Contractor Prequalification 165 Capitol Avenue,5th Floor South Hartford, CT 06106 (860) 713-5280 Fax: (860) 622-2867 e-mail: <u>DAS.Prequalification@ct.gov</u> Contact:Prequalification Program

State of Connecticut Department of Administrative Services Contractor Prequalification Program Required Prequalification Forms

Directions for retrieving your Prequalification Certificate:

In order to print out your Prequalification Certificate, please go to the On-Line Contractor Directory:

http://www.biznet.ct.gov/prequalSearch/

Once in the directory, just type in your company name and click on "Go" to pull up your company. When your company information appears, you will notice that your company name is shown as a blue link. Just click on this link and it will take you to your Prequalification Certificate.

<u>Please Note</u>: When you submit a bid, you must include with your other documents the following:

- A copy of your Prequalification Certificate. This document may be found and completed on-line at the Contractor Prequalification Application website.
- An Update (Bid) Statement This document may be found and completed on-line at the Contractor Prequalification Application website.

Should you have any questions or concerns, please contact the DAS' Contractor Prequalification Program at 860-713-5280.

Web Address: <u>http://www.das.state.ct.us</u>



STATE OF CONNECTICUT GIFT AND CAMPAIGN CONTRIBUTION CERTIFICATION

Written or electronic certification to accompany a State contract with a value of 50,000 or more, pursuant to C.G.S. §§ 4-250, 4-252(c) and 9-612(f)(2) and Governor Dannel P. Malloy's *Executive Order 49.*

INSTRUCTIONS:

Complete all sections of the form. Attach additional pages, if necessary, to provide full disclosure about any lawful campaign contributions made to campaigns of candidates for statewide public office or the General Assembly, as described herein. Sign and date the form, under oath, in the presence of a Commissioner of the Superior Court or Notary Public. Submit the completed form to the awarding State agency at the time of initial contract execution and if there is a change in the information contained in the most recently filed certification, such person shall submit an updated certification either (i) not later than thirty (30) days after the effective date of such change or (ii) upon the submittal of any new bid or proposal for a contract, whichever is earlier. Such person shall also submit an accurate, updated certification not later than fourteen days after the twelve-month anniversary of the most recently filed certification or updated certification.

CHECK ONE: Initial Certification 12 Month Anniversary Update (Multi-year contracts only.)

Updated Certification because of change of information contained in the most recently filed certification or twelve-month anniversary update.

GIFT CERTIFICATION:

As used in this certification, the following terms have the meaning set forth below:

- "Contract" means that contract between the State of Connecticut (and/or one or more of it agencies or instrumentalities) and the Contractor, attached hereto, or as otherwise described by the awarding State agency below;
- If this is an Initial Certification, "Execution Date" means the date the Contract is fully executed by, and becomes effective between, the parties; if this is a twelve-month anniversary update, "Execution Date" means the date this certification is signed by the Contractor;
- 3) "Contractor" means the person, firm or corporation named as the contactor below;
- 4) "Applicable Public Official or State Employee" means any public official or state employee described in C.G.S. §4-252(c)(1)(i) or (ii);
- 5) "Gift" has the same meaning given that term in C.G.S. § 4-250(1);
- 6) "Principals or Key Personnel" means and refers to those principals and key personnel of the Contractor, and its or their agents, as described in C.G.S. §§ 4-250(5) and 4-252(c)(1)(B) and (C).

I, the undersigned, am a Principal or Key Personnel of the person, firm or corporation authorized to execute this certification on behalf of the Contractor. I hereby certify that, no gifts were made by (A) such person, firm, corporation, (B) any principals and key personnel of the person firm or corporation who participate substantially in preparing bids, proposals or negotiating state contracts or (C) any agent of such, firm, corporation, or principals or key personnel who participates substantially in preparing bids, proposals or negotiating state contracts, to (i) any public official or state employee of the state agency or quasi-public agency soliciting bids or proposals for state contracts or the negotiation or award of state contracts or (ii) any public official or state employee of any other state agency, who has supervisory or appointing authority over such state agency or quasi-public agency.

I further certify that no Principals or Key Personnel know of any action by the Contractor to circumvent (or which would result in the circumvention of) the above certification regarding **Gifts** by providing for any other Principals, Key Personnel, officials, or employees of the Contractor, or its or their agents, to make a **Gift** to any Applicable Public Official or State Employee. I further certify that the Contractor made the bid or proposal for the Contract without fraud or collusion with any person.

CAMPAIGN CONTRIBUTION CERTIFICATION:

I further certify that, on or after January 1, 2011, neither the Contractor nor any of its principals, as defined in C.G.S. § 9-612(f)(1), has made any **campaign contributions** to, or solicited any contributions on behalf of, any exploratory committee, candidate committee, political committee, or party committee established by, or supporting or authorized to support, any candidate for <u>statewide public office</u>, in violation of C.G.S. § 9-612(f)(2)(A). I further certify that **all lawful campaign contributions** that have been made on or after January 1, 2011 by the Contractor or any of its principals, as defined in C.G.S. § 9-612(f)(1), to, or solicited on behalf of, any exploratory committee, candidate committee, political committee, or party committee established by, or supporting or authorized to support any candidates for <u>statewide public office</u> or the <u>General Assembly</u>, are listed below:

| Lawful Campaign Co | ontributions to (| Candidates for | Statewide | Public Office: |
|--------------------|-------------------|----------------|-----------|-----------------------|
|--------------------|-------------------|----------------|-----------|-----------------------|

| Contribution Date | Name of Contributor | <u>Recipient</u> | <u>Value</u> | <u>Description</u> |
|-------------------|---------------------|------------------|--------------|--------------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Lawful Campaign Contributions to Candidates for the General Assembly:

| Contribution Date | Name of Contributor | <u>Recipient</u> | <u>Value</u> | Description |
|---------------------|------------------------|------------------------|------------------|--------------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Sworn as true to th | e best of my knowledge | and belief, subject to | the penalties of | false statement. |
| Printed Contractor | Name | Printed N | ame of Authori | zed Official |
| Signature of Auth | orized Official | - | | |
| Subscribed and a | cknowledged before r | ne this day | of | , 20 |
| | c | ommissioner of the | Superior Court | (or Notary Public) |
| | M | ly Commission Expi | res | |



Affidavit to accompany a bid or proposal for the purchase of goods and services with a value of 50,000 or more in a calendar or fiscal year, pursuant to Connecticut General Statutes §§ 4a-81(a) and 4a-81(b). For sole source or no bid contracts the form is submitted at time of contract execution.

INSTRUCTIONS:

If the bidder or vendor has entered into a consulting agreement, as defined by Connecticut General Statutes § 4a-81(b)(1): Complete all sections of the form. If the bidder or contractor has entered into more than one such consulting agreement, use a separate form for each agreement. Sign and date the form in the presence of a Commissioner of the Superior Court or Notary Public. If the bidder or contractor has not entered into a consulting agreement, as defined by Connecticut General Statutes § 4a-81(b)(1): Complete only the shaded section of the form. Sign and date the form in the presence of a Commissioner of Notary Public.

Submit completed form to the awarding State agency with bid or proposal. For a sole source award, submit completed form to the awarding State agency at the time of contract execution.

This affidavit must be amended if there is any change in the information contained in the most recently filed affidavit not later than (i) thirty days after the effective date of any such change or (ii) upon the submittal of any new bid or proposal, whichever is earlier.

AFFIDAVIT: [Number of Affidavits Sworn and Subscribed On This Day: _____]

I, the undersigned, hereby swear that I am a principal or key personnel of the bidder or contractor awarded a contract, as described in Connecticut General Statutes § 4a-81(b), or that I am the individual awarded such a contract who is authorized to execute such contract. I further swear that I have not entered into any consulting agreement in connection with such contract, **except for the agreement listed below**:

| Consultant's Name and Title | | Name of Firm (if applicable) | | |
|-----------------------------|---------------------------------|--|-----------------------|--|
| Start Date | End Date | Cost | _ | |
| Description of Servi | ces Provided: | | | |
| Is the consultant a | former State employee or forme | er public official? | □ NO | |
| If YES: Name of Fo | ormer State Agency | Termination Date of En | nployment | |
| Sworn as true to th | e best of my knowledge and bel | lief, subject to the penalties of | false statement. | |
| Printed Name of Bio | dder or Contractor Signature of | f Principal or Key Personnel | Date | |
| | Printed Name | e (of above) | Awarding State Agency | |
| Sworn and subsci | ribed before me on this | day of, | 20 | |
| | Commiss or Notar | sioner of the Superior Court y Public | ! | |
| | | | _ | |

My Commission Expires



STATE OF CONNECTICUT AFFIRMATION OF RECEIPT OF STATE ETHICS LAWS SUMMARY

Written or electronic affirmation to accompany a large State construction or procurement contract, having a cost of more than \$500,000, pursuant to Connecticut General Statutes §§ 1-101mm and 1-101qq

INSTRUCTIONS:

Complete all sections of the form. Submit completed form to the awarding State agency or contractor, as directed below.

CHECK ONE:

- □ I am a person seeking a large State construction or procurement contract. I am submitting this affirmation to the awarding State agency with my bid or proposal. [Check this box if the contract will be awarded through a competitive process.]
- □ I am a contractor who has been awarded a large State construction or procurement contract. I am submitting this affirmation to the awarding State agency at the time of contract execution. [Check this box if the contract was a sole source award.]
- ☐ I am a subcontractor or consultant of a contractor who has been awarded a large State construction or procurement contract. I am submitting this affirmation to the contractor.
- I am a contractor who has already filed an affirmation, but I am updating such affirmation either (i) no later than thirty (30) days after the effective date of any such change or (ii) upon the submittal of any new bid or proposal, whichever is earlier.

IMPORTANT NOTE:

Within fifteen (15) days after the request of such agency, institution or quasi-public agency for such affirmation contractors shall submit the affirmations of their subcontractors and consultants to the awarding State agency. Failure to submit such affirmations in a timely manner shall be cause for termination of the large State construction or procurement contract.

AFFIRMATION:

I, the undersigned person, contractor, subcontractor, consultant, or the duly authorized representative thereof, affirm (1) receipt of the summary of State ethics laws* developed by the Office of State Ethics pursuant to Connecticut General Statutes § 1-81b and (2) that key employees of such person, contractor, subcontractor, or consultant have read and understand the summary and agree to comply with its provisions.

* The summary of State ethics laws is available on the State of Connecticut's Office of State Ethics website.

| Signature | Date | |
|-------------------------------------|-------|-----------|
| Printed Name | Title | |
| Firm or Corporation (if applicable) | | |
| Street Address | City | State Zip |
| | | |



STATE OF CONNECTICUT

Written or electronic PDF copy of the written certification to accompany a large state contract pursuant to P.A. No. 13-162 (Prohibiting State Contracts With Entities Making Certain Investments In Iran)

Respondent Name:

П

INSTRUCTIONS:

CHECK ONE:

Initial Certification. Amendment or renewal.

A. Who must complete and submit this form. Effective October 1, 2013, this form must be submitted for any large state contract, as defined in section 4-250 of the Connecticut General Statutes. This form must always be submitted with the bid or proposal, or if there was no bid process, with the resulting contract, regardless of where the principal place of business is located.

Pursuant to P.A. No. 13-162, upon submission of a bid or prior to executing a large state contract, the certification portion of this form must be completed by any corporation, general partnership, limited partnership, limited liability partnership, joint venture, nonprofit organization or other business organization whose principal place of business is located outside of the United States. United States subsidiaries of foreign corporations are exempt. For purposes of this form, a "foreign corporation" is one that is organized and incorporated outside the United States of America.

Check applicable box:

Respondent's principal place of business is within the United States or Respondent is a United States subsidiary of a foreign corporation. Respondents who check this box are not required to complete the certification portion of this form, but must submit this form with its Invitation to Bid ("ITB"), Request for Proposal ("RFP") or contract package if there was no bid process.

Respondent's principal place of business is outside the United States and it is not a United States subsidiary of a foreign corporation. CERTIFICATION required. Please complete the certification portion of this form and submit it with the ITB or RFP response or contract package if there was no bid process.

B. Additional definitions.

- "Large state contract" has the same meaning as defined in section 4-250 of the Connecticut General Statutes; 1)
- 2) "Respondent" means the person whose name is set forth at the beginning of this form; and
- "State agency" and "quasi-public agency" have the same meanings as provided in section 1-79 of the Connecticut General 3) Statutes.

C. Certification requirements.

No state agency or quasi-public agency shall enter into any large state contract, or amend or renew any such contract with any Respondent whose principal place of business is located outside the United States and is not a United States subsidiary of a foreign corporation unless the Respondent has submitted this certification.

Complete all sections of this certification and sign and date it, under oath, in the presence of a Commissioner of the Superior Court, a Notary Public or a person authorized to take an oath in another state.

CERTIFICATION:

I, the undersigned, am the official authorized to execute contracts on behalf of the Respondent. I certify that:

 Respondent has made no direct investments of twenty million dollars or more in the energy sector of Iran on or after October 1, 2013, as described in Section 202 of the Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010.

 Respondent has either made direct investments of twenty million dollars or more in the energy sector of Iran on or after October 1, 2013, as described in Section 202 of the Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010, or Respondent made such an investment prior to October 1, 2013 and has now increased or renewed such an investment on or after said date, or both.

Sworn as true to the best of my knowledge and belief, subject to the penalties of false statement.

| Printed Respondent Name | Printed Name of Authorized Official |
|--|-------------------------------------|
| Signature of Authorized Official | |
| Subscribed and acknowledged before me this _ | day of |

Commissioner of the Superior Court (or Notary Public)

, 20____.



STATE OF CONNECTICUT NONDISCRIMINATION CERTIFICATION – <u>Affidavit</u> <u>By Entity</u> For Contracts Valued at <u>\$50,000 or More</u>

Documentation in the form of an <u>affidavit signed under penalty of false statement by a chief executive</u> officer, president, chairperson, member, or other corporate officer duly authorized to adopt corporate, company, or partnership policy that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended

INSTRUCTIONS:

For use by an <u>entity</u> (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at $\pm 50,000$ or more for any year of the contract. Complete all sections of the form. Sign form in the presence of a Commissioner of Superior Court or Notary Public. Submit to the awarding State agency prior to contract execution.

AFFIDAVIT:

I, the undersigned, am over the age of eighteen (18) and understand and appreciate the obligations of

| an oath. I am | of | | | , an entity |
|--|-------------------|---------------------|--------------------|----------------|
| Signatory's Title | | Name of I | | |
| duly formed and existing under the law | vs of | | | |
| | Nam | e of State or Com | monwealth | |
| I certify that I am authorized to execut | te and deliver th | is affidavit on beh | alf of | |
| | and that | | | |
| Name of Entity | | Name of I | Entity | |
| has a policy in place that complies with | the nondiscrim | ination agreement | s and warranties c | of Connecticut |
| General Statutes §§ 4a-60(a)(1)and 4a | a-60a(a)(1), as | amended. | | |
| | | | | |
| Authorized Signatory | | | | |
| | | | | |
| | | | | |
| Printed Name | | | | |
| | | | | |
| Sworn and subscribed to before me | e on this | day of | , 20 | |
| | | | | |
| | | | | |
| Commissioner of the Superior Cour Notary Public | t/ | Commission | Expiration Date | |
| | | | | |



STATE OF CONNECTICUT NONDISCRIMINATION CERTIFICATION – <u>New Resolution</u> <u>By Entity</u> For Contracts Valued at <u>\$50,000 or More</u>

Documentation in the form of a <u>corporate</u>, <u>company</u>, <u>or partnership policy adopted by resolution of the</u> <u>board of directors</u>, <u>shareholders</u>, <u>managers</u>, <u>members or other governing body</u> of a contractor that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended

INSTRUCTIONS:

For use by an <u>entity</u> (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at <u>\$50,000 or more</u> for any year of the contract. Complete all sections of the form. Submit to the awarding State agency prior to contract execution.

CERTIFICATION OF RESOLUTION:

| | , of | |
|----------------|--|---|
| Title | N | Name of Entity |
| laws of | Name of | State or Commonwealth |
| copy of a res | olution adopt | ed on the day of |
| ody of | Name of Entit | ty , |
| vernance and | management | and the laws of |
| further certif | y that such re | solution has not been modified |
| | | |
| Nan | ne of Entity | comply with the |
| arranties of (| Connecticut Ge | eneral Statutes |
| amended. | | |
| | | |
| this | day of | , 20 |
| | | |
| | Date | |
| | | |
| | Title laws of copy of a res ody of remance and further certif Nam arranties of C amended. this | Title, or Title, or Name of Date Title, or Name of Copy of a resolution adopt Name of Entity Name of Entity arranties of Connecticut Ge amended. Date |



STATE OF CONNECTICUT NONDISCRIMINATION CERTIFICATION – <u>Prior Resolution</u> <u>By Entity</u> For Contracts Valued at <u>\$50,000 or More</u>

Documentation in the form of a <u>corporate</u>, <u>company</u>, <u>or partnership policy adopted by a prior resolution</u> of the board of directors, shareholders, managers, members or other governing body</u> of a contractor that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended

INSTRUCTIONS:

For use by an <u>entity</u> (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at <u>\$50,000 or more</u> for any year of the contract. Complete all sections of the form. Attach copy of previously adopted resolution (*State of CT, Nondiscrimination Certification, Form D: New Resolution*). Submit all documentation to the awarding State agency prior to contract execution.

CERTIFICATION OF PRIOR RESOLUTION:

I, the undersigned, am a duly authorized corporate officer or member of $_$

Name of Entity

- I have reviewed the attached prior resolution. I certify that:
- (1) the attached prior resolution complies with the nondiscrimination agreements and warranties of

Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended; and

(2) the prior resolution remains in full force and effect on the date this documentation is submitted to the

awarding State agency.

Authorized Signatory

Printed Name

Date

Title

RESERVED FOR STATE USE

I, the undersigned head of the awarding State agency, or designee, certify that the attached prior resolution complies with the nondiscrimination agreements and warranties of Connecticut General Statutes \S 4a-60(a)(1) and 4a-60a(a)(1), as amended.

Signature of Agency Head (or designee)

Date



Cit.gov

To review the list of certified small and minority businesses link to:

For Contract Compliance Forms and Reports link here.

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25 Sigourney Street, Hartford, Connecticut 06106 / Phone: 860-541-3400

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http://www.ct.gov/chro/cwp/view.asp?a=2525&Q=315904&chroPNavCtr=|
COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES CONTRACT COMPLIANCE REGULATIONS NOTIFICATION TO BIDDERS

(Revised 09/17/07)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans ... (2) Hispanic Americans ... (3) persons who have origins in the Iberian Peninsula ... (4)Women ... (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians ..." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements:

- (a) the bidder's success in implementing an affirmative action plan;
- (b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
- (c) the bidder's promise to develop and implement a successful affirmative action plan;
- (d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
- (e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following <u>BIDDER CONTRACT COMPLIANCE MONITORING REPORT</u> must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) Definition of Small Contractor

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding ten million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving of written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category.

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

3) Definition of Racial and Ethnic Terms (as used in Part IV Bidder Employment Information) (Page 3)

| <u>White</u> (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. <u>Black</u> (not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa. <u>Hispanic</u> - All persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or | <u>Asian or Pacific Islander</u> - All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa. <u>American Indian or Alaskan Native</u> - All persons having origins in any of the original peoples of North America and |
|---|--|
| Central or South American, or other Spanish culture or | origins in any of the original peoples of North America, and |
| origin, regardless of race. | who maintain cultural identification through tribal affiliation or community recognition. |

BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART I - Bidder Information

| Company Name Street Address City & State Chief Executive | Bidder Federal Employer Identification Number Or Social Security Number |
|---|--|
| Major Business Activity (brief description) | Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor. Yes No -Bidder is a minority business enterprise Yes No (If yes, check ownership category) Black Hispanic Asian American_ American Indian/Alaskan Native Iberian Peninsula Individual(s) with a Physical Disability Female |
| Bidder Parent Company (If any) | - Bidder is certified as above by State of CT Yes_ No_ |
| Other Locations in Ct. (If any) | |

PART II - Bidder Nondiscrimination Policies and Procedures

| 1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes_ No | 7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes_ No_ |
|--|--|
| 2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? YesNo | 8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? YesNo |
| 3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? | 9. Does your company have a mandatory retirement age for all employees? YesNo |
| | |
| 4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes_ No_ | 10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? YesNoNA |
| 5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes_ No_ | 11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes_No_NA_ |
| 6. Does your company have a collective bargaining agreement with workers? Yes No 6a. If yes, do the collective bargaining agreements contain non-discrim ination clauses covering all workers? Yes No | 12. Does your company have a written affirmative action Plan? Yes_ No_ If no, please explain. |
| 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? YesNo | 13. Is there a person in your company who is responsible for equal employment opportunity? Yes_No_ If yes, give name and phone number. |

1. Will the work of this contract include subcontractors or suppliers? Yes_No_

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above?

Yes__No__

PART IV - Bidder Employment Information

| JOB CATEGORY * | OVERALL TOTALS | WH (not of I origin) | IITE Hispanic | BLA (not of Hi origin) | CK ispanic | HISPA | NIC | ASIAN of ISLANDI | r PACIFIC ER | AMERICAN ALASKAN N | INDIAN or IATIVE |
|--|-------------------|----------------------------|------------------|------------------------------|---------------|---------|-----------|---------------------|-----------------|-----------------------|---------------------|
| | | Male | Female | Male | Female | Male | Female | Male | Female | male | female |
| Management | | | | | | | | | | | |
| Business & Financial Ops | | | | | | | | | | | |
| Marketing & Sales | | | | | | | | | | | |
| Legal Occupations | | | | | | | | | | | |
| Computer Specialists | | | | | | | | | | | |
| Architecture/Engineering | | | | | | | | | | | |
| Office & Admin Support | | | | | | | | | | | |
| Bldg/ Grounds Cleaning/Maintenance | | | | | | | | | | | |
| Construction & Extraction | | | | | | | | | | | |
| Installation , Maintenance & Repair | | | | | | | | | | | |
| Material Moving Workers | | | | | | | | | | | |
| Production Occupations | | | | | | | | | | | |
| TOTALS ABOVE | | | | | | | | | | | |
| Total One Year Ago | | | | | | | | | | | |
| | FORM | AL ON THE J | OB TRAINEES (I | ENTER FIGUR | ES FOR THE SA | ME CATE | GORIES AS | ARE SHOWN A | BOVE) | | |
| Apprentices | | | | | | | | | | | |
| Trainees | | | | | | | | | | | |

Date:

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

PART V - Bidder Hiring and Recruitment Practices

| Which of the following recruitment sources are used by you? (Check yes or no, and report percent used) | | | 2. Check (X) any of the below listed requirements that you use as a hiring qualification(X) | | 3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination | |
|--|-----|----|--|--|---|--|
| SOURCE | YES | NO | % of applicants provided by source | | | |
| State Employment Service | | | | | Work Experience | |
| Private Employment Agencies | | | | | Ability to Speak or Write English | |
| Schools and Colleges | | | | | Written Tests | |
| Newspaper Advertisement | | | | | High School Diploma | |
| Walk Ins | | | | | College Degree | |
| Present Employees | | | | | Union Membership | |
| Labor Organizations | | | | | Personal Recommendation | |
| Minority/Community Organizations | | | | | Height or Weight | |
| Others (please identify) | | | | | Car Ownership | |
| | | | | | Arrest Record | |
| | | | | | Wage Garnishments | |

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

| (Signature) | (Title) | (Date Signed) | (Telephone) |
|-------------|---------|---------------|-------------|
| | | | |

WESTERN CONNECTICUT STATE UNIVERSITY

NOTICE OF CHANGES TO THE THE CONNECTICUT COMMISSION ON HUMAN RIGHTS & OPPORTUNITIES SELF-PERFORMANCE & SUB-CONTRACTING REQUIREMENTS FOR THE SUPPLIER DIVERSITY (SET-ASIDE SBE/MBE) PROGRAM

The contractor who is selected to perform this state project must file and receive an approved Affirmative Action Plan by the Commission of Human Rights and Opportunities. This project is subject to the State Set-Aside goals and new self- performance and subcontracting requirements.

The contractor selected to perform this state project needs to solicit multiple bids per subcontract (class of work) from an assorted variety of subcontractors, non-trade related service providers, ethnic minority, woman, certified by State of CT. Dept. of Administrative Services Supplier Diversity (Set-Aside) Program.

Please note the following **NEW STATUTORY CHANGES TO** 4a-60g, effective October 1, 2013 as it relates to **Self-Performance & Subcontracting Requirements**

P. A. 13-304 increases the percentages of work required to be performed by any prime SBE/MBE company that is awarded a contract under the set-aside statutes. Previously, a company awarded a set-aside contract was required to self-perform at least 15% of such contract; it will now be required to self-perform at least 30%. Further, SBEs and MBEs that subcontract some of the work under their set-aside contracts will be required to subcontract at least 50% of the remaining work (i.e. the work not self-performed by the prime) to SBEs and MBEs, respectively, instead of 25%, under current law. Please note that the 50% requirement applies to the work subcontracted; in other words, the percentage to be self-performed by the prime contractor cannot be used to accomplish the 50% requirement.

• Example: If an SBE is awarded a \$100,000 state contract under the set-aside statutes, that SBE will be required to perform at least \$30,000 of the work under the contract with its own workforce. If the SBE self-performs \$30,000 of the work, and chooses to subcontract the remainder, the SBE must subcontract at least \$35,000 of the work to another certified SBE (50% of the remaining \$70,000 on the contract).

The CHRO Form of Proposal Set-Aside Worksheet <u>must</u> be submitted with the bid package.

∞

CHRO Form of Proposal

Western Connecticut State University Bid # 2016-ERB-0312 **Generator Installations in Residence Halls** Student Centers & Westside Classroom Building

| | Subcontractor Name | Class of | SBE | MBE | Prime Contractor | Subcontract |
|----|------------------------|------------------------------|-----------------------------|---------------------------|----------------------|-------------|
| | | work | | | self performing \$\$ | amounts |
| 1 | | | | | \$ | |
| 2 | | | | | | \$ |
| 3 | | | | | | \$ |
| 4 | | | | | | \$ |
| 5 | | | | | | \$ |
| 6 | | | | | | \$ |
| 7 | | | | | | \$ |
| 8 | | | | | | \$ |
| 9 | Prime Contractor Total | | | | 0 | |
| 10 | SBE Subtotal | Add SBE sub above list an | contract an d enter tota | nounts fro al at right | m | \$ |
| 11 | MBE/WBE Subtotal | Add MBE/W | BE subcont r total to th | ract amou e right | nts from the | \$ |
| 12 | Lump Sum base bid | Enter total lu form | ımp sum ba | ise bid fro | m bid submittal | \$ |
| 13 | SBE Percentage | Divide line 1 | 0 by line 12 | . Enter % t | to the right | % |
| 14 | MBE/WBE Percentage | Divide line 1 | 1 by line 12 | . Enter % t | to the right. | % |

Set Aside Worksheet

In determining and ensuring compliance with CHRO requirements this worksheet must be submitted as part of the bid submittal package. Failure to do so may be grounds for disqualification of the bid. Compliance determination shall initially be based on the base bid sum. However, for bid solicitations requiring acceptance of Alternates or Supplemental bids, a revised worksheet shall be required prior to issuance of contract. Small Business Set Aside requires for this project: Minimum 25% of total lump sum to certified SBE's with at least one quarter (1/4) of THAT amount to certified MBE's.

The MBE requirement is still 6.25% of the entire bid total.

Each bidder shall submit, as part of their proposal, copies of Certificates of Eligibility for each set aside subcontractor or "screen shots" from the State of Connecticut Supplier Diversity web site for each set aside subcontractor showing name and address, certification type and certificate expiration date.

Vendor Company Name ______

Authorized signature Date

STATE OF CONNECTICUT COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES

NOTICE CONCERNING CONTRACT COMPLIANCE RESPONSIBILITIES

TO ALL LABOR UNIONS, WORKERS REPRESENTATIVES AND VENDORS:

Any contract this contractor has with the State of Connecticut or political subdivisions of the state, other than municipalities, shall be performed in accordance with CONN. GEN. STAT. Section 4a-60 and Section 4a-60a.

This means that this contractor:

1. Agrees to provide the Commission on Human Rights and Opportunities (CHRO) with any information concerning this contractor's employment practices and procedures which relates to the Commission's responsibilities under CONN. GEN. STAT. Sections 4a-60 or 46a-56 or Section 4a-60a.; and

2. Agrees to include the provisions of CONN. GEN. STAT. Section 46a-60(a) and Section 4a-60a in each and every subcontract and purchase order and to take whatever action the CHRO deems necessary to enforce these provisions.

WITH REGARD TO RACE, COLOR, RELIGIOUS CREED, AGE, MARITAL STATUS, NATIONAL ORIGIN, ANCESTRY, SEX, MENTAL RETARDATION OR PHYSICAL DISABILITY, this means that this contractor:

1. Shall not discriminate or permit discrimination against anyone;

2. Shall take affirmative action so that persons applying for employment are hired on the basis of job-related qualifications and that employees once hired are treated without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation or physical disability, unless the contractor can show that the disability prevents performance of the work involved;

3. Shall state in all advertisements for employees that it is an affirmative actionequal opportunity employer;

4. Shall comply with CONN. GEN. STAT. Sections 4a-60, 46a-68e and 46a-68f and with each regulation or relevant order issued by the CHRO under CONN. GEN. STAT. Sections 46a-56, 46a-68e and 46a-68f; and

5. Shall make, if the contract is a public works contract, good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials.

WITH REGARD TO SEXUAL ORIENTATION, GENDER IDENTITY OR EXPRESSION:

1. The contractor will not discriminate or permit discrimination against anyone, and employees will be treated without regard to their sexual orientation, gender identity or expression once employed; and

2. The contractor agrees to fully comply with Section 4a-60a and each regulation or relevant order issued by the CHRO under CONN. GEN. STAT. Section 46a-56.

Persons having questions about this notice or their rights under the law are urged to contact the:

COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES AFFIRMATNE ACTION AND CONTRACT COMPLIANCE UNIT 25 Sigourney Street Hartford, Connecticut 06106 860-541-4709

COPIES OF THIS NOTICE SHALL BE POSTED IN CONSPICUOUS PLACES AVAILABLE TO ALL EMPLOYEES AND APPLICANTS FOR EMPLOYMENT SEEC FORM 10 CONNECTICUT STATE ELECTIONS ENFORCEMENT COMMISSION Rev. 1/11 Page 1 of 3



Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

Acknowledgement of Receipt of Explanation of Prohibitions for Incorporation in Contracting and Bidding Documents

This notice is provided under the authority of Connecticut General Statutes 9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

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

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

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly** *solicit* contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

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

PENALTIES FOR VIOLATIONS

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

<u>**Civil penalties**</u>—Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

<u>Criminal penalties</u>—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may resulting the contract being voided.

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

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

SEEC FORM 10 CONNECTICUT STATE ELECTIONS ENFORCEMENT COMMISSION Rev. 1/11 Page 2 of 3



DEFINITIONS

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

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

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

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

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

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

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

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

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

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

SEEC FORM 10

CONNECTICUT STATE ELECTIONS ENFORCEMENT COMMISSION Rev. 1/11 Page 3 of 3



| ACKN | OWLEDGE] | MENT OF RECE | IPT | |
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| Additional information may be for | und on the web | osite of the State Elect | tions Enforcement Commission, | |
| Click on the | ne link to "Lob" | byist/Contractor Lim | itations" | |
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GENERAL CONTRACTOR BIDDERS QUALIFICATION STATEMENT

| PROJECT | Western Connecticut State University |
|-----------|---|
| NAME/NO.: | Generator Installations in Residence Halls, student Centers & |
| | Westside Classroom Building; DCS Project No. BI-RD 289 |
| BID NO.: | 2016-ERB-0312 |

All bidders are <u>required</u> to file this form, properly completed, <u>WITH THEIR PROPOSAL</u>. Failure of a bidder to answer any question or provide required information may be grounds for the awarding authority to disqualify and reject their bid. if a question or request for information does not pertain to your organization in any way, use the symbol "NA" (Not Applicable). Use additional 8 ¹/₂" x ll" sheets with your letterhead as necessary.

1. Indicate exactly the name by which this organization is known:

Name:

2. How many years has this organization been in business under its present business name?

Years:

3. How many years has this organization been in business as a General Contractor?

Years:

- 4. If this organization has not always been a General Contractor, list the trade(s) that your firm customarily performed prior to the time that you became a General Contractor:
 - 4.1

 4.2

 4.3
- 5. Indicate all other names by which this organization has been known and the length of time known by each name:

| 5.1 | | |
|-----|------|--|
| 5.2 | | |
| 5.3 | | |

SECTION 00030 GENERAL CONTRACTOR BIDDERS QUALIFICATION STATEMENT PAGE 2 OF 6

6. This firm is a:

| Corporation | |
|---------------------|--|
| Partnership | |
| Sole Proprietorship | |
| Joint Venture | |
| Other | |

- 7. Attach resumes of all supervisory personnel, such as Principals, Project Managers, and Superintendents, who will be directly involved with project on which you are now a bidder. Indicate the number of years of construction experience and number of years of which they were in a Supervisory capacity.
- 8. List all sub-trades which your firm customarily performs with own employees.

| 8.1 | |
|-----|--|
| 8.2 | |
| 8.3 | |
| 8.4 | |
| 8.5 | |
| | |

9. <u>**Trade References:**</u> Names, addresses and telephone numbers of several firms with whom your organization has regular business dealings, (attach separate sheets as necessary):

| <u>10. All</u> Construction Project following format as nece | s your organization has in process (a essary): | ttach separate sheets using the |
|---|--|---------------------------------|
| 10.1 Specific Title & Location: | | |
| 10.2 Contract Amount: | | |
| 10.3 Description of your scope of work performed . | | |
| 10.4 Owner: | | |
| | | |
| 10.5 Designer: | | |
| 10.6 Start Date: | | |
| 10.7 Finish Date: | | |
| *10.8 Any Complaint on Quality or Management | | |
| 10.9 Owners Representative: | (Name) | Telephone Number |
| | | |

*Please Attach A Separate Sheet Explaining Any Negative Entry In This Row.

11 All Construction Projects your organization has completed in the past five years or the twenty projects most recently completed (attach separate sheets using the following format as necessary):

| 11.1 Specific Title & Location: | | |
|--|--------|------------------|
| | | |
| 11.2 Contract Amount: | | |
| 11.3 Description of your scope of work performed . | | |
| | | |
| 11.4 Owner: | | |
| 11.5 Designer: | | |
| | | |
| 11.6 Start Date: | | |
| 11.7 Finish Date: | | |
| | | |
| *11.8 Any Complaint on Quality or Management | | |
| | | |
| 11.9 Owners Representative: | (Name) | Telephone Number |
| | | |

*Please Attach A Separate Sheet Explaining Any Negative Entry In This Row.

12. Has your organization ever failed to complete a contract, or has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a contract? If so, indicate the circumstances leading to the project failure and the name of the company which provided the bonding for the failed contract(s):

- 13. List all legal or administrative proceedings currently pending or concluded adversely within the last five years which relate to procurement or performance of any public or private construction contracts. (Exclude OSHA violations which are called for elsewhere in this statement).
- 13.1 Attached:
- 13.2 N/A:
- 14. List all willful or serious violations of any Occupational Safety and Health Act (OSHA) or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act or Occupational Safety and Health Act of 1970. Indicate whether these were abated within the time fixed by the citation or whether the citation was appealed. If appealed what is the status or disposition.

14.1

14.2

15. Has your organization had any criminal convictions related to the injury or death of any employee in the three year period preceding the bid. Please list any such convictions below.

15.1

15.2

15.3

SECTION 00030 GENERAL CONTRACTOR BIDDERS QUALIFICATION STATEMENT PAGE 6 OF 6

| Dated at | | |
|--------------------------------------|----------------------------|-----------------------------------|
| Signed this | day of | 19 |
| Name of Organization: | | |
| | | |
| | | |
| | Signature | |
| | (Print Name) | |
| | Title | |
| Notary Statement: | | |
| Mr./Mrs./Ms. | | being duly sworn |
| deposes and says that he/she is the | | of |
| | (Positie | on or litle) |
| (Firm Name) | , and | that the answers to the foregoing |
| questions and all statements therein | contained are true and cor | rect. |
| Subscribed and sworn before me this | s day of | 19 |
| | | |
| Notary Public | | |

END OF SECTION

WESTERN CONNECTICUT STATE UNIVERSITY

NOTICE REGARDING THE STATE OF CONNECTICUT - DEPARTMENT OF LABOR PREVAILING WAGE RATES REQUIREMENT

Please Note:

The Department of Labor's Prevailing Wage Rates <u>shall apply</u> to this project.

The Minimum Rates and Classifications for Building Construction listing, as issued by the Department of Labor for this project, will be forwarded to all prospective bidders via addendum as soon as it becomes available.

Thank you.

Facilities Planning & Engineering Western Connecticut State University

PAGE 1 OF 10

CT DAS PROCUREMENT SERVICES NOTICE TO BIDDERS ON BEHALF OF CT DEPARTMENT OF CONSTRUCTION SERVICES

ARTICLE 1 BIDS AND REJECTION OF BIDS:

- 1.1 Bids shall be for the complete work as specified and shall include the names of any subcontractors for the four classes of work specified in subsection (a) of C.G.S. § 4b-93 as revised, and for each other class of work for which the awarding authority has required a separate section pursuant to said subsection and the dollar amounts of their subcontracts, and the contractor shall be selected on the basis of such bids. It shall be presumed that the bidder intends to perform with its own employees all work in such four classes and such other classes, for which no subcontractor is named. The bidder's qualifications for performing such work shall be subject to review under C.G.S. § 4b-92, as revised. For projects estimated to exceed Five Hundred Thousand Dollars (\$500,000.00) in total cost, the bidder must be prequalified by the Department of Administrative Services in the classification specified in the Invitation to Bid.
- **1.2** The awarding authority may require the contractor to replace a **Named Subcontractor** whenever the awarding authority determines in their sole discretion that such **replacement** is in the **best interest of the State.**
- **1.3** Every bid which is conditional or obscure, or which is not accompanied by a Department of Administrative Services Prequalification Certificate and Update Statement, or which contains any addition not called for, shall be invalid, and the awarding authority shall *reject* every such bid. The awarding authority shall be authorized to waive minor irregularities which he considers in the best interest of the State, provided the reasons for any such waiver are stated in writing by the awarding authority and made a part of the contract file. No such bid shall be rejected because of the failure to submit prices for, or information relating to, any item or items for which no specific space is provided in the bid form furnished by the awarding authority, but this sentence shall not be applicable to any failure to furnish prices or information required by C.G.S. § 4b-95, as revised, to be furnished in the bid form provided by the awarding authority.

No person who's **Subcontract** exceeds five hundred thousand dollars in value may perform work as a Subcontractor on a project *estimated* to cost more than five hundred thousand dollars, unless the person is **prequalified** in accordance with C.G.S. § 4a-100, as amended by **Public Act 06-134**.

1.4 Projects That Exceed Threshold Limits C.G.S §29-276b:

Projects designated in Section 00 41 00, Bid Proposal Form as "Exceeding the Threshold Limits" must meet C.G.S §20-341gg Registration of Major Contractors:

Any person engaged in the business of construction, structural repair, structural alteration, dismantling or demolition of a structure or addition that exceeds the threshold limits provided in C.G.S §29-276b, or any person who, under the direction of a general contractor, performs or offers to perform any work that impacts upon the structural integrity of a structure or addition, including repair, alteration, dismantling or demolition of a structure or addition that exceeds the threshold limits shall engage in or offer to perform the work of a Major Contractor unless such person has first obtained a license or certificate of registration from the Department of Consumer Protection. Individuals must be licensed under the requirements of **C.G.S §20-341gg "Registration of Major Contractors**". The Department of Consumer Protection shall issue a certificate of registration to any person who is prequalified pursuant to section 4a-100 who applies for registration in accordance with this section.

The contractor and all subcontractors that engage in work that impacts upon the structural integrity of a structure or addition must register as a **Major Contractor** with the Department Of Consumer Protection and obtain a **Major Contractor** License issued by the Department Of Consumer Protection prior to Bid Due Date/Time of this Project.

For further information visit the Department Of Consumer Protection Website: www.dcp.state.ct.us

1.5 Bids shall be publicly opened and read by the awarding authority forthwith. The awarding authority *may* require in the bid form that the contractor agree to perform a stated, minimum percentage of work with its **own forces**. The awarding authority *may* also require the contractor to set aside a portion of the contract for subcontractors who are eligible for **set-aside contracts**. The awarding authority shall not permit **substitution** of a subcontractor for one named in accordance with the provisions of said C.G.S. § 4b-95 or **substitution** of a subcontractor for any designated sub-trade work bid to be performed by the contractor's own forces, *except* for **good cause**. The term "good cause" includes but is not limited to a subcontractor's or, where appropriate, a contractor's: (1) Death or physical disability, if the listed subcontractor is an individual; (2) dissolution, if a

PAGE 2 OF 10

corporation or partnership; (3) bankruptcy; (4) inability to furnish any performance and payment bond shown on the bid form; (5) inability to obtain, or loss of, a license necessary for the performance of the particular category of work; (6) failure or inability to comply with a requirement of law applicable to contractors, subcontractors, or construction, alteration, or repair projects; (7) failure to perform its agreement to execute a subcontract under C.G.S. § 4b-96, as revised.

- **1.6** The **bid price** shall be the price set forth in the space provided on the **bid form**. No bid shall be rejected (1) because of error in setting forth the name of a subcontractor as long as the subcontractor or subcontractors designated are clearly identifiable, or (2) because the plans and specifications do not accompany the bid or are not submitted with the bid. Failure to correctly state a **subcontractor's price** shall be cause for rejection of the bid.
- **1.7** Each contractor who is awarded a contract on or after October 1, 2002 shall be subject to provisions of the C.G.S. § 31-53 as amended by Public Act 02-69, "An Act Concerning Annual Adjustments to Prevailing Wages."
- **1.8** In determining bid price, consideration should be given to C.G.S. § 31-53 and 31-55a of the Connecticut General Statutes regarding **annual adjustment of prevailing wage rates.** Annual adjustments of prevailing wage rates will not be considered a matter for a contract amendment.
- **1.9** Any contractor who violates any **provision** of said **C.G.S. § 4b-95** may be **disqualified** from bidding on other contracts that are subject to the provisions of **Chapter 60** of the Connecticut General Statutes, as revised, for a **period** not to exceed twenty-four months, commencing from the date on which the violation is discovered, for each violation. The awarding authority shall periodically review the contractor's subcontracts to insure compliance with such provisions, and shall after each such review prepare a written report setting forth his findings and conclusions.
- **1.10 Bids** shall be submitted *only* on the **forms furnished** for the specific project. In *no* event will bids or changes in bids made by telephone, telegraph, facsimile or other communication technology be considered. *Any* bid form omitting or adding items, altering the form, containing conditional or alternative bids, or *without* the original signature of the bidder or its authorized representative, will be *rejected*.
- **1.11** Any bid received *after* the **scheduled closing time** for the receipt of bids will be returned to the bidder unopened.
- **1.12** Any **bid** once deposited with the **Department of Construction Services (CT DCS)** may only be **withdrawn** by **letter** of request, signed by the depositing bidder and presented to the **DAS** Supervisor, Bidding and Contracts Unit, *prior* to the time of opening of any bid for the project designated or identified project.
- 1.13 Gift And Campaign Contribution Certification: In accordance with Executive Order 7C, and pursuant to Public Act 11-229, any principal or key personnel of the person, firm or corporation submitting a bid or proposal for a contract that has a value of \$50,000 or more, shall be required to electronically upload a Gift And Campaign Contribution Certification prior to or at the time of the bid proposal submission. Instructions on how to electronically upload the Gift And Campaign Contribution Certification are available from the website of the Connecticut Department of Administrative Services (CT DAS), "Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online". The Vendor Guide can be found at http://www.ct.gov click on Doing Business > Doing Business with the State > State Procurement > Business Friendly Initiatives > Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online (PDF).

Pursuant to C.G.S. § 4-252(d), and Public Act 11-229, any bidder or proposer that does not **electronically upload** the certification as required under this section shall be disqualified and CT DCS shall award the contract to the next highest ranked proposer or the next lowest responsible qualified bidder or seek new bids or proposals.

Once uploaded, an updated **Gift and Campaign Contribution Certification** shall be **electronically uploaded** within **30 days** of any changes to the submitted information.

Annually, on *or* within two (2) weeks of the **anniversary** date of the execution of this contract, the Contractor shall **electronically upload** a completed **Annual Certification** with authorizing resolution. For the purposes of this paragraph, the execution date of the contract will be the date the Commissioner of CT DCS signs the contract.

1.14 Affirmation of Receipt of State Ethics Laws Summary: Pursuant to Section 37 of Public Act 05-287, when the CT DCS is seeking a contract for a large state construction or procurement contract having a cost of more than \$500,000, CT DCS shall inform all potential consultant and contractor firms to electronically download the "Guide to the Code of Ethics For Current or Potential State Contractors" from the website of Office of State Ethics (OSE).

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Pursuant to Public Act 11-229, CT DCS is also required to notify all potential consultant and contractor firms for a large state construction or procurement contract that they must **electronically upload** prior to or at the time of the bid proposal submission an "*Affirmation of Receipt of State Ethics Laws Summary*" affirming that their key employees have read and understand the summary and agree to comply with the provisions of state ethics law. Instructions on how to electronically upload an "*Affirmation of Receipt of State Ethics Laws Summary*" are available from the website of the Connecticut Department of Administrative Services (CT DAS), "Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online". The Vendor Guide can be *found* at http://www.ct.gov click on Doing Business > Doing Business with the State > State Procurement > Business Friendly Initiatives > Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online (PDF).

Failure to provide this affidavit with the bid proposal shall result in **rejection** of the bid. The **summary** includes a **note** regarding the more stringent CT DCS policy regarding gifts. *If* you decide to use the **Ethics Summary** posted on the <u>OSE web site</u> you must also add to it the **Note** which is set forth below.

Note re: DCS Policy:

The policy of the Department of Construction Services (DCS) in regard to gifts or anything of value is more stringent than the State Ethic Code. Under the CT DCS policy, no employee of CT DCS can directly or indirectly solicit or accept anything or value; other than a cup of coffee or tea, or a bottle of soda or water; from any developer, contractor, consultant, vendor, realtor, or lessor, or any person or organization on their behalf, with who CT DCS has or may have a business relationship. Accordingly, any person, or contractor, consultant, or any other business doing business with or seek do business with CT DCS may not directly or indirectly give anything of value other than a cup of coffee or tea, or a can or bottle of soda or water, to an employee.

Furthermore, the successful bidder shall provide the **Summary of the State Ethics Laws**, to each **named subcontractor** and any other **subcontractor** or **subconsultant** with a contract valued over \$500,000 and obtain a **Subcontractor and Subconsultant State Ethics Affidavit** that the key personnel of the subcontractor have read, understand, and agree to comply with provisions of the state ethics laws. The successful bidder shall provide such subcontractor(s) affidavit to the Department of Construction Services.

1.15 Consulting Agreement Affidavit and Certificate (of Authority): A Consulting Agreement Affidavit must be completed and electronically uploaded prior to or at the time of the bid proposal submission for contracts with a value of \$50,000 or more. A Certificate (of Authority) shall be submitted with the bid proposal to CT DAS Procurement Services for contracts with a value of \$50,000 or more.

Instructions on how to electronically submit the **Consulting Agreement Affidavit** are available from the website of the Connecticut Department of Administrative Services (CT DAS), "Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online": **The Vendor Guide** can be *found* at <u>http://www.ct.gov</u> click on Doing Business > Doing Business with the State > State Procurement > **Business Friendly Initiatives** > Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online (PDF).

Once uploaded, an updated **Consulting Agreement Affidavit** shall be **electronically uploaded** within **30 days** of any changes to the submitted information. Once uploaded, the Affidavit shall be updated and submitted as required by the Office of Policy and Management and the Connecticut Department of Administrative Services. For the purposes of this paragraph, the **execution date** of the contract will be the date the Commissioner of CT DCS signs the contract.

In the event that a bidder or vendor *refuses* to submit the *affidavit* required under Conn. Gen. Stat. § 4a-81, such bidder shall be *disqualified* and the award shall be made to the next lowest responsible qualified bidder or new bids or proposals shall be sought.

The Certificate (of Authority) can be found in Section 00 40 14 Certificate (of Authority).

- 1.16 State Election Enforcement Commission: With regard to a State contract as defined in P.A. 07-01 having a value in a calendar year of \$50,000 or more or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this submission in response to the State's solicitation expressly acknowledges receipt of, and must submit to DAS Procurement Services with the bid proposal submission, the State Election Enforcement Commission's Form 10 notice advising prospective state contractors of the state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice. See the SEEC website www.ct.gov/seec for downloading SEEC Form 10.
- **1.17** Nondiscrimination Certification: A nondiscrimination certification is required for all State contracts, regardless of type, term, cost or value. The appropriate form must be electronically uploaded prior to or at the time of

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the bid proposal submission. Instructions on how to electronically upload the **Nondiscrimination Certification** are available from the website of the Connecticut Department of Administrative Services (CT DAS), "Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online": **The Vendor Guide** can be *found* at <u>http://www.ct.gov</u> click on Doing Business > Doing Business with the State > State Procurement > **Business Friendly Initiatives** > Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online (PDF).

For the **list of Nondiscrimination forms and descriptions** go to the **Office of Policy and Management (OPM)** website, <u>www.ct.gov/opm</u>, <u>under Featured Links</u> > Nondiscrimination Certification

- **1.18** When a **mandatory bid conference** is required, bids submitted by contractors who have **not properly registered** and attended the mandatory pre-bid conference shall be rejected as **non-responsive**. All attendees of the pre-bid conference will be required to register. **Proper registration** means that the attendee has signed his or her name to the official roster and listed the name and address of the company he or she represents on the official roster no later than the designated start time of the pre-bid conference. Bidders are advised to register early as **no** attendee will be allowed to register *after* the advertised start time of the pre-bid conference.
- **1.19** In the event that a bidder or vendor refuses to submit the **consulting affidavit** required under subsection (b) of section 51 of Public Act 05-287, such bidder shall be *disqualified* and the award shall be made to the next lowest responsible gualified bidder or new bids or proposals shall be sought.
- **1.20** All acquisitions, agreements and contracts are subject to the provisions of the C.G.S. § 9-333n (transferred to 9-612) regarding **CAMPAIGN CONTRIBUTION RESTRICTION**.
- **1.21** Each contract between a state or quasi-public agency and a large state contractor shall provide that, if an officer, employee, or appointing authority of a large state contractor takes or threatens to take any personnel action against any employee of the contractor in **retaliation** for such employee's **disclosure** of information to the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of Section 4-61dd of the Connecticut General Statutes, the contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of the contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The executive head of the state or quasi-public agency may request the Attorney General to bring a civil action in the Superior Court for the judicial district of Hartford to seek imposition and recovery of such civil penalty.

Each large state contractor shall post a **notice** of the provisions of Section 4-61dd relating to large state contractors in a conspicuous place that is readily available for viewing by the employees of the contractor.

- **1.22** It is agreed that this contract shall be governed by, construed, and enforced in accordance with the **laws of the State of Connecticut**.
- **1.23** Nothing in this Agreement shall be construed as a waiver or limitation upon the **State's sovereign immunity**. To the extent this Section is found to be inconsistent with any other part of this Agreement, this Section shall control. This Section of the Agreement shall survive the completion and/or termination of this Agreement.
- **1.24** Pursuant to Connecticut General Statutes Sec. 31-53b (a) each contract entered into on

or after July 1, 2007, for the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public building project by the state or any of its agents, or by any political subdivision of the state or any of its agents, where the total cost of all work to be performed by all contractors and subcontractors in connection with the contract is at least one hundred thousand dollars, shall contain a provision requiring that, not later than thirty days after the date such contract is awarded, each contractor furnish proof to the Labor Commissioner that all employees performing manual labor on or in such public building, pursuant to such contract, have completed a **course** of at least ten hours in duration in **construction safety and health** approved by the federal Occupational Safety and Health Administration or, in the case of telecommunications employees, have completed at least ten hours of training in accordance with 29 CFR 1910.268.

- **1.25** Bidders are responsible for **addenda** as noted in Article 4 of this notice. **Failure to acknowledge** all **addenda** in the space provided in Bid Proposal Form shall be cause for **rejection** of the bid.
- **1.26** The Department of Construction Services *may* reject a bid as **non-responsive** *if* the bidder does *not* make all required **pre-award submittals** *within* the time designated by the Department of Construction Services.

ARTICLE 2 BID SECURITY:

Each bid must be accompanied by a **certified check** made payable to "Treasurer, State of Connecticut," or the bid must be accompanied by a **bid bond**, in the form required by the awarding authority, having as **surety** thereto such surety

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company or companies acceptable to the Commissioner of the Department of Construction Services and as are authorized to do business in this State, for an amount not less than 10 percent of the bid. All **checks** submitted by **unsuccessful** bidders shall be returned to them *after* the contract has been awarded.

ARTICLE 3 Forfeit Of Bid Security:

Failure of the successful bidder to execute a contract awarded as specified and bid shall result in the **forfeiture** of the bid bond or certified check.

ARTICLE 4 Addenda And Interpretations:

No interpretations of the meaning of the plans, specifications or other contract documents will be made orally to any bidder. Every request for such interpretation should be in writing to the awarding authority and to be given consideration *must* be received at least ten (10) days *prior* to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, *if* issued, will be posted on the CT DCS Website and State Contracting Portal. However, at the discretion of the awarding authority the addenda *may* be *mailed* no later than seven (7) days *prior* to the date fixed for the opening of bids to those prospective bidders (at the respective addresses furnished for such purposes) who do not have email accounts and request the fiscal officer to mail them the addenda; failure of any bidder to receive any such addendum or interpretation shall not release any bidder from any obligations under its bid as submitted. It shall be the bidder's responsibility to make inquiry as to, and to obtain, the addenda issued, if any.

ARTICLE 5 Executive Orders:

The Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, the Client Agency shall provide a copy of these orders to the Contractor. The Contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services, in accordance with their respective terms and conditions.

ARTICLE 6 (Intentionally left Blank)

ARTICLE 7 (Intentionally left Blank)

ARTICLE 8 Sexual Harassment Policy

This contract is subject to the provisions of the Department of Construction Services Sexual Harassment Policy ("Policy") and, as such, the contract may be canceled, terminated, or suspended by the CT DCS for violation of or noncompliance with said Policy. Said document is hereby incorporated herein by reference and made a part hereof as though fully set forth herein. This policy may be found at the **Department of Construction Services Website** at <u>http://www.ct.gov/dcs</u>, under **Publications**.

ARTICLE 9 Certificate of Legal Existence:

A corporation that is awarded the contract must comply with the laws of this State regarding the procurement of a certificate of authority to transact business in this State from the **Secretary of the State**. A Certificate of Legal Existence which is not older than ninety (90) days from the date of the contract signing must be filed with the Department of Construction Services' Purchasing Officer.

ARTICLE 10 Security For Faithful Performance:

10.1 Performance Bond:

On or before the contract award date, the successful bidder shall substitute for the **certified check** or **bid bond** accompanying its bid an executed **performance bond**, in the amount not less than 100 percent of the contract price, conditioned upon the faithful performance of the contract, and having as surety thereto such surety company or companies satisfactory to the Commissioner and as are authorized to transact business in this State. This bond is to be furnished pursuant to **C.G.S. § 49-41**, as revised.

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10.2 Labor and Material Bond:

At this same time, the successful bidder shall submit a labor and material bond in the amount not less than 100 percent of the contract price which shall be binding upon the award of the contract to such bidder, with surety or sureties satisfactory to the Commissioner and as are authorized to transact business in this State, for the protection of persons supplying labor or materials in the prosecution of the work provided for in the contract for the use of each such person. Any such bond furnished shall have as principal the name of the successful bidder. This bond is to be furnished pursuant to **C.G.S. § 49-41**, as revised.

The following sections of the General Statutes of Connecticut, as revised, are inserted as information concerning this bond:

C.G.S. § 49-41a. Enforcement of payment by general contractor to subcontractor and by subcontractor to his subcontractors.

- (a) When any public work is awarded by a contract for which a payment bond is required by section 49-41, the contract for the public work shall contain the following provisions: (1) A requirement that the general contractor, within thirty days after payment to the contractor by the State or a municipality, pay any amounts due any subcontractor, whether for labor performed or materials furnished, when the labor or materials have been included in a requisition submitted by the contractor and paid by the State or a municipality; (2) a requirement that the general contractor shall include in each of its subcontracts a provision requiring each subcontractor to pay any amounts due any of its subcontractors, whether for labor performed or materials furnished, within thirty days after such subcontractor receives a payment from the general contractor which encompasses labor or materials furnished by such subcontractor.
- If payment is not made by the general contractor or any of its subcontractors in accordance with such (b) requirements, the subcontractor shall set forth his claim against the general contractor and the subcontractor of a subcontractor shall set forth its claim against the subcontractor through notice by registered or certified mail. Ten days after the receipt of that notice, the general contractor shall be liable to its subcontractor, and the subcontractor shall be liable to its subcontractor, for interest on the amount due and owing at the rate of one percent per month. In addition, the general contractor, upon written demand of its subcontractor, or the subcontractor, upon written demand of its subcontractor, shall be required to place funds in the amount of the claim, plus interest of one per cent, in an interest-bearing escrow account in a bank in this State, provided the general contractor or subcontractor may refuse to place the funds in escrow on the grounds that the subcontractor has not substantially performed the work according to the terms of his or its employment. In the event that such general contractor or subcontractor refuses to place such funds in escrow, and the party making a claim against it under this section is found to have substantially performed its work in accordance with the terms of its employment in any arbitration or litigation to determine the validity of such claim, then such general contractor or subcontractor shall pay the attorney's fees of such party.
- (c) No payment may be withheld from a subcontractor for work performed because of a dispute between the general contractor and another contractor or subcontractor.
- (d) This section shall not be construed to prohibit progress payments prior to final payment of the contract and is applicable to all subcontractors for material or labor whether they have contracted directly with the general contractor or with some other subcontractor on the work.

C.G.S. § 49-42. Enforcement of right to payment on bond. Suit on bond, procedure and judgment.

(a) Any person who performed work or supplied materials for which a requisition was submitted to, or for which an estimate was prepared by, the awarding authority and who does not receive full payment for such work or materials within sixty days of the applicable payment date provided for in subsection (a) of section 49-41a, or any person who supplied materials or performed subcontracting work not included on a requisition or estimate who has not received full payment for such materials or work within sixty days after the date such materials were supplied or such work was performed, may enforce such right to payment under the bond by serving a notice of claim on the surety that issued the bond and a copy of such notice to the contractor named as principal in the bond within one hundred eighty days of the applicable payment date provided for in subsection (a) of section 49-41a, or, in the case of a person supplying materials or performing subcontracting work not included on a requisition or estimate, within one hundred eighty days after the date such materials were supplied or such work was performed. The notice of claim shall state with substantial accuracy the amount claimed and the name of the party for whom the work was performed or to whom the materials were supplied, and shall provide a detailed description of the bonded project for which the work or materials were provided. If the content of a notice prepared in accordance with subsection (b) of section 49-41a complies with the requirements of this section, a copy of such notice. served within one hundred eighty days of the payment date provided for in subsection (a) of section 49-41a upon the surety that issued the bond and upon the contractor named as principal in the bond, shall satisfy the notice requirements of this section. Within ninety days after service of the notice of claim, the surety

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shall make payment under the bond and satisfy the claim, or any portion of the claim which is not subject to a good faith dispute, and shall serve a notice on the claimant denying liability for any unpaid portion of the claim. The notices required under this section shall be served by registered or certified mail, postage prepaid in envelopes addressed to any office at which the surety, principal or claimant conducts his business, or in any manner in which civil process may be served. If the surety denies liability on the claim, or any portion thereof, the claimant may bring action upon the payment bond in the superior court for such sums and prosecute the action to final execution and judgment. An action to recover on a payment bond under this section shall be privileged with respect to assignment for trial. The court shall not consolidate for trial any action brought under this section with any other action brought on the same bond unless the court finds that a substantial portion of the evidence to be adduced, other than the fact that the claims sought to be consolidated arise under the same general contract, is common to such actions and that consolidation will not result in excessive delays to any claimant whose action was instituted at a time significantly prior to the motion to consolidate. In any such proceeding, the court judgment shall award the prevailing party the costs for bringing such proceeding and allow interest at the rate of interest specified in the labor or materials contract under which the claim arises or, if no such interest rate is specified, at the rate of interest as provided in section 37-3a upon the amount recovered, computed from the date of service of the notice of claim, provided, for any portion of the claim which the court finds was due and payable after the date of service of the notice of claim, such interest shall be computed from the date such portion became due and payable. The court judgment may award reasonable attorneys fees to either party if upon reviewing the entire record, it appears that either the original claim, the surety's denial of liability, or the defense interposed to the claim is without substantial basis in fact or law. Any person having direct contractual relationship with a subcontractor but no contractual relationship express or implied with the contractor furnishing the payment bond shall have a right of action upon the payment bond upon giving written notice of claim as provided in this section.

- (b) Every suit instituted under this section shall be brought in the name of the person suing, in the superior court for the judicial district where the contract was to be performed, irrespective of the amount in controversy in the suit, but no such suit may be commenced after the expiration of one year after the applicable payment date provided for in subsection (a) of section 49-41a, or, in the case of a person supplying materials or performing subcontracting work not included on a requisition or estimate, no such suit may be commenced after the date such materials were supplied or such work was performed.
- (c) The word "material" as used in section 49-41 to 49-43, inclusive, includes the rental of equipment used in the prosecution of work provided for in the contract.

ARTICLE 11 CONNECTICUT SALES AND USE TAXES:

All bidders shall familiarize themselves with the current statutes and regulations of the **Department of Revenue Services**. The tax on materials or supplies exempted by such statutes and regulations shall not be included as part of a bid.

Nonresident contractors must comply with the provisions C.S.G. § 12-430(7), Bond requirement for nonresident contractors, and the regulations established pursuant to that section.

ARTICLE 12 Contractor's Qualifications:

All bidders shall file with their bids a statement of qualifications on the appropriate form.

ARTICLE 13. Subcontractors:

As required by the <u>Bid Proposal Form</u>, each bidder shall furnish with its submitted bid, and in the place on the bid form provided for such purpose, the **names of responsible and qualified subcontractors** who are actually to perform the work required by the division or portion of the specifications listed for the base bid. **Failure to so list a subcontractor** for any division or portion of the specifications will result in the **rejection** of the entire bid.

ARTICLE 14 NOT USED

ARTICLE 15 Nondiscrimination and Affirmative Action Provisions:

This section is inserted in connection with Subsection (a) of C.G.S. § 4a-60 of the General Statutes of Connecticut, as revised.

References in this section to "contract" shall mean this Contract and references to "contractor" shall mean the Contractor.

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- **a.** (1) The contractor agrees and warrants that in the performance of the contract such 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, mental retardation, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such 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. The 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, mental retardation, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved; (2) the contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the commission; (3) the contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the commission advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, 46a-68e and 46a-68f; (5) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56.
- b. If the contract is a CT DCS contract, the contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such CT DCS project.
- c. "Minority business enterprise" means any small contractor or supplier of materials fifty-one per cent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) Who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise and (3) who are members of a minority, as such term is defined in subsection (a) of section 32-9n; and "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations. "Good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements.
- **d. Determination** of the contractor's good faith efforts shall include but shall not be limited to the following factors: The contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the commission may prescribe that are designed to ensure the participation of minority business enterprises in CT DCS projects.
- e. The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.
- f. The contractor shall include the provisions of sections (a) and (b) above in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with section 46a-56; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.

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ARTICLE 16 Nondiscrimination Provisions Regarding Sexual Orientation:

This section is inserted in connection with Subsection (a) of Section 4a-60a of the General Statutes of Connecticut, as revised.

- The contractor agrees and warrants that in the performance of the contract such contractor will not **a.** (1) discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the state of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and (4) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.
- b. The contractor shall include the provisions of section (a) above in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with section 46a-56; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.
- **c**. For the purposes of this entire Non-Discrimination section, "contract" includes any extension or modification of the contract, "contractor" includes any successors or assigns of the contractor, "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced, and "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders. For the purposes of this section, "contract" does not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, (2) a quasi-public agency, as defined in Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

A nondiscrimination certification is required for all State contracts, regardless of type, term, cost or value. The appropriate form must be electronically uploaded *prior to or at the time of the bid proposal submission*. Instructions on how to electronically upload the Nondiscrimination Certification are available from the website of the Connecticut Department of Administrative Services (CT DAS), "Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online": The Vendor Guide can be *found* at <u>http://www.ct.gov</u> click on Doing Business > Doing Business with the State > State Procurement > Business Friendly Initiatives > Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online (PDF).

For the list of Nondiscrimination forms and descriptions go to the Office of Policy and Management (OPM) website, www.ct.gov/opm, under Featured Links > Nondiscrimination Certification.

ARTICLE 17 Union Labor:

Attention is called to the fact that there may be construction work now being carried on at the site at which construction is contemplated being done by union labor. This fact must be kept in mind by all bidders.

ARTICLE 18 Labor Market Area:

All bidders shall have read Sections 31-52 and 31-52a of the Connecticut General Statutes, as revised. These sections relate to the preference of State citizens and the preference of residents of the labor market area in which the work under the contract is to be done and the penalties for violations thereof.

In order to avoid violations by the contractor and to cooperate with and assist the State in the implementation of the statutory mandates, any bidder awarded a contract with the State shall be required to provide the State with the following information:

- **18.1** The names and addresses of employees utilized by the contractor and by its subcontractors and how long each such employee has resided in Connecticut.
- **18.2** How long each employee has resided in the labor market area, as established by the State Labor Commissioner, in which the work under the contract is to be done. Labor market areas are indicated on the end of this section.
- **18.3** Within thirty (30) days after the start of work, the contractor shall submit a signed statement setting forth the procedures the contractor and its subcontractors have taken to assure that they have sought out qualified residents of the labor market area. Also, the statement shall include information as to how many persons were considered for employment and how many were actually hired. Such procedures will include, but not be limited to, obtaining names of available persons from area Employment Security Offices.
- **18.4** In the same manner as item (18.3) above, the statement shall indicate the steps taken to assure that the contractor and its subcontractors have sought out qualified residents of this State.
- **18.5** The contractor shall cooperate with and provide information to the construction supervisor or inspector of the State assigned to collect and verify the information required. The State may request that all such information be updated during the term of the contract at reasonable times.
- **18.6** All such information gathered and compiled by the State shall be forwarded to the Labor Commissioner.

18.7 Pursuant to C.G.S. § 31-52b, as revised:

"The provisions of C.G.S. § 31-52 and 31-52a shall not apply where the State or any subdivision thereof may suffer the loss of revenue granted or to be granted from any agency or department of the federal government as a result of said sections or regulative procedures pursuant thereto."

However, no exception shall be determined to be applicable unless stated in writing by the Commissioner of the Department of Construction Services

18.8 Website Link:

For guidance on the CT Department of Labor (DOL) Labor Market Areas (LMA) visit CT-DOL Website Link: <u>http://www1.ctdol.state.ct.us/lmi/misc/lmatowns.asp</u>.

END OF SECTION

WORKING PROCEDURES DURING CONSTRUCTION

SECTION I - GENERAL

- A. Contact between the budgeted agency and the Architect/Engineer will be through the Construction Administrator assigned to the project. Contact between the Architect and the Contractor will be through the Construction Administrator, except on matters relating to shop drawings (Section 5 below); approval of materials (Section 6); approval of samples (Section 7).
- B. The control, field supervision, and inspection of this project through the date of guarantee required by the General Conditions will be conducted by the University or its designated representative ,as directed by the University Architect delegated by the Commissioner to the Director of Construction Services ,whose project organization includes the following:
 - (1) Director of Facilities Planning & Engineering/University Representative
 - (2) Associate Director/Assistant Director of Facilities Planning & Engineering
 - (3) Construction Administrator/University Representative/ Project Manager
 - (4) Architect/ Engineer
- C. The Construction Administrator assigned to the project is responsible to his superiors for the control, field supervision, and inspection of the project. The Contractor and the Architect/Engineer submit to the Construction Administrator a separate written statement on each question of contract interpretation, contract discrepancy, contract change, or on any question concerning a deviation from the contract requirements.

SECTION 2 – CORRESPONDENCE

- A. Standard practice is to be as follows:
 - 1. All correspondence must bear the correct title and assigned contract number for purposes of identification.
 - 2. For ease in filing, a separate letter must be issued for each subject. SEVERAL SUBJECTS ARE NOT TO BE COMBINED IN ONE LETTER.
 - 3. All shop drawings, samples, etc., must be accompanied by a transmittal letter, which should be clear as to what is being transmitted.
 - 4. Persons and/or firms receiving copies shall be noted on all copies of each letter. A check mark is to be placed beside each name so as to designate to whom the copy belongs.
 - 5. The following procedures as to be followed:
 - a. A copy of every letter addressed by the Architect/Engineer to the Construction Administrator (and vice versa) is to be sent to the Director of Facilities Planning & Engineering.
 - b. A copy of every letter addressed by the Architect/Engineer to the Contractor (and vice versa) is to be sent to the Director of Facilities Planning and Engineering and Construction Administrator.

- c. A copy of every letter addressed by the Contractor to the Construction Administrator (and vice versa) is to be sent to the Director of Facilities Planning and Engineering and the Architect/Engineer.
- d. A copy of every letter addressed by either the Construction Administrator or the Architect/Engineer to the budgeted agency is to be sent to the Director of Facilities Planning and Engineering.
- B. All correspondence addressed to the Director of Facilities Planning & Engineering is to be sent to Western Connecticut State University, 181 White Street, Danbury, CT 06810. <u>Letters shall be sent direct and with the least</u> possible delay.

SECTION 3 – JOB DRAWINGS, DETAIL DRAWINGS, ETC.

A. The Architect/Engineer will furnish four (4) prints, three (3) to be sent by transmittal letter directly to the Construction Administrator on the job and one (1) directly to the Director of Facilities Planning and Engineering with one (1) copy of the transmittal letter. A copy of the transmittal letter only is to be sent directly to the Director of Facilities Planning & Engineering, and three (3) prints are to be sent directly to the Contractor together with a copy of the same transmittal letter.

SECTION 4 – APPROVAL OF SUBCONTRACTORS

A. Initial submission shall be as prescribed in the proposal attached to and made a part of the contract. Subsequent submission(s), on the Contractor's letterhead, shall include the name of the proposed subcontractor(s), what services they will be providing, and the contract amount. This information is sent to the Director of Facilities Planning and Engineering, with a copy to the Architect/Engineer, and the Construction Administrator. The Contractor will be notified by the University on approvals of all subcontractors.

SECTION 5 - SHOP DRAWINGS

- A. The Contractor shall forward, after detailed checking in his office, with a transmittal letter, three (3) prints of each shop drawing to the Architect/Engineer for initial checking, following the procedure as outlined in paragraph 2 above. At the same time, the Contractor shall send a copy of the transmittal letter to the Director of Facilities Planning and Engineering, and one (1) copy to the Construction Administrator, assigned to the project.
- B. After corrections have been made, or when the shop drawings are finally approved, the Contractor is to furnish a total of seven (7) prints of each drawing to the Architect/Engineer. For sprinkler shop drawings, provide a total of ten (10) prints. All prints to include the project name and DCS project number.
- C. Noting his action on shop drawings, the Architect/Engineer shall:
 - 1. Retain two (2) sets of drawings for his files.
 - 2. Return two (2) sets to the Contractor with a transmittal letter.
 - 3. Send one (1) set to the District Construction Supervisor together with a copy of the transmittal letter.
- 4. Send two (2) sets to the Construction Administrator, with one (1) copy of the transmittal letter.
- 5. In the case of fire sprinkler systems only, add (3) sets of final approved shop drawings to make a total of (10) sets. Two (2) sets will be sent to the States Insurance Carrier. One (1) set (if the building exceeds the threshold limit) shall be sent to the State Fire Marshals office for ultimate approval and compliance. The sets submitted to the Fire Marshal and Insurance Carrier shall include hydraulic calculations, and manufacturers' specification sheets for all sprinkler heads, backflow preventors, and fire pumps (including pump curves).

SECTION 6 - APPROVAL OF MATERIALS

- A. The Contractor shall submit directly to the Architect/Engineer for approval a list of all materials and equipment proposed for use on the project, following the procedure outlined in paragraph 2 above. Approval or disapproval will be handled as follows. Note that there are three (3) broad classifications to be considered:
 - 1. Action on any material or equipment which is named by brand in the specifications will be taken by the Architect/Engineer.
 - 2. When the Contractor proposes an equal for any specified material or equipment, he shall submit to the Architect/Engineer full information (manufacturer's brochure, etc.) covering the item proposed. The Architect/Engineer will evaluate the data and submit three (3) copies of the information along with his recommendations to the Director of Facilities Planning and Engineering, who will inform the Contractor of the decision.
 - 3. If the Contractor proposes material or equipment that deviates from the specifications (a substitution to be handled by a change order), he shall submit full information about the item, and a credit to the owner, where applicable, supported by the manufacturer's original quotation for specified material and that for the substitution. The Architect/Engineer will review this data, and submit three (3) copies of the information along with his recommendations to the Director of Facilities Planning and Engineering, who will notify the Contractor of the decision.
 - 4. Time limitations for making submittals on equals or for substitutions, shall be in accordance with Article 14 of the General Conditions.
- B. Selection of paint colors and colors of interior finished materials shall be made by the Architect/Engineer, who will be responsible for obtaining approval of the using agency. After receiving this approval, he will notify the Contractor.

SECTION 7 – APPROVAL OF SAMPLES

Procedure on approval of samples will be the same as for materials; however, in most cases, samples delivered by the Contractor to the job site will be examined there and will be held there until completion of the work. Approval by the Architect/Engineer is to be in writing following procedure outlined in Section 6A. (2).

SECTION 8 – REPORTS ON WORK AT SITE

- A. The diary kept by the Construction Administrator on the job will be available for the Architect/Engineer. The CC/S will also keep a list of questions for determination by the Architect/Engineer.
- B. Observation reports by the Architect/Engineer are also required.

SECTION 9 - INSURANCE CERTIFICATES

A. All certificates, in triplicate, will be sent to the Contracts Supervisor of the Contract Section.

SECTION 10 - INSTRUCTIONS ON THE WORK

- A. All instructions on the job will be given the Contractor by the Construction Administrator, who will make any decisions not in conflict with the plans and specifications. He will advise the Architect/Engineer at all times as to actions taken. On matters of major importance, the Construction Administrator will consult with the Director of Facilities Planning and Engineering and the Architect/Engineer and obtain clearance before giving instructions to the Contractor.
- B. On engineering projects, each Architect/Engineer will keep the Engineering Section of the Department of Construction Services advised concerning instructions and interpretations given by him, and in no case will authorize engineering changes in the plans or specifications without receiving prior approval of the Engineering Section.
- C. Deviations from plans and specifications will be handled by a change order.

SECTION 11 – SCHEDULE OF VALUES OF THE WORK

- A. The Contractor shall prepare, on forms furnished by the Department of Construction Services, one (1) pencil copy of the schedule of values, for various parts of the work, broken down as directed, aggregating the total sum of the contract, and submit to the assigned Construction Administrator for review.
- B. Following this review and initialing by the Mechanical/Electrical Specialist, if applicable, the Construction Administrator will transmit the initialed copy of the schedule of values to the Hartford office for further processing.
- C. After final approval, the Hartford office will notify the Contractor to submit the final typed schedule of values in the number of copies required.
- D. Under no circumstances is the Contractor to submit a requisition for partial payment until the schedule of values has been approved.

SECTION 12 – <u>REQUISITIONS</u>

- A. The Contractor's requests for partial payment shall be itemized to correspond with the approved schedule of values. Requisitions shall be submitted directly to the Construction Administrator for approval and processing.
- B. Requisitions for requests for partial payment shall be submitted once a month directly to the Construction Administrator assigned to the project.

SECTION 13 – CHANGE ORDERS

- A. Any change for improvement of the work or to provide for field conditions suggested by the budgeted agency, the Department of Construction Services, the Contractor, or the Architect/Engineer, will be handled by the Construction Administrator assigned to the project. The Construction Administrator is to determine the necessity for the change and clear with the Architect/Engineer and the budgeted agency. He may ask the Architect/Engineer to prepare any documents necessary to process the change, and he will obtain from the Contractor any estimate covering additions to or deductions from the contract price.
- B. Changes requested by the agency must first be addressed by the agency head to the Commissioner of Construction Services for consideration and approval before any action will be taken by the Construction Administrator.
- C. To expedite change orders during the course of construction, proposals are to be submitted directly to the assigned Construction Administrator (in the number of copies requested) with a copy to the Director of Facilities Planning and Engineering, the District Construction Supervisor, and the Architect/Engineer.
- D. After review and comment by the budgeted agency, the request for change order, with all back-up, <u>including the architect's/engineer's recommendations</u> and a definite statement of need and/or reason for the change, will be submitted by the Construction Administrator to the central office of the Department of Construction Services. On approval by the Commissioner, a change order to the contract will be issued authorizing the change.
- E. The amount of compensation to be paid for additional work shall be in accordance with Article 13 of the General Conditions.
- F. Lump sum proposals are to contain certain quantities and unit prices and be itemized in sufficient detail to give the Department of Construction Services a basis for checking. When a subcontractor's price is included in the general contractor's proposal, the subcontractor's breakdowns to be included. <u>Credits</u> must be deducted before the percentage can be applied.
- G. Every proposal is to state whether or not extension of time is required, and if so, of how many days.
- H. In the event of disagreement between the Contractor and the Cost Review Section as to the amount of the proposal, the Cost Review Section will take the matter up with the Contractor through the Construction Administrator on the job or, if more expedient, directly with the Contractor.
- I. In no case is a Contractor to proceed without an approved Change Order, or if necessary, to expedite the work, a proceed order authorized by the Commissioner of the Director of Construction, as provided in Articles 13 and 26 of the General Conditions. This shall not, however, affect the power of the Contractor to act in a case of emergency, threats of injury to persons, damage to the work or an adjacent property.

END

Inspection Requests for State Projects

Effective immediately, all inspection requests on State projects shall be emailed to the Office of the State Building Inspector at: <u>OSBI.Inspections@ct.gov</u>.

Inspection requests shall be made at least 24 hours prior to the requested time of inspection.

The email shall include the following information:

- The project name and project number.
- The date and time of the requested inspections.
- The type(s) of inspections requested.
- The name and phone number of the project contact person in case you need to be reached due to conflicts.
- The email shall be cc'd to the inspector(s) assigned to your project.

Multiple inspections can be scheduled in a single email. Just be clear as to the date and time of each inspection.

If you have any questions on this procedure, please consult with the inspectors assigned to your project. If you still have questions, please contact the Office of the State Building Inspector at (860)713-5900 and ask to speak to Stephen Carey or Daniel Tierney.

Connecticut State University System



Central Connecticut State University Eastern Connecticut State University Southern Connecticut State University Western Connecticut State University System Office

STANDARD TERMS AND CONDITIONS

I. DEFINITIONS

The following words, when used herein, shall have the following meanings:

- "Contract" shall mean any agreement negotiated by and between CSU and the contractor selected by CSU as the result of a request for proposal, request for quotation, or request for bid, including, but not limited to, a personal service agreement or purchase order.
- 2. "CSU" shall refer to the Connecticut State University System, which is comprised of Central Connecticut State University, Eastern Connecticut State University, Southern Connecticut . State University, Western Connecticut State University and the System Office, collectively and individually, as the context requires.
- "Person" shall mean an individual, partnership, corporation or other business entity, as the context requires.
- "Proposal" shall mean a response to a request for proposal, request for bid, or request for quotation.
- "Proposer" shall mean a contractor that submits a response to a request for proposal, request for bid, or request for quotation.
- "RFP" shall mean a request or invitation for proposal, bid, or quotation, as applicable.

II. TERMS AND CONDITIONS RELATED TO REQUESTS FOR PROPOSALS A. General Conditions

- CSU reserves the right to amend or cancel an RFP prior to the date and time for the opening of proposals. CSU, in its sole discretion, reserves the right to accept or reject any and all'proposals, in whole or in part, and to waive any technicality in any proposal submitted, and to accept any part of a proposal deemed to be in the best interest of CSU.
- Proposals received from proposers debarred by the State of Connecticut will not be considered for award.
- CSU does not commit to specific volumes of activity, nor does it guarantee the accuracy of statistical information provided in the RFP. Such information is supplied to proposers for reference only.
- All responses to the RFP shall be and remain the sole property of CSU.
- 5. Each proposer shall bear all costs associated with proposer's response to an RFP, including, but not limited to, the costs of any presentation and/or demonstration required by CSU. In addition, answers or clarifications sought by CSU arising out of or in connection with the proposal shall be furnished by the proposer at the proposer's expense.

- CSU reserves the right to negotiate, as it may deem necessary, with any or all of the proposers that submit proposals.
- Any alleged oral agreement or arrangement made by any proposer with CSU or any employee thereof shall not be binding.

B. Submission of Proposals

- Proposals must be submitted on forms supplied by CSU. Telephone, facsimile, or email proposals will not be accepted in response to an RFP.
- 2. The time and date proposals are to be received and opened are stated in each RFP issued by CSU. Proposals received in the applicable CSU purchasing department after the date and time specified in the RFP will be returned to the proposer unopened. Proposal amendments received by CSU after the time specified for opening of proposals shall not be considered.
- 3. All proposals must be addressed to the location designated in the RFP. Proposal envelopes must clearly state the proposal number as well as the date and time of the opening of the proposals, as stated in the RFP. The name and address of the proposer must appear in the upper left hand corner of the envelope.
- Proposals must be computer prepared, typewritten or handwritten in ink. Proposals submitted in pencil will be rejected.
- 5. Proposers must answer all the questions set forth in the RFP using the outline and numbering scheme set forth therein. Proposers must furnish all information requested in the RFP and supply all materials required for consideration. Eailure of the proposer to answer all questions and supply all information and materials requested may be grounds for rejection of the proposal.
- 6. All proposals must be signed by a person duly authorized to sign proposals on behalf of the proposer. All signatures on the proposal must be original. Proposals bearing stamp signatures will be rejected. Unsigned proposals will be rejected.
- 7. Alterations or corrections to the proposal must be initialed by the person signing the proposal or his or her authorized designee. All initials on alterations or corrections to the proposal must be original. In the event that an authorized designee initials an alteration or correction, the proposer must submit a written authorization from the proposal's signatory to the authorized designee, authorizing the designee to make the alteration or correction. Failure to submit such an authorization shall result in rejection of proposal as to those items altered or corrected and not initialed.

- Conditional proposals are subject to rejection in whole or in part, in the sole discretion of CSU. A conditional proposal is defined as one that limits, modifies, expands or supplements any of the terms and conditions and/or specifications of the RFP.
- Alternate proposals will not be considered by CSU, unless otherwise noted on the RFP or on the proposal form. An alternate proposal is defined as one that is submitted in addition to the proposer's primary response to the RFP.
- 10.CSU does not sponsor any one manufacturer's products, but lists equipment by name and model number to designate the quality and performance level desired. Proposers may propose substitutes similar in nature to the equipment specified. The substitute must, in the sole determination of CSU, be equal in quality, durability, appearance, strength and design to the equipment or product specified in the RFP, or offer a clear advantage to CSU because of improved or superior performance. All proposals including equipment or product substitutes must be accompanied with current descriptive literature on, and data substantiating, the equal or superior nature of the substitute. All final decisions concerning substitutes will be made by CSU prior to any award. The word substitute shall not be construed to permit substantial departure from the detailed requirements of the specifications.
- 11.Each proposer's prices must be firm for a period up to 120 days from date of the opening of proposals. Prices must be extended in decimal, not fraction, must be net, and must include transportation and delivery charges, fully prepaid by the contractor, to the destination specified in the proposal, and subject only to cash discount.
- 12. Pursuant to Section 12-412 of the Connecticut General Statutes, the State of Connecticut is exempt from the payment of excise, transportation and sales taxes imposed by the Federal Government and/or the State. Accordingly, such taxes must not be included in proposal prices.
- If there is a discrepancy between a unit price and an extended price, the unit price will govern.
- 14. By submitting a proposal, the proposer asserts that the offer and information contained therein is in all respects fair and without collusion or fraud and was not made in connection with any competing proposer's submission of a separate response to the RFP. By submitting a proposal, the proposer further asserts that it neither participated in the formation of CSU's solicitation development process nor had any knowledge of the specific contents of the RFP prior to its issuance, and that no employee of CSU participated directly or indirectly in the preparation of the proposer's proposal.
- 15. It is the proposer's responsibility to check the website of the State of Connecticut Department of Administrative Services (www. das.state.ct.us/Purchase/Portal/Portal Home.asp) for changes prior to the proposal opening. It is the responsibility of the proposer to obtain all information related to proposal submission including, without limitation, any and all addenda or supplements required.

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- 16. Any person contemplating submitting a proposal who is in doubt as to the true meaning of, or is in need of clarification of, any part of the RFP or the specifications set forth therein, must submit a written request for clarification to CSU. The proposer may rely only upon a response to a request for clarification set forth in writing by CSU.
- 17. Proposals for the provision of services must include the cost of obtaining all permits, licenses, and notices

required by the city or town in which the services is to be provided, and the State and Federal governments.

- 18. Each proposer must complete and submit with its proposal the following non-discrimination and affirmative action forms: the Notification to Proposers, Contract Compliance, and EEO-1. It shall not be sufficient to declare or state that such forms are on file with the State of Connecticut. Failure to include the required forms shall result in rejection of the proposal.
- C. Samples
- Samples, when required by the RFP, must be submitted strictly in accordance with the requirements of the RFP.
- 2. Any and all required samples shall be furnished by the proposer at no cost to CSU. All samples, unless otherwise indicated, will become the property of CSU and will not be returned to the proposer unless the proposer states in the proposal that the sample's return is requested. A sample will be returned on the request of the proposer if the sample has not been rendered useless or beyond its useful life. The proposer must pay the costs associated with the return of any sample. Samples may be held by CSU for comparison with actual product deliveries.
- The making of chemical and physical tests of samples submitted with proposals shall be made in the manner prescribed by CSU.
- D. Bonding Requirements / Guaranty or Surety
- If required by this RFP, the proposal must be accompanied by a bid bond or a certified check in an amount that is ten percent (10%) of the bid amount. The bid bond must be executed by an insurance company licensed to do business in the State of Connecticut. Certified checks must be made payable to CSU or the appropriate CSU University.
- The proposal bond must be executed by the proposer as follows:

(a) If the proposer is a corporation - must be signed by an official of the corporation above his or her official title, and the corporate seal must be affixed over the signature;

(b) If the proposer is a partnership - must be signed by a general partner;

(c) If the proposer is an individual - must be signed by the individual and indicate that he or she is "doing business as"

3. The surety company executing the bond or countersigning must be licensed in Connecticut and the bond must be signed by an official of the surety company with the corporate seal affixed over his or her signature. Signatures of two witnesses for both the principal and the surety must appear on the bond.

III. CONTRACT AWARD

- All proposals properly submitted will be opened and read publicly. Upon award, the proposals are subject to public inspection. CSU will not prepare abstracts of proposals received for distribution, nor will information concerning the proposals received be conveyed by telephone.
- Award will be made to the lowest responsible qualified proposer who complies with the proposal requirements. Price alone need not be the sole determining factor for an award. Other criteria, listed in the RFP, may be considered by CSU in the award determination.
- CSU reserves the right to grant an award and/or awards by item, or part thereof, groups of items, or all items of the proposal and to waive minor irregularities and

omissions if, in CSU's judgment, the best interests of CSU or the State of Connecticut will be served.

- CSU reserves the right to correct inaccurate awards resulting from its administrative errors.
- 5. The Award Notice and Offer (to enter into a formal contract) shall be sent to the awarded proposer by first class certified mail, return receipt requested, to the address provided in the awarded proposal, or by overnight courier. The Notice and Offer shall constitute an offer by CSU to enter into negotiations to come to a formal contract agreement. If the proposer, within ten (10) business days of receipt of said Notice and Offer, declines to begin contract negotiations, then the offer to negotiate a contract may be withdrawn and an offer to negotiate a contract extended to the next lowest responsible qualified proposer, and so on until a contract is negotiated and executed.
- 6. Each proposal submitted shall constitute an offer by the proposer to furnish any or all of the commodities or services described therein at the prices given and in accordance with conditions set forth in the proposal, the RFP, and these "Standard Terms and Conditions." Acceptance and resulting contract formation shall be in a formal written document authorized by CSU's Purchasing Department and where applicable, approved by the Attorney General, and shall comprise the entire agreement between the proposer and CSU.
- IV. TERMS AND CONDITIONS RELATED TO CONTRACT WITH SUCCESSFUL PROPOSER By submitting a response to the RFP, the proposer agrees that any contract negotiated between it (if the successful proposer), as contractor, and CSU may contain the following provisions, as deemed applicable by CSU:

A. General Conditions

- Any product developed and accepted by CSU under a contract awarded as a result of an RFP shall be sole property of CSU, unless stated otherwise in the contract.
- Data collected or obtained by the contractor in connection with the performance of the contract shall not be shared with any third party without the express written approval of CSU.
- 3. The contractor shall defend, indemnify and hold harmless CSU, its officers and employees, against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, monetary loss, interest, attorney's fees, costs and expenses of whatsoever kind or nature arising out of the performance of the agreement, including those arising out of injury to or death of contractor's employees or subcontractors, whether arising before, during or after completion of the services thereunder and in any manner directly or indirectly caused, occasioned or contributed to in whole or in part, by reason of any act, omission, fault or negligence of contractor or its employees, agents or subcontractors. Without limiting the foregoing, the contractor shall defend, indemnify and hold CSU and the State of Connecticut harmless from liability of any kind for the use of any copyright or un-copyrighted composition, secret process, patented or unpatented invention furnished or used in the performance of the contract. This indemnification shall be in addition to the warranty obligations of the contractor and shall survive the termination or cancellation of the contract or any part thereof.

 The contactor shall: (i) guarantee its products against defective materials and workmanship; (ii) repair damage of any kind, for which it is responsible, to CSU's premises or equipment, to its own work or to the work of other contractors; (iii) obtain and pay for all applicable licenses, permits, and notices; (iv) give all notices and comply with all requirements of the municipality in which the service is to be provided and of the State and federal governments; and (v) carry proper and sufficient insurance to protect the State from loss.

- The contract shall be interpreted and governed by the laws of the State of Connecticut, without regard to its principles of conflicts of laws.
- The contractor agrees that it shall be subject to and abide by all applicable federal and state laws and regulations.
- The contractor agrees that it shall comply with Section 4a-60 of the Connecticut General Statutes and with Executive Orders Nos. 3, 16, 17 and 7B.
- 8. The contractor agrees that the sole and exclusive means for the presentation of any claim against the State of Connecticut, the Connecticut State University or the Board Of Trustees arising from a contract with CSU, shall be in accordance with the provisions of Chapter 53 of the Connecticut General Statutes (Claims Against the State) and that no additional legal proceedings will be initiated in any state or federal court in addition to, or in lieu of, said Chapter 53 proceedings.
- 9. The contractor agrees that CSU shall have and retain sole and exclusive right and title in and to the forms, maps, and/or materials produced for CSU pursuant to the contract, including all rights to use, distribute, sell, reprint, or otherwise dispose of same. The contractor further agrees that it shall not copyright, register, distribute, or claim any rights in or to said maps and/or materials or the work produced under the contract.
- 10. The contractor or subcontractor, as applicable, shall offer and agree to assign to CSU all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act, 15 U.S.C. 15, or under Chapter 624 of the general statutes, arising from the purchase of services, property or intangibles of any kind pursuant to a public purchase contract or subcontract; such assignment shall be made and become effective at the time the contract is executed by the parties, without further acknowledement by them.
- The contractor shall not assign or otherwise dispose of the contract or its right, title or interest therein, or its power to execute such contract, to any other person without the prior written consent of CSU.
- 12. CSU reserves the right to inspect commodities for conformance with proposal specifications. When commodities are rejected by CSU, said commodities shall be removed by the contractor, at the contractor's expense, from the CSU premises within forty-eight (48) hours after notification of such rejection, unless public health and safety require immediate destruction or other disposal of such rejected delivery. Rejected items left longer than forty-eight (48) hours shall be considered abandoned by the contractor and CSU shall have the right to dispose of them as its own property.
- 13. If any provision, term or condition of the contract is prohibited, invalid, or unenforceable then that provision, term or condition shall be ineffective to the extent of the prohibition, invalidity, or prohibition without invalidating the remaining provisions, terms and conditions unless it materially alters the nature or intent thereof.
- Should the terms of any purchase order or invoice issued in connection with the contract conflict with the

terms of the contract, the terms of the contract shall prevail.

- 15. Failure of the contractor to deliver commodities or perform services as specified in the contract will constitute authority for CSU to purchase these commodities or services on the open market. The contractor shall promptly reimburse CSU for excess costs incurred by CSU due to these purchases, and these purchases shall be deducted by CSU from the quantities contracted for.
- 16. No right or duty, in whole or in part, of the contractor under the contract may be assigned or delegated without the prior written consent of CSU. The subcontracting or assignment of any of contractor's obligations under the contract to a subcontractor shall require the prior written approval of CSU.
- 17. Upon termination of the contract by CSU, the contractor shall both immediately discontinue all services (unless the notice directs otherwise) and deliver to CSU all data, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have been accumulated by the contractor in performing its duties under the contract, whether completed or in progress. All such documents, information, and materials shall become the property of CSU.
- 18. The State of Connecticut shall assume no liability for payment for services under the terms of the contract until the contractor is notified that the contract has been accepted by CSU and, if applicable, approved by the Office of Policy and Management ("OPM") or the Department of Administrative Services ("DAS") and by the Attorney General of the State of Connecticut.

B. Insurance

 Before commencing to perform services pursuant to the contract, the contractor shall obtain, at its own cost and for the duration of the contract, the following insurance:

 (a) Commercial General Liability: \$1,000,000
 combined single limit per occurrence for bodily injury, personal injury and property damage. Coverage shall include Premises and Operations, Independent Contractors, Products and Completed Operations, Contractual Liability and Broad Form Property Damage coverage. If a general aggregate is used, the general aggregate limit shall apply separately to the project or the general aggregate limit shall be twice the occurrence limit.

(b) Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury. Coverage extends to owned, hired and non-owned automobiles. If the contractor does not own an automobile, but one is used in the execution of the contract, then only hired and non-owned coverage is required. If a vehicle is not used in the execution of the contract then automobile coverage is not required.

(c) Professional Liability: \$1,000,000 limit of liability.

(d) Workers' Compensation and Employers Liability: Statutory coverage in compliance with the laws of the State of Connecticut. Coverage shall include Employer's Liability with minimum limits of \$100,000 each accident, \$500,000 Disease - Policy limit, \$100,000 each employee.

An Excess Liability/Umbrella Policy may be used to meet the minimum limit guidelines.

 The contractor shall provide copies of its Certificates of Insurance to CSU, if requested to do so. The Certificates shall include the following: (a) The certificate shall clearly identify the State of Connecticut, its officers, officials, employees, agents, boards and commissions as Additional Insured. The coverage shall contain no special limitations on the scope of protection afforded to the State.

(b) The certificate shall clearly indicate the project name and project number or some easily identifiable reference to the relationship to the State.

- The Certificates shall be signed by a person authorized by that insurer to execute contracts on its behalf. The certificate Accord Form 25 Certificate shall indicate a minimum thirty (30) day endeavor to notify requirement in the event of cancellation or non-renewal of coverage.
- The contractor shall assume responsibility for payment of any and all deductibles applicable to the insurance policies described in Section IV.B.1 above.
- The contractor's insurer shall have no right of recovery or subrogation against the State and the described insurance shall be primary coverage.
- Each required policy of insurance shall provide that it shall not be suspended, voided, cancelled or reduced except after thirty (30) days' prior written notice sent by certified mail to CSU.
- "Claims Made" coverage shall be unacceptable, with the exception of Professional Liability.

C. Bonds

The successful proposer shall submit the following bonds, at the request of CSU, within ten (10) days of the date of receipt of the Award Notice and Offer:

- A Performance Bond in the amount of one hundred percent (100%) of the total proposal price; and
- A Labor and Material Payment Bond in the amount of one hundred percent (100%) of the total proposal price.

A company authorized to transact business in the State of Connecticut shall execute the bonds. Checks shall be made payable to CSU or the appropriate CSU University.

D. Delivery

- Unless otherwise specified in the proposal, all products and equipment delivered pursuant to the contract shall be new and shall include any and all manufacturer's warranties.
- 2. Delivery shall be to the point specified in the contract.
- All deliveries shall display, in plain sight, any related Purchase Order or Reference/Delivery Number. Failure to display said number may cause the shipment to be rejected and returned at the contractor's expense.
- All deliveries shall be in compliance with Sections 22a-194 to 22a-194g of the Connecticut General Statutes related to product packaging.
- Deliveries shall be subject to reweighing on official sealed scales designated by the State and payment shall be made on the basis of net weight of materials received.
- Payment terms are net forty-five (45) days after receipt of goods or invoice, whichever is later. State of Connecticut certified small or minority contractors are payable under terms net thirty (30) days.
- Monies owed to CSU or the Department of Revenue Services (DRS) by the contractor shall be deducted from current obligations.

E. Inspection and Tests

- The inspection of all commodities and the making of chemical and physical tests of samples of deliveries to determine whether or not the contract specifications are being complied with shall be made in the manner prescribed by CSU.
- Any item that fails in any way to meet the terms or specifications set forth in the contract is subject to be paid for at an adjusted price or rejected, in the discretion of CSU.
- 3. After delivery and installation of any equipment provided pursuant to the contract, the contractor shall certify to CSU that the equipment has been properly installed and is ready for use. Thereafter, for a test period of sixty (60) days, CSU shall operate the system in accordance with its normal operating practices. The acceptance test shall determine if the equipment's operating characteristics meet the performance standards set forth in the contract.

F. Advertising

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Reference by the contractor to sales to CSU for advertising and promotional purposes without the prior approval of CSU shall be expressly prohibited.

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TERMS/CONDITIONS

EXECUTIVE ORDERS

This Agreement is subject to the provisions of Executive Order No. 3 of Governor Thomas J. Meskill promulgated June 16, 1971, and, as such, this Agreement may be canceled, terminated or suspended by the State Labor Commissioner for violation of or noncompliance with said Executive Order No. 3, or any state or federal law concerning nondiscrimination, notwithstanding that the Labor Commissioner is not a party to this contract. The parties to this Agreement, as part of the consideration hereof, agree that said Executive Order No. 3 is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the State Labor Commissioner shall have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the contract is completed are terminated prior to completion. The contractor, agrees, as part consideration hereof, that this Agreement is subject to the Guidelines and Rules issued by the State Labor Commissioner to implement Executive Order No. 3, and that he will not discriminate in his employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the State Labor Commissioner. This Agreement is also subject to provisions of Executive Order No. 17 of Governor Thomas J. Meskill promulgated February 15, 1973, and, as such, this Agreement may be canceled, terminated or suspended by the contracting agency or the State Labor Commissioner for violation of or noncompliance with said Executive Order No. 17, notwithstanding that the Labor Commissioner may not to abide by said Executive Order and agree that the contracting agency and the State Labor Commissioner shall have joint and several continuing jurisdiction in respect to contract performance in regard to listing all employment openings with the Connecticut State Employment Service. This contract is also subject to Executive Order Number 16 of Governor John G. Rowland promulgated August 4, 1999, and as such, the Agreement may be canceled, tenninated or suspended by the state for violation of or noncompliance with said Executive Order No. 16. The Parties to this Agreement, as part of the consideration hereofin agree that (a) The Contractor shall prohibit as a condition of employement, any weapon or dangerous instrument defined in (b): (b) Weapon means any firearm, including BB gun, whether loaded or unloaded, any knife (excluding a small period packet knife), including a switchblade or other knife having an automatic spring release device, a stiletto, any police balon or nightstick or any martial arts weapon or electronic defence weapon. Dangerous instrument means any instrument, article, or substance that, under the circumstances, is capable of causing death or serious physical injury. (c) The Contractor shall prohibit employees from attempting to use, or threaten to use, any such weapon or dangerous instrument in the state work site and employees shall be prohibited from enusing, or threatening to cause, physical injury or death to any individual in the state work site. (d) The Contractor shall adopt the above prohibition as work rules, violation of which shall subject the employee to disciplinary action up to and including discharge. The Contractor shall insure and require that all employees are aware is such work rules. (e) The contractor agrees that any subcontract it enters into in furtherance of the work to be performed hereunder shall contain provisions (a) through (d) of this Section. This Agreement is subject to Executive Order No 7B of Governor Jodi M. Rell, promulgated on November 16, 2005. The Parties to this Agreement, as part of the consideration hereof, agree that :(a.) The State Contracting Standards Board ("the Board") may review this contract and recommend to the state contracting agency termination of the contract for cause. The state contracting agency shall consider the recommendations and act as required of permitted in accordance with the contract and applicable law. The Board shall provide the results of its review, together with its recommendations, to the state contracting agency and any other affected party in accordance with the notice provisions in the contract no later than fifteen (15) days after the Board finalizes its recommendation. For the purposes of this Section, "for cause" means: (1.) a violation of the State Ethics Code (Conn. Gen. Stat. Chapter 10) or Section 4A-100 of the Conn. Gen. Statutes Board instances its recontracting and procurement process by any person substantially involved in such contract or state contracting agency. (b.) For the purposes of this Section, or (2.) wantan or reckless disregard of any state contracting and procurement process by any person substantially involved in such contract or state contracting agency. (b.) For the purposes of this Section, or (2.) wanten or recitess disregard of any state contracting and procurement process of any person substantiany involved in such contract or state contracting agency. (0.) For the purposes of this becturn, "contract" shall not include real property innexactions involving less than a fee simple interest or financial assistance comprised of state or federal funds, the form of which may include but is not limited to grants, loan gurantees, and participation interests in loans, equity investments and tax credit programs. Notwithstanding the foregoing, the Board shall not have any authority to recommend the termination of a contract for the sele or purchase of a fee simple interest in real property following transfer of title. (c.) Effective January 1, 2006, notwithstanding the contract value listed in Conn. Gen. Stat. 4-250 and 4-251, all procurements between state agencies and private entities with a value of \$50,000 (fifty thousand dollars) or more in a calendar or fiscal year shall comply with the gift affidavit requirements of said Sections. Certification by agency officials or employees required by Conn. Gen. Stat. 4-252 shall not be affected by this Section.

NON-DISCRIMINATION

(a) For the purposes of this section, "minority business enterprise means any small contractor or supplier of materials fifty-one percent or more of the capital stock; if any, or assets of which is owned by a persons; (1) who are active in the daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Conn. Gen. Stat. 32-9n; and good faith means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations. Good faith efforts shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements.

For purposes of this section, Commission means the Commission on Human Rights and Opportunities.

For purposes of this section, Public works contract means any agreement between any individual, firm or corporation and the state or any political subdivision of the state other than a nunicipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including but not limited to, matching expenditures, grants, loans, insurance or guarantee

- (b) (1) The Contractor agrees and warrants that in the performance of the contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of 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. The Contractor further agrees to take affirmative action source instanticy prevents perturbative to the work involved in any manner protocol of the and of the finite of the finite of contraction. The contractor function are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, see, mental relardation, or physical disability, including but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employees" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor agrees to comply with each provision of this section and Conn. Gen. Stat. 46a-68e and 46a-68E and with each regulation or relevant order issued by said Commission pursuant to Conn. Gen. Stat. 46a-66e and 46a-68E and 46a-68E (5) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts. concerning the employment practices and procedures of the Contractor as relate to the provisions of this section and section 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.
- (c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: the Contractor's employment and subcontracting policies, patterns and practices, Determination to be compared a good tant entries and induced, on and induced and the source in the compared of a supervision of the source of of minority business enterprises in public works projects.
- (d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.
 (e) The Contractor shall include the provision of subsection (b) of this section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such The contractor sum menue me provision of subsection (u) or mis section in every subsective is parentee of the commission. The contractor shall take such action with respect to any such privations shall be obtaining on a successfully, venew or manufactore mass examples of requirings of energy of the containing of a successfully and and a successfully of the containing of a successfully of the contractor with containing of a successfully of the contractor of the co enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.
- (1) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this contract and as they may be adopted or amended from time to time during the term of this
- (g) The contractor agrees to the following provisions: The contractor agrees and warrants that in the performance of the agreement such Contractor will not discriminate or permit discrimination against any persons or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; the Contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract without regard to user sexual orientation, the Contractor agrees to provide and more another to be provided by the Commission on Human Rights and Opportunities advising the labor union or envided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to Section 46a-56 of the general statutes; the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to perfinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this section and Section 46a-56 of the general statues.
- (h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligations of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter

INSURANCE

The contractor agrees that while performing services specified in the agreement that he shall carry sufficient insurance (liability and/or other) as applicable according to the nature of the service to be performed so as to "save harmless" the State of Connecticut from any insurable cause whatsoever. If requested, certificates of such insurance shall be filed with the contracting State agency prior to the performance of services.

STATE LIABILITY

The State of Connecticut shall assume no liability for payment for services under the terms of this agreement until the contractor is notified that this agreement has been accepted by the contracting agency and, if applicable, approved by the Office of Policy and Management (OPM) or the Department of Administrative Services (DAS) and by the Attorney General of the State of Connecticut,

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ARTICLE 1 DEFINITIONS

WHENEVER THE FOLLOWING TERMS, OR PRONOUNS IN PLACE OF THEM, ARE USED THE INTENT AND MEANING SHALL BE AS FOLLOWS:

1.1 ACCEPTANCE: The Owner's acknowledgement of the Work from the Contractor upon certification by the Construction Administrator and Architect or Engineer that all Work has been completed.

1.2 ADDITIONAL OR DELETED WORK: Work required by the Department that, in the judgment of the Commissioner, involves any addition to, deduction from, or modification of the Work required by the Contract Documents.

1.3 AGENCY: The (User) Agency of the State of Connecticut having administrative authority of the facility in which the Work is being performed.

1.4 APPLICATION FOR PAYMENT, PARTIAL PAYMENT OR REQUISITION: Contractor's certified request for payment for completed portions of the Work and, if the Contract so provides, for materials or equipment suitably stored pending their incorporation into the Work.

1.5 ARCHITECT OR ENGINEER: A sole proprietor, partnership, firm, corporation or other business organization under Contract with the Owner, commissioned to prepare Contract Drawings and Specifications, to advise the Owner and in certain cases, to perform regular inspections during construction and when authorized to perform the duties of the Construction Administrator.

1.6 AS-BUILT DRAWINGS: Construction Drawings revised by the Contractor to show all significant Modifications made during the construction process.

1.7 BASE BID: Monetary value stated in the Bid Proposal Form as the sum for which the Bidder offers to perform the Work described in the Bidding Documents, exclusive of adjustments for Supplemental Bids.

1.8 BID BOND: Form of Bid Security executed by the Bidder as Principal and by a Surety to guarantee that the Bidder will enter into a Contract within a specified time and furnish any required bond as mandated by Connecticut General Statute Section 4b-92.

1.9 BIDDER: A sole proprietor, partnership, firm, corporation or other business organization submitting a Bid on the Bid Proposal Form for the Work contemplated.

1.10 BIDDING DOCUMENTS: Collectively, the Bidding Requirements and the proposed Contract Documents, including any addenda issued prior to receipt of Bids.

1.11 BID OR BID PROPOSAL FORM: A complete and duly signed proposal to perform Work (or a designated portion thereof) for a stipulated sum submitted in accordance with the Bidding Documents.

1.12 BID SECURITY: Certified check or Bid Bond submitted with Bid Proposal Form, which provides that the Bidder, if awarded the Contract, will execute such Contract in accordance with the requirements of the Bidding Documents.

1.13 BUILDER'S RISK INSURANCE: A specialized form of property insurance which provides coverage for loss or damage to the Work pursuant to the Contract Documents.

1.14 CASH ALLOWANCE: An amount established in the Contract Documents for inclusion in the Contract Sum to cover the cost of prescribed items not specified in detail, and as shown in the Allowance Schedule.

1.15 CERTIFICATE OF ACCEPTANCE: A document issued by the Owner to the Contractor stating that all Work specified in the Certificate of Acceptance has been completed and accepted by the Owner.

1.16 CERTIFICATE OF COMPLIANCE: A document stating that for the portion of the Project completed, either the design portion or the construction portion, has been performed in substantial compliance with all applicable building codes.

1.17 CERTIFICATE OF OCCUPANCY: Document issued by the authority having jurisdiction certifying that all or a designated portion of a building is approved for its designated use.

1.18 CERTIFICATE OF SUBSTANTIAL COMPLE-TION: A document prepared by the Architect or Engineer and approved by the Owner on the basis of an inspection stating:

- **1.18.1** that the Work, or a designated portion thereof, is determined to be Substantially Complete;
- **1.18.2** the date of Substantial Completion;
- **1.18.3** the responsibilities of the Owner and the Contractor for security maintenance, heat, utilities, damage to the Work and insurance; and
- **1.18.4** the time within which the Contractor shall complete the remaining Work.

1.19 CHANGE ORDER: Written authorization signed by the Owner, authorizing a modification in the Work, an adjustment in the Contract Sum, or an adjustment in the Contract Time.

1.20 COMMISSIONER: The State of Connecticut, Department of Public Works (DPW) Commissioner acting directly or through specifically authorized DPW personnel or agent(s) having authority to perform duties defined in Article 25.

1.21 CONSTRUCTION ADMINISTRATOR: A sole proprietor, partnership, firm, corporation or other business organization, under Contract or employed by the Owner commissioned and/or authorized to oversee the fulfillment of all requirements of the Contract Documents. The authorized Construction Administrator may be a Department of Public Works Assistant Project Manager, Department of Public Works Project Manager, a Clerk of the Works, an Architect, a Consulting Architect, a Consulting Construction Administrator, a Consulting Engineer etc. or any other designee as authorized and identified by the Owner.

1.22 CONSTRUCTION CHANGE DIRECTIVE: A written authorization signed by the Owner, directing a modification in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum, Contract Time or both. Any Construction Change Directive effecting an adjustment to the Contract Sum or Contract Time shall result in a Change Order.

1.23 CONTRACT DOCUMENTS OR CONTRACT: The Agreement between Owner and Contractor, Conditions of the Contract (General Conditions, Supplementary Conditions, General Requirements and other Conditions), Drawings, Specifications, and Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract, all of which shall constitute the Contract.

1.24 CONTRACTOR OR GENERAL CONTRACTOR: A sole proprietor, partnership, firm or Corporation, under direct Contract with the Department of Public Works, responsible for performing the Work under the Contract Documents. Whenever the words "Contractor" or "General Contractor" are used it shall be understood to mean Contractor.

1.25 CONTRACTOR'S LIABILITY INSURANCE: Insurance purchased and maintained by the Contractor that insures the Contractor for claims for property damage, bodily injury or death.

1.26 CONTRACT START DATE OR DATE OF COMMENCEMENT OF THE WORK: The date, speci-

fied by the Owner in the Notice to Proceed, on which the Contractor is required to start the Work.

1.27 CONTRACT SUM: The sum stated in the Contract, which is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

1.28 CONTRACT TIME: The period of time allotted in the Contract Documents for Substantial Completion of the Work, including authorized adjustments thereto. The Contract Time is the sum of all Working Days and Non-Working Days as further defined herein and specified in the Contract Documents.

1.29 DAY: Whenever the word Day is used it shall be understood to mean calendar day stated on the Bidding Documents, unless stated otherwise.

1.30 DEPARTMENT OF PUBLIC WORKS (DPW) PROJECT MANAGER: The individual employed by the Owner, designated and authorized by the Commissioner, to be responsible for the overall management and oversight of the Project, and to represent the (User) Agency.

1.31 DIESEL VEHICLE EMMISSIONS CONTROL: The reduction of air pollution emissions from diesel powered vehicles through the use of diesel engine emission control technologies.

1.32 EQUAL(S): Any deviation from the Specification which is defined as follows: A replacement for the specified material, device, procedure, equipment, etc., which is recognized and accepted as substantially equal to the first listed manufacturer or first listed procedure specified after review by the Architect/Engineer, and may be rejected or approved at the sole discretion of the Owner. All equals must be substantially equivalent to the first manufacturer or first procedure listed in the Specifications with reference to all of the following areas: the substance and function considering quality, workmanship, economy of operation, durability, and suitability for purposes intended; size, rating, and cost. The equal does not constitute a modification in the scope of Work, the Schedule, or Architect/Engineer's design intent of the specified material, device, procedure, equipment, etc.

1.33 FINAL INSPECTION: Review of the Work by the Architect or Engineer and Owner to determine whether Acceptance has been achieved.

1.34 FINAL PAYMENT: The last payment made by the Owner to the Contractor, made after notice of the Acceptance. Payment shall include the entire unpaid balance of the Contract Sum as adjusted by modifications.

1.35 GENERAL CONDITIONS: The General Conditions of the Contract for Construction, part of Division 00 of the Specifications.

1.36 GENERAL REQUIREMENTS: That part of the Contract Documents entitled General Requirements, which is Division 01 of the Specifications.

1.37 GUARANTEE: See Warranty.

1.38 LIQUIDATED DAMAGES: A sum established in a Contract, usually as a fixed sum per Day, as the predetermined measure of damages to be paid to the Owner due to the Contractor's failure to complete the Work within the Contract Time.

1.39 LUMP SUM: An item or category priced as a whole rather than broken down into its elements.

1.40 MOBILE SOURCE: A source designed or constructed to move from one location to another during normal operation except portable equipment and includes, but is not limited to, automobiles, buses, trucks, tractors, earth moving equipment, hoists, cranes, aircraft, locomotives operating on rails, vessels for transportation on water, lawnmowers, and other small home appliances.

1.41 NON-WORKING DAYS: All Saturdays, Sundays, Legal State Holidays (12), and any other Days identified in the Contract Documents that the Contractor is not permitted to execute the Work. The restriction of Non-Working Days may be suspended upon the approval or direction of the Commissioner.

1.42 NOTICE TO BIDDER: A notice contained in the Bidding Document informing prospective Bidders of the opportunity to submit Bids on a Project.

1.43 NOTICE TO PROCEED: Written notice, issued by the Commissioner or the Commissioner's authorized representative, to the Contractor authorizing the Contractor to proceed with the Work and establishing the date for commencement of the Contract Time.

1.44 OWNER OR DEPARTMENT: The State of Connecticut, Department of Public Works acting through its Commissioner or specifically authorized Department personnel or agent.

1.45 OVERHEAD: Indirect costs including: supervision (any position over the foreman), field and home office expense, insurance, and small tools and consumables.

1.46 PAYMENT, BOND, LABOR BOND OR MATERIAL BOND: A bond in which the Contractor 03/11/09 and the Contractor's surety guarantee to the Owner that the Contractor will pay for labor and materials furnished for use in the performance of the Contract, as required by Connecticut General Statutes Section 49-41.

1.47 PERFORMANCE BOND OR SURETY BOND: A bond in which the Contractor and the Contractor's surety guarantee to the Owner that the Work will be performed in accordance with the Contract Documents, as required by Connecticut General Statutes Section 49-41.

1.48 PERFORMANCE SPECIFICATION: A description of the desired results or performance of a product, material, assembly, procedure, or a piece of equipment with criteria for identifying the standard.

1.49 PLANS OR DRAWINGS: All Drawings or reproductions of Drawings pertaining to the construction of the Work contemplated and its appurtenances.

1.50 PROJECT: The total construction of which the Work performed under the Contract Documents may be the whole or a part.

1.51 PROJECT MANUAL: The set of documents assembled for the Work which includes, but is not limited to, Contract Documents, Bidding Requirements, Sample Forms, Conditions of the Contract, General Requirements, and the Specifications.

1.52 PROPRIETARY SPECIFICATION: A specification that describes a product, procedure, function, material, assembly, or piece of equipment by trade name and/or by naming the manufacturer(s) or manufacturer's procedure, exact model number, item, etc., of those products acceptable to the Owner.

1.53 RETAINAGE: A percentage of each Application for Payment and a percentage of the total Contract Sum retained by the Owner.

1.54 SCHEDULE: A Critical Path Method (CPM) or Construction Schedule as required by the Contract Documents which shall be a diagram, graph or other pictorial or written Schedule showing all events expected to occur and operations to be performed and indicating the Contract Time, start dates, durations and finish dates as well as Substantial Completion and Acceptance of the Work, rendered in a form permitting determination of the optimum sequence and duration of each operation.

1.55 SCHEDULE OF VALUES: A document furnished by the Contractor to the Architect or Engineer and Owner stating the portions of the Contract Sum allocated to the various

portions of the Work, which is to be used for reviewing the Contractor's Applications for Payment.

1.56 SECONDARY SUBCONTRACTOR: A sole proprietor, partnership, firm or Corporation under direct Contract with the Subcontractor to the General Contractor.

1.57 SENSITIVE RECEPTOR SITES: Areas where concentrations of diesel emissions may be harmful to sensitive populations, including, but not limited to, hospitals, school and university buildings being occupied during a student semester, residential structures, daycare facilities, elderly housing, and convalescent facilities.

1.58 SHOP DRAWINGS: Drawings provided to Architect or Engineer and Owner by a Contractor that illustrate construction, materials, dimensions, installation, and other pertinent information for the incorporation of an element or item into the construction as detailed Contract Documents.

1.59 SPECIFICATIONS: The description, provisions and other requirements pertaining to the method and manner of performing the Work and/or to the quantities and quality of materials to be furnished under the Contract.

1.60 SUBCONTRACTOR: A sole proprietor, partnership, corporation or other business organization under direct Contract with the Contractor supplying labor and/or materials for the Work at the site of the Project.

1.61 SUBMITTALS: Documents including, but not limited to, samples, manufacturer's data, Shop Drawing, or other such items submitted to the Owner and Architect or Engineer by the Contractor for the purpose of approval or other action, as required by the Contract Documents.

1.62 SUBSTANTIAL COMPLETION: The stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents.

1.63 SUBSTITUTION: Any deviation from the specified requirements, which is defined as follows: A replacement for the specified material, device, procedure, equipment, etc., which is not recognized or accepted as equal to the first manufacturer or procedure listed in the Specification after review by the Architect/Engineer, and may be rejected or approved by the Owner. The Substitution is not equal to the specified requirement in comparison to the first manufacturer or first procedure listed in the Specifications in one or more of the following areas: the substance and function considering quality, workmanship, economy of operation, durability, and suitability for purposes intended; size, cost, and rating. The Substitution constitutes a modification in the scope of

Work, the Schedule, or the Architect/Engineer's design intent of the specified material, device, procedure, equipment, etc.

1.64 SUPERINTENDENT: The Contractor's representative at the site who is responsible for continuous field supervision, coordination, in, completion of the Work, and, unless another person is designated in writing by the Contractor to the Owner and the Construction Administrator, for the prevention of accidents.

1.65 SUPPLEMENTAL BID: The monetary value stated in the Bid to be added to the amount of the Base Bid if the corresponding Work, as described in the Bidding Documents, is accepted.

1.66 SUPPLEMENTARY CONDITIONS: An extension in the Bid to be added to the amount of the Base Bid if the corresponding Work, as described in the Bidding Documents, is accepted.

1.67 SYSTEMS COMMISSIONING AUTHORITY (SCA): An independent entity under contract directly with the Owner or Owner's Representative responsible for performing the specified commissioning procedures.

1.68 THRESHOLD LIMIT BUILDING: Any proposed (new) structures or additions as defined by the Connecticut General Statutes Section 29-276b.

1.69 UNIT PRICE: The monetary value stated by the Owner or the Contractor, as a price per unit of measurement for materials or services as described in the Contract Documents and/or Bidding Documents.

1.70 WARRANTY: A written, legally enforceable assurance of specified quality or performance of a product or Work or of the duration of satisfactory performance.

1.71 WORK: The construction and services required by the Contract Documents, and including all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

ARTICLE 2 CONDITIONS OF WORK

2.1 The Contractor shall carefully examine and study the conditions under which the Work is to be performed and the site of the Work, and compare the Contract Documents with each other and to information furnished by the Owner including but not limited to the Plans and Specifications, the form of the Contract, General Conditions, Supplementary Condi-

tions, General Requirements, Bonds and all other Contract Documents associated with the Work.

2.2 The Contractor shall report to the Construction Administrator all errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such errors, inconsistencies or omission and failed to report it to the Construction Administrator. If the Contractor performs any actions or construction activity knowing it involves an error, inconsistency or omission in the Contract Documents without notice to the Construction Administrator, the Contractor shall assume responsibility for such performance and related costs for the correction and shall not be allowed to submit any claim related to error, inconsistencies or omission.

2.3 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Construction Administrator at once; and it will be assumed that the Contract Documents. Any deterrent conditions at the site of the Work which are obvious and apparent upon examination of the site but are not indicated on the Plans shall be corrected by the Contractor without additional compensation.

2.4 In performing the Work, the Contractor must employ such methods or means as will not cause any interruption of or interference with the Work of any other Contractor, nor any inordinate disruption with the normal routine of the Owner, institution or Agency operating at the site.

2.5 No claims for additional compensation will be considered when additional costs result from conditions made known to, discovered by, or which should have been discovered by, the Contractor prior to Contract signing.

2.6 All Communications from the Contractor concerning proposed changes to the Contract Sum, Contract Time, or Work shall be in writing.

2.7 The Contractor shall perform the Work in accordance with the Contract Documents and approved Submittals pursuant to Article 5.

ARTICLE 3 CORRELATION OF CONTRACT DOCUMENTS

3.1 The Contract Documents are complementary, and what is

called for by any one shall be as binding as if called for by all. Where discrepancies of conflict occur in the Contract Documents the following order of precedence shall be utilized:

3.1.1 Amendments and addenda shall take precedence over previously issued Contract Documents.

3.1.2 The Supplementary Conditions take precedence over the General Conditions.

3.1.3 The General Conditions take precedence over the General Requirements.

3.1.4 The Specifications shall take precedence over the Plans.

3.1.5 Stated dimensions shall take precedence over scaled dimensions.

3.1.6 Large-scale detail Drawings shall take precedence over small-scale Drawings.

3.1.7 The Schedules contained in the Contract Documents shall take precedence over other data on the Plans.

3.2 Neither party to the Contract shall take advantage of any obvious error or apparent discrepancy in the Contract Documents. The Contractor shall give immediate written notification of any error or discrepancy discovered to the Construction Administrator, who shall take the necessary actions to obtain such corrections and interpretations as may be deemed necessary for the completion of the Work in a satisfactory and acceptable manner. The Contractor shall then promptly proceed under the direction of the Owner and the provisions of Article 13. The Contractor's failure to provide immediate notice shall mean the Contractor will not be entitled to any additional compensation, either monetary or Contract Time adjustment, with respect to any discrepancy.

3.3 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

3.4 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings, shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

3.5 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

ARTICLE 4 COMMENCEMENT AND PROGRESS OF WORK

4.1 The Work shall start upon the date given in the Notice to Proceed. The Contractor shall complete all the Work necessary for Final Payment, including but not limited to Substantial Completion, Contract close-out, testing and demonstration of all systems as required for Acceptance, punchlist Work, training and submission of Record Documents, manuals, Guarantees and Warranties as stated in the Contract Document.

4.2 Time is of the ess ence with respect to the Contract Time. By executing the Contract, the Contractor confirms and agrees that the Contract Time is a reasonable period to perform the Work. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. The Contractor may, at his discretion, plan to complete the Work and achieve Substantial Completion in less time than the Contract Time.

4.3 The Contractor's early completion Schedule notwithstanding, the Owner reserves the right to order Modifications to the Work in accordance with Article 13 at any time during the Contract Time.

4.4 The Contractor shall not be entitled to costs for delay due to Owner ordered Modifications or any other circumstances for the period of time between the Contractor's elected early completion and the end of the Contract Time. Such costs include, but are not limited to, extended home office costs, field office costs, or supervisory and management costs incurred in performance of the Work. Early completion of the Work shall not merit additional compensation.

4.5 If the Contractor is delayed at any time in the progress of Work by acts of God, such as fire or flood or any action, injunction or stop order issued by any court, judge or officer of the court or any other court action beyond the Owner's control, then the Contract Time may be extended by Change Order for such reasonable time as demonstrated by the Contractor's Schedule and as the Owner may determine that such event has delayed the Work. In any event, the granting of an extension of time shall be solely within the discretion of the Owner.

4.6 Except as otherwise may be provided herein, extensions of time shall be the Contractor's sole remedy for such delay. No payment or compensation of any kind shall be made to the Contractor for damages because of hindrance in the orderly progress of Work caused by the aforesaid causes.

4.7 The Contractor acknowledges that the Contract amount includes and anticipates any and all delays, whether avoidable or unavoidable, from said orders, which may issue from any court, judge, court officer, or act of God, and that such delays shall not, under any circumstances, be construed as compensable delays.

4.8 Any extension of the Contract Time shall be by Change Order pursuant to Article 13.

4.9 The Contractor shall employ a competent project manager who shall represent the Contractor. Communications given to the project manager shall be binding as if given to the Contractor. The project manager will be employed full time on the Project and be located and assigned to the Project site during and for the duration of the Work.

4.10 The Contractor shall employ a competent Superintendent and necessary assistants who will be in attendance at the project site during the performance of the Work.

4.11 Upon execution of the Contract, materials may be purchased. No material escalation costs will be valid or compensable unless the Owner directs, in writing, a delay in the procurement.

ARTICLE 5 SUBMITTALS, PRODUCT DATA, SHOP DRAWINGS AND SAMPLES

5.1 Contractor shall review, approve, and submit to the Construction Administrator all Submittals including but not limited to, product data, Shop Drawings, and samples, with such promptness as to cause no delay in the Work.

5.2 Correction or approval of such Submittals, Shop Drawings, product data and samples will be made with reasonable promptness by the Architect or Engineer. Approval will be general only and shall not relieve the Contractor from responsibility for errors in dimensions, for construction and field coordination of the Work or for any departure from the Contract Documents, unless such departure has received the Owner's written approval.

5.3 No Work governed by such Shop Drawings, Schedules or samples shall be fabricated, delivered or installed until approved by the Architect or Engineer.

5.4 No damages for delays or time extensions will be granted, even if approvals deviate from the approved Schedule.

<u>ARTICLE 6</u> SEPARATE CONTRACTS

6.1 The Owner reserves the right to perform Work in connection with the Contract with the Owner's own forces, or to let

separate contracts relating to the Contract (Project) site or in connection with Work on adjoining sites. In such cases, the Contractor shall afford such parties reasonable opportunity for storage of materials and equipment and coordinate and connect the Work with the work on adjoining sites or other Projects, and shall fully cooperate with such parties in the matter required under Article 7 herein.

6.2 Contractors working in the same vicinity shall cooperate with one another and, in case of dispute, decision of the Owner shall be final and binding to all Contractors involved, including Contractors under separate Contracts.

6.3 The Contractor shall assume all liability, financial or otherwise, in connection with this Contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience or delay which the Contractor may cause other Contractors. If the Contractor experiences a loss because of the presence and operations of other Contractors working adjacent to or within the limits of the same Project, then as between the Owner and the Contractor, the Contractor shall bear such loss.

6.4 Insofar as possible, the Contractor shall arrange the Work and shall place and dispose of the materials being used so as not to interfere with the operations of other Contractors adjacent to or within the limits of the same Project. The Contractor shall join its Work with that of others in an acceptable manner, and perform the Work in proper accordance with that of the others.

6.5 In no event shall the Owner be responsible for any claim or damages that are the result of the Contractor's failure to coordinate the Work with any other Contractor or Subcontractor.

ARTICLE 7 COOPERATION OF TRADES

7.1 The Contractor shall be responsible for and shall control all activities of their Subcontractors. The Subcontractors shall consult and cooperate with one another. Each Subcontractor shall furnish all necessary information to other Subcontractors and shall lay out and install their own Work so as to avoid any delays or interference with the Work of others.

7.2 Any cost or changes, cutting and/or repairing, made necessary by the failure to observe the above requirements shall be borne by the party or parties responsible for such failure or neglect or their faulty Work installed.

ARTICLE 8 DAMAGES

8.1 The Liquidated Damages, provided in the Bidding Documents, will be assessed at two distinct times, as follows:

8.1.1 Liquidated Damages – Substantial Completion:

If the Contractor fails to achieve Substantial Completion of the Work by the Substantial Completion Date, and such delay is not otherwise excused under this Contract, then the Contractor agrees to pay to the Owner Liquidated Damages for the dollar amount specified in the Bid Proposal Form for this Project, for each Day beyond Substantial Completion that the Contractor fails to achieve Substantial Completion. The parties to this Contract acknowledge and agree that the actual damages that are to be anticipated as a result of the neglect, failure, or refusal of the Contractor to substantially complete the Project by the established Substantial Completion Date are uncertain in amount or extremely difficult to determine. Accordingly, the parties to this Contract do intend and in fact now agree to liquidate damages in advance and stipulate that the amount set forth in this subparagraph is reasonable and an appropriate remedy and is intended to constitute compensatory damages and does not constitute a penalty of any kind. The parties understand and agree that, by including a provision for Liquidated Damages in this Contract, or in pursuing any relief pursuant to such provision:

.1 the parties do not intend to set a price for the privilege not to perform;

.2 the availability of Liquidated Damages may not be relied upon as a basis for argument that the Owner has an adequate remedy at law; and

3 the remedies available to the Owner under this Agreement are cumulative and not exclusive.

8.1.2 Liquidated Damages – Acceptance:

If the Contractor fails to complete all of the Work required for Acceptance of the Work within ninety (90) Days of Substantial Completion then the Contractor agrees to pay to the Owner Liquidated Damages for the dollar amount specified in the Bid Proposal Form for each Day in excess of ninety (90) Days beyond the Substantial Completion Date that the Contractor fails achieve Acceptance. The parties to this Contract acknowledge and agree that the actual damages that are to be anticipated as a result of the failure of the Contractor to complete all of the Work required for Acceptance within ninety (90) Days of the established Substantial Completion Date are uncertain in amount or extremely difficult to determine. Accordingly, the parties to this Contract do intend and in fact now agree to liquidate damages in advance and stipulate that the amount set forth in this subparagraph is reasonable and an appropriate remedy and is intended to constitute compensatory damages and does not constitute a penalty of any kind. The parties understand and agree that, by including a provision for Liquidated Damages in this Contract, or in pursuing any relief pursuant to such provision:

.1 the parties do not intend to set a price for the privilege not to perform;

.2 the availability of Liquidated Damages may not be relied upon as a basis for argument that the Owner has an adequate remedy at law; and

.3 the remedies available to the Owner under this Agreement are cumulative and not exclusive.

8.2 The Liquidated Damages or any portion thereof may be waived at the sole discretion of the Commissioner.

8.3 No payment by the Owner, either partial or final, shall be construed to waive the Owner's right to seek Liquidated Damages.

8.4 In the event a court determines that the Contract herein is null and void for any reason, Contractor agrees that Contractor will not seek or pursue any lawsuit or claim for damages, including, but not limited to, claims for loss of Overhead or anticipated profits, against the Owner and the Owner shall not be liable for any damages which Contractor may incur as a result of such decision. In addition, if the court enjoins the Owner from entering into or proceeding with the Contract herein, the Owner shall not be liable for any damages arising out of or relating to the award of such Contract which Contractor may have incurred as a result of the injunction.

ARTICLE 9 MINIMUM WAGE RATES

9.1 In accordance with the provisions of the Connecticut General Statutes Section 31-53, the following applies:

"The wages paid on an hourly basis to any person performing the work of any mechanic, laborer, or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (h) of this section, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each payday."

9.2 Each Contractor who is awarded a Contract on or after October 1, 2002 shall be subject to provisions of the Connecticut General Statutes, Section 31-53 as amended by Pub-

lic Act 02-69, "An Act Concerning Annual Adjustments to Prevailing Wages."

No wage adjustment will be made to the Contract for any wage increase under this Article.

ARTICLE 10 POSTING MINIMUM WAGE RATES

10.1 The Contractor shall post at conspicuous points on the site of the Contract a Schedule showing all determined wage rates for all trades and all authorized deductions, if any, from wages to be paid.

10.2 The Contractor shall provide weekly certified payrolls to the Owner for all persons working on the site.

ARTICLE 11 CONSTRUCTION SCHEDULES

11.1 Unless otherwise specified in the Contract Documents, within twenty-one (21) Days from the Contract Start Date, the Contractor shall submit the following to the Owner for approval:

11.1.1 A comprehensive Schedule of Submittals required by the Specifications. Said Schedule shall include Submittal dates, required approval dates and date material must be on site.

11.1.2 The Contractor shall allow a minimum of 14 Days for the Owner and its agents' review of Submittals. No extension of the Contract Time shall be granted for revisions and resubmission. Further, the Contractor shall allow a minimum of eight weeks for testing and Acceptance of the Work by the Owner.

11.1.3 When the Contract Documents specify a "CPM Schedule" a detailed Critical Path Method Schedule is required using software approved by the Owner and/or Construction Administrator with as many activities as necessary to make the Schedule an effective tool for planning and monitoring the progress of the Work. The Contractor shall show all pertinent activities requiring coordination between trades.

11.1.4 When the Contract Documents specify a "Construction Schedule" a detailed Construction Schedule is required using software approved by the Owner as a horizontal bar chart with a separate bar for each major portion of the Work or operation to make the Schedule an effective tool for planning and monitoring the progress of the Work.

11.2 Unless otherwise specified under the Contract Documents, the Contractor shall provide a monthly update of the CPM Schedule or Construction Schedule in the format required by the Owner as well as a disk of the updated Schedule and program. If, in the opinion of the Owner, the Work is falling behind Schedule, the Contractor shall submit a revised Schedule demonstrating a recovery plan to ensure Substantial Completion of the Work within the Contract Time.

11.3 Overtime, increased manpower, and additional shifts: If ordered by the Owner in writing, the Contractor shall work overtime, and/or add additional manpower and/or shifts:

11.3.1 If the Contractor is not behind Schedule, the Owner will pay the Contractor the actual additional premium portion of the wages for overtime or additional shift work not included in the Contract price, but the Contractor shall not be entitled to Overhead and Profit.

11.3.2 If the Contractor, through its sole or partial fault or neglect is behind Schedule, the Owner may order the Contractor, at the Contractor's expense, to increase its manpower or to work any overtime or additional shifts or take other action necessary to expedite the Work to meet the Project Schedule.

11.3.3 If the Schedule is shown to be more than 21 Days behind in any critical activity, overtime, increase manpower and/or additional shifts shall be implemented immediately regardless of who is at fault. A disagreement over the cause of the impact will not relieve the Contractor from the obligation of complying with this Article. Once liability for the impact is determined, compensation will be determined in accordance with 11.3.1 or 11.3.2.

11.3.4 The Owner reserves the right to suspend activity under Paragraph 11.3. Suspension shall be in writing and at the sole discretion of the Commissioner.

11.4 Requisitions for partial payment will not be processed until the Contractor has complied with this requirement.

<u>ARTICLE 12</u> PREFERENCE IN EMPLOYMENT

12.1 Should this Contract be for the construction or repair of any building, then in the employment of labor to perform the Work specified herein, preference shall be given to citizens of the United States, who are, and continuously for at least three (3) months prior to the date hereof, have been residents of the labor market area, as established by the State of Connecticut Labor Commissioner, in which such Work is to be done, and if no such qualified person is available, then to citizens who have continuously resided in the county in which the Work is to be performed for at least three (3)

months prior to the date hereof, and then to citizens of the state who have continuously resided in the State at least three months prior to the date hereof.

12.2 Should this Contract be for a Public Works Project other than for the construction, remodeling or repairing of public buildings covered by Connecticut General Statutes 31-52, then in the employment of mechanics, laborers or workmen to perform the Work specified herein, preference will be given to residents of the state who are, and continuously for at least six (6) months prior to the date hereof have been residents of this State, and if no such person is available then to residents of other states.

12.3 The provisions of this Article shall not apply where the state or any subdivision thereof may suffer the loss of revenue granted or to be granted from any Agency or Department of the federal government as a result of this Article or regulations related thereto.

ARTICLE 13 COMPENSATION FOR CHANGES IN THE WORK

13.1 At any time, without invalidating the Contract and by a written order and without notice to the sureties, the Owner, through the Construction Administrator, may order modifications in the Work consisting of additions, deletions or other revisions. Upon request, the Contractor shall supply the Construction Administrator promptly with a detailed proposal for the same, showing quantities of and Unit Prices for the Work and that of any Subcontractor involved.

13.2 Modifications to the Work will be authorized by a written Change Order, or if necessary to expedite the Work, a written Construction Change Directive, issued by the Owner as provided for in Article 25. Change Orders and Construction Change Directives shall be processed in accordance with the terms of the Contract Documents. Upon receipt of the written Change Order, the Contractor shall proceed with the Work when and as directed.

13.3 If a Change Order makes the Work less expensive for the Contractor, the proper deductions shall be made from the Contract Sum, said deductions to be computed in accordance with the provisions listed in this Article 13.

13.4 The Contractor shall not be entitled to an extension of time if in the opinion of the Owner the Additional Work in conjunction with the Work can be performed without impact on the Contract Time.

13.5 The Contractor may request, and the Owner may grant additional Contract Time when, in the opinion of the Owner,

the Contractor has demonstrated that the Additional Work cannot be performed in conjunction with the Work without impact on the original Substantial Completion and/or Acceptance (if applicable) date.

13.6 The amount of compensation to be paid to the Contractor for any Additional or Deleted Work that results in a Change Order shall be determined in one of the following manners:

13.6.1 AMOUNT OF COMPENSATION FOR CHANGE ORDER COSTS: LABOR, EQUIPMENT, BENEFITS AND MATERIAL:

13.6.1.1 Unit Price: As stated in the Contract Documents.

13.6.1.2 Unit Price: As subsequently agreed upon by the Contractor and Owner

13.6.1.3 Lump Sum: Agreed upon sum by the Owner and the Contractor. The Owner may rely on costs, prices, and documentation provided by the Contractor or Subcontractor in agreeing to a Lump Sum. If the Owner believes that additional information is necessary to substantiate the accuracy of the cost, the Owner reserves the right to request and receive additional information from the Contractor. The Lump Sum must be based upon the following itemized costs:

13.6.1.3.1 Labor: (Contractor's or Subcontractor's own forces) No Change Order Proposal shall be negotiated if the request is solely for the increased labor rate over those originally carried by the Contractor in its original bid. Additional foreman hours shall not be included unless additional crews are added and/or a compensable time extension is granted. Project Executive time shall not be included as a direct cost as it is part of the overhead mark-up allowed. Project manager hours shall not be included unless a compensable time extension is granted.

13.6.1.3.2 Material: (Actual cost to the Contractor or Subcontractor) Cost shall not be based upon list pricing unless it reflects the actual prices being paid and no discounts or other offsets are being received by the Contractor or Subcontractor. No Change Order Proposal shall be negotiated if the request is solely for the escalation of material prices over those originally carried by the Contractor in its original bid.

13.6.1.3.3 Benefits: (The established rates of the following benefit costs inherent to the particular labor involved):

13.6.1.3.3.1 Workers Compensation.

13.6.1.3.3.2 Federal Social Security.

13.6.1.3.3.3 Connecticut Unemployment Compensation.

13.6.1.3.3.4 Fringe Benefits.

13.6.1.4 Rented Equipment (Used directly on the Work and by the Contractor's or Subcontractor's own forces).

13.6.1.5 Owned Equipment (Used directly on the Work and by the Contractor's or Subcontractor's own forces). Daily rate is not to exceed 3% of the monthly rental rate as identified by a nationally recognized construction cost estimating guide or service.

13.6.1.6 SMALL TOOLS:

Include items such as shovels, picks, rakes, ladders, and power tools which are expected to be utilized on a project. Trade related equipment, hand tools, and power tools normally supplied with the labor or are normally expected to be owned in the performance of the typical work for a trade are not compensable. These costs shall not be approved as part of the Direct Cost of a Change Order as they are included in the Contractor's overhead mark-up percentage.

13.6.2 OVERHEAD AND PROFIT PERCENTAGES:

(Maximum allowable percentages applied to labor, equipment, and material)

13.6.2.1 Contractor's mark-up for Work performed by its own forces:

| Change Order Amount | Overhead and Profit |
|----------------------|---------------------|
| \$0 to \$ 5,000 | 20% |
| \$5,001 to \$15,000 | 17% |
| \$15,001 to \$25,000 | 15% |
| \$25,000 and greater | 12% |

13.6.3 OVERHEAD AND PROFIT PERCENTAGES: (Maximum allowable percentages applied to labor, equipment, benefits and material)

13.6.3.1 Contractor's mark-up for Work performed by its Subcontractor's forces and not allowable for any subsidiary in which the Contractor has a majority ownership:

| Change Order Amount | Overhead and Profit |
|---------------------|----------------------------|
| \$0 and greater | 6% |

13.6.4 OVERHEAD AND PROFIT PERCENTAGES: (Maximum allowable percentages applied to labor, equipment, benefits and material)

Subcontractor's mark-up for Work performed by its own forces:

| Change Order Amount | Overhead and Profit |
|----------------------|----------------------------|
| \$0 to \$ 5,000 | 20% |
| \$5,001 to \$15,000 | 17% |
| \$15,001 to \$25,000 | 15% |
| \$25,000 and greater | 12% |

13.6.5 OVERHEAD AND PROFIT PERCENTAGES: (Maximum allowable percentages applied to labor, equipment, benefits and material)

13.6.5.1 Subcontractor's mark-up for Work performed by its Secondary Subcontractor's forces. Limited to one level (tier) below the Subcontractor and not allowable for any subsidiary in which the Subcontractor has a majority ownership.

| Change Order Amount | Overhead and Profit |
|---------------------|----------------------------|
| \$0 and greater | 6% |

13.7 BOND COSTS

13.7.1 Actual additional bonding costs associated with the value of the Change Order will be compensable only when supported by written documentation by the bonding company that the Change Order requires an increase to the original Performance, Payment, Labor or Material Bond.

13.7.2 The Contractor shall notify the bonding company at each \$500,000 increase to the contract value as the cumulative result of change orders. A copy of the Consent of Surety must be provided to the Owner prior to the execution of any change order which exceeds each cumulative \$500,000.

13.8 Trade discounts, rebates, and amounts received from the sales by the Contractor of surplus materials and equipment shall accrue to the Owner.

13.9 If the parties cannot agree upon a Lump Sum, then the Commissioner, through the Project Manager, may at the option of the Commissioner take the following action(s):

13.9.1 Issue a Construction Change Directive for the Additional or Deleted Work. The amount of compensation shall be computed by the actual net costs to the Contractor determined by time and material or Unit Prices based upon the same information required in Subparagraphs 13.6.1.3.3.1 through 13.6.1.5:

13.9.1.1 Labor (Contractor's or Subcontractor's own forces)

13.9.1.2 Material (Used by Contractor's or Sub- contractor's own forces).

13.9.1.3 Benefits: (The established rates of the following benefit costs inherent to the particular labor involved):

13.9.1.3.1 Workers Compensation.

13.9.1.3.2 Federal Social Security.

13.9.1.3.3 Connecticut Unemployment Compensation.13.9.1.3.4 Fringe Benefits.

13.9.1.4 Rented Equipment (Used directly on the Work and by the Contractor's or Subcontractor's own forces).

13.9.1.5 Owned Equipment (Used directly on the Work and by the Contractor's or Subcontractor's own forces). Daily rate is not to exceed 3% of the monthly rental rate that can be identified by a nationally recognized construction cost estimating guide or service.

13.9.2 Issue a Change Order adjusting the Contract Sum in the amount as determined by the Commissioner.

13.10 For any Change Order or Construction Change Directive the Contractor shall, when requested, promptly furnish in a form satisfactory to the Construction Administrator and the Owner a complete detailed accounting of all costs relating to the Additional Work, including but not limited to certified payrolls and copies of accounts, bills and vouchers to substantiate actual costs. Further, the Owner reserves the right to access and make copies of the Contractor's records at any time upon written request from the Commissioner.

13.11 Failure of the Contractor to negotiate in good faith issues of time and costs or failure to provide requested documentation within fourteen (14) Days, or a time period accepted by the Commissioner, shall constitute a waiver by the Contractor of any claim. In such cases the Owner may elect to issue a unilateral Change Order in an amount deemed to be fair and equitable by the Commissioner. The provisions hereof shall not affect the power of the Contractor to act in case of emergency, threatened injury to persons, or damage to Work on any adjoining property. In this case the Commissioner, through the Project Manager, shall issue a Change Order for such amount as the Commissioner finds to be reasonable cost of such Work.

ARTICLE 14 DELETED WORK

14.1 Without invalidating any of the terms of the Contract, the Commissioner may order deleted from the Contract any items or portions of the Work deemed necessary by the Commissioner.

14.2 The compensation to be deducted from the Contract Sum for such deletions shall be determined in the manner provided for under the provisions of Article 13 or in the event none of the provisions of Article 13 are applicable then by the value as estimated by the Owner.

<u>ARTICLE 15</u> MATERIALS: STANDARDS

15.1 Unless otherwise specifically provided for in the Specifications, all equipment, materials and articles incorporated in

the Work are to be new and of the best grade of their respective kinds for the purposes. Wherever in the Contract Documents a particular brand, make of material, device, or equipment is shown or specified, the first manufacturer listed in the specification section is to be regarded as the standard. When the specification is proprietary and only one manufacturer is listed, the Contractor shall use the named manufacturer and no Substitutions or Equals will be allowed.

15.2 Any other brand, make of material, device, equipment, procedure, etc. which is a deviation from the specified requirement is prohibited from use, but may be considered by the Owner for approval as an Equal or Substitution. The Contractor is to adhere to the specific requirements of the Contract Documents. Substitutions are discouraged and are only approved by the Commissioner as an exception.

15.3 Submittals – Equals and Substitution Requests:

15.3.1 Substitution of Materials and Equipment before Bid Opening. The Owner will consider requests for Equals or Substitutions, if made prior to the receipt of the Bid. The information on all materials shall be consistent with the information herein.

15.3.1.1 Statement of Variances – a statement of variances must list all features of the proposed Substitution which differ from the Drawings, Specifications and/or product(s) specified and must further certify that the Substitution has no other variant features. A request will be denied if submitted without sufficient evidence.

15.3.1.2 Substitution Denial – any Substitution request not complying with the above requirements will be denied. Substitution request sent after the deadline established in the Notice to Bidder will be denied.

15.3.1.3 An addendum shall be issued to inform all prospective Bidders of any accepted Substitution in accordance with Owner's addenda procedures.

15.3.2 Substitution of Materials and Equipment After Bid Opening: Subject to the Architect or Engineer's determination, if the material or equipment is Equal to the one specified or pre-qualified and the DPW Project Manager's approval of such determination, Substitution of Material or Equipment may be allowed after the Letter of Award is issued only:

15.3.2.1 If the specified or pre-qualified item is delayed by unforeseeable contingencies beyond the control of the Contractor which would cause a delay in the Project completion;

15.3.2.2 If any specified or pre-qualified item is found to be unusable or unavailable due to a change by the manufacturer or other circumstances; or

15.3.2.3 If the Contractor desires to provide a more recently developed material, equipment, or manufac-

tured model from the same named manufacturer than the one specified or pre-qualified; or

15.3.2.4 If the specified material and/or equipment inadvertently lists only a single manufacturer.

15.4 Contractor shall submit each request for Equal or Substitution to the Architect or Engineer who shall review each request and make the following recommendations to the Owner:

15.4.1 Acceptance or non-acceptance of the adequacy of the submission and required back-up,

15.4.2 Determination of the category of the request for Substitution or Equal, and

15.4.3 Overall recommendation for approval or rejection of the Substitution or Equal. The determination of the category as a Substitution may be grounds for an immediate rejection by the Owner.

15.5 Approval of the Owner for each Equal or Substitution shall be obtained before the Contractor proceeds with the Work. The decision of the Commissioner, in this regard, shall be final and binding on the Contractor.

15.6 No extension of time will be allowed for the time period required for consideration of any Substitution or Equal. No extension of time will be allowed and no responsibility will be assumed by the Owner when a Contractor submits a request for Substitution or Equal, whether such request be approved or denied, and the Contractor shall not be entitled to any claim for damages for delay.

15.7 If the Contractor submits any request for an Equal or a Substitution, he shall bear the burden of proof that such requested Equal or Substitution meets the requirements of the Plans and Specifications.

15.8 The Contractor shall purchase no materials or supplies for the Work which are subject to any chattel mortgage or which are under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that the Contractor has good title to all materials and supplies used by him in the Work.

15.9 All products and systems supplied to the State as a result of a purchase by a Contractor shall be certified that, to the best of the supplier's knowledge, there are no materials that are classified as hazardous materials being used within the assembly. Hazardous materials include, but are not limited to, products such as asbestos, lead, and other materials that have proven to cause a health risk by their presence.

ARTICLE 16 INSPECTION AND TESTS STANDARD FORM FOR ALL PROJECTS **16.1** The purpose of the inspections will be to assure that the Work is performed in accordance with the Contract Documents. These inspections shall include, but not be limited to, all inspections and testing as required by the Owner, and any authorities have jurisdiction.

16.2 All material and workmanship, if not otherwise designated by the Specifications, shall be subject to inspection, examination and test by the Commissioner at any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction is carried on. The Contract Documents additionally identify the parties responsible for performing and paying for the required testing and inspections. All required tests performed in a laboratory will be obtained and paid for by the Owner, except when the tests show the Work to be defective. The Contractor shall pay for all the costs associated with re-tests and re-inspections for all tests and inspections which fail. The Owner will issue a deduct Change Order to recover said retesting costs from the Contractor. All other tests, unless otherwise specified, shall be made at the Contractor's expense. Notice of the time of all tests to be made at the site shall be given to all interested parties, including the Owner.

16.3 Without additional cost to the Owner, the Contractor shall promptly furnish facilities, labor and materials necessary to coordinate and perform operational tests and checkout of the Work. The Contractor shall furnish promptly all reasonable facilities, labor, and materials necessary to make all such testing safe and convenient.

16.4 If, at any time before final payment and Acceptance of the Work, the Commissioner considers it necessary or advisable to examine of any portion of the Work already completed by removing or tearing out the same, the Contractor shall, upon request, furnish promptly all necessary facilities, labor, and materials. If such Work is found to be defective in any material respect, as determined by the Owner, because of a fault of the Contractor or any of the Contractor's Subcontractors, or if any Work shall have been covered without the approval or consent of the Commissioner (whether or not it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including removal and/or demolition of the defective Work, including labor, material, and testing, including labor, material, re-testing or re-inspecting, services of required consultants, additional super-

vision, the Commissioner's and the Construction Administrator's administrative costs, and other costs for services of other consultants.

16.5 Cost of Systems Commissioning Retesting: The cost to retest a pre-functional or functional test, if the Contractor is responsible for the deficiency, shall be the Contractor's. If

the Contractor is not responsible, any cost recovery for retesting costs shall be negotiated with the Contractor.

- **16.5.1** For a deficiency identified, not related to any prefunctional checklist or start-up fault, the following shall apply: The Systems Commissioning Authority (SCA) and Construction Administrator will direct the retesting of the equipment once at no "charge" to the Contractor for their time. However, the Systems Commissioning Authority's and Construction Administrator's time for additional testing will be charged to the Contractor.
- **16.5.2** The time for the Systems Commissioning Authority and Construction Administrator to direct any retesting required because a specific pre-functional checklist or start-up test item, reported to have been successfully completed, but determined during functional testing to be faulty, will be back charged to the Contractor.

16.5.3 Any required retesting by any Subcontractor shall not be considered a justified reason for a claim of delay or for a time extension by the Contractor.

ARTICLE 17 ROYALTIES AND PATENTS

17.1 If the Contractor desires to use any design, device, material or process covered by a patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the holder of said patent or copyright. The Contractor shall furnish a copy of this legal agreement to the Owner.

17.2 The Contractor shall indemnify and hold harmless the Owner and Construction Administrator for any costs, expenses and damage which it may be obliged to pay by reason of any infringement of a patent or a copyright, at any time during the prosecution or after the Final payment of the Work.

ARTICLE 18 SURVEYS, PERMITS AND REGULATIONS

18.1 Unless otherwise provided for, the Contractor shall furnish surveys necessary for the execution of the Work. The Owner will furnish the Contractor with two base lines and a benchmark.

18.2 The Contractor shall obtain and pay for permits and licenses necessary for the execution of the Work and the occupancy and use of the completed Work.

18.3 The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations including building and fire safety codes relating to the performance of the Work.

18.4 If underground utilities may be involved in part of the Work the Contractor is required to request "Call-Before-You-Dig" to verify the location of underground utilities at least (3) Working Days, as further defined under Paragraph 1.71 herein, prior to the start of any excavation. The Contractor shall also notify the Owner and Agency at least (3) Working Days prior to the start of any excavation. If "Call-Before-You-Dig" fails or refuses to respond to the Contractor's request, then the Contractor shall obtain the services of a qualified underground utility locating firm, at no additional cost to the Owner, to verify locations of underground utilities prior to the start of any excavation. The Contractor shall be held responsible for providing safety, protecting the Work and protecting workmen as necessary to perform the Work. The Contractor shall be responsible for maintaining and protecting all original utility mark-out at no additional cost to the Owner.

ARTICLE 19 PROTECTION OF THE WORK, PERSONS AND PROPERTY

19.1 The Contractor shall continuously and adequately protect the Work against damage from any cause, and shall protect materials and supplies furnished by the Contractor or Subcontractors, whether or not incorporated in the Work, and shall make good any damage unless it be due directly to errors in the Contract Documents or is caused by agents or employees of the Owner.

19.2 To the extent required by law, by public authority, or made necessary in order to safeguard the health and welfare of the personnel or occupants of any of the state institutions, the Contractor shall adequately protect adjacent property and persons, and provide and maintain all facilities, including but not limited, to passageways, guard fences, lights, and barricades necessary for such protection.

19.3 The Contractor shall take all necessary precautions for the safety of employees on the Work and shall comply with applicable provisions of federal and state safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the Work is being performed. The Contractor shall also comply with the applicable provisions of the Associated General Contractors' "Manual of Accident Prevention in Construction", the standards of the Connecticut Labor Department and Occupational Safety and Hazard Association (OSHA).

19.4 The Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of employees of the State and the public, and shall post danger signs warning against any dangerous condition or hazard created

by such things as protruding nails, well holes, elevator hatchways, scaffolding, window openings, excavations, tripping hazards or slipping, stairways and falling materials.

19.5 The Contractor shall designate a qualified and responsible on-site staff person, whose duty shall be the prevention of accidents. The name and position of the designated person shall be reported to the Owner by the Contractor at the commencement of the Contract.

19.6 The Contractor shall at all times protect excavations, trenches, buildings, and all items of Work from damage by rain, water from melted snow or ice, surface water run off and subsurface water usual for the vicinity at the time of operations; and provide all pumps and equipment and enclosures to insure such protection.

19.7 The Contractor shall construct and maintain all necessary temporary drainage and provide all pumping necessary to keep excavation, basements, footings and foundations free of water.

19.8 The Contractor shall remove all snow and ice as may be required for access to the site and proper protection and prosecution of the Work.

19.9 The Contractor shall install bracing, shoring, sheathing, sheet piling, caissons and any other underground facilities as required for safety and proper execution of the Work, and shall remove this portion of the Work when no longer necessary.

19.10 During cold weather the Contractor shall protect all Work from damage. If low temperature makes it impossible to continue operations safely in spite of cold weather precautions, the Contractor may cease Work upon the written approval of the Commissioner.

ARTICLE 20 TEMPORARY UTILITIES

20.1 Unless expressly provided for otherwise in the Contract Documents, the Contractor shall include in the proposed contract bid price as stated on the Bid Proposal Form, the costs of all temporary utilities required for Project completion and protection of the Work. Said temporary utilities include, but are not limited to, lighting, heating, cooling, electrical power, water, telephone, sanitary facilities, and potable water.

ARTICLE 21 CORRECTION OF WORK

21.1 The Contractor shall promptly and without expense to the Owner remove from the premises all materials rejected by or unacceptable to the Commissioner as failing to conform to the Contract Documents, whether incorporated in the Work or not.

21.2 The Contractor shall promptly and without expense to the Owner replace any such materials, which do not conform to the Contract Documents, and shall bear the expense of making good all Work of other Contractors or Subcontractors destroyed or damaged by such removal or replacement.

21.3 If the Contractor, after receipt of notice from the Owner, shall fail to remove such rejected or unacceptable materials within a reasonable time as fixed in said notice, the Owner may remove and store such materials at the expense of the Contractor.

21.4 Such action shall not affect the obligation of the Contractor to replace and complete assembly and installation of the Work and to bear the expenses referred to above. Prior to the correction of rejected or unacceptable Work or if the Commissioner deems it inexpedient or undesirable to correct any portion of the Work which was rejected, deemed unacceptable, or not done in accordance with the Contract Documents, the Contract Sum shall be reduced by such amount as, in the judgment of the Commissioner, shall be equitable.

21.5 No extension of time will be given to the Contractor for correction of rejected or unacceptable Work. All significant punchlist Work shall be completed before Substantial Completion is determined. The remaining minor punchlist Work, as determined by the Commissioner, shall be completed within ninety (90) Days of established Substantial Completion date.

21.6 Final Payment shall not relieve the Contractor of responsibility for the defects in material or workmanship.

21.7 Unless expressly provided for otherwise in the Contract Documents, the Contractor shall remedy any rejected or unacceptable Work, and any Work found to be not conforming to the Contract Documents which is discovered within 18 Months after the date of Substantial Completion. The Contractor shall pay for any damage to other Work caused by such nonconforming Work or any damage created in correcting the nonconforming Work.

ARTICLE 22 GUARANTEES and WARRANTIES

22.1 Unless expressly provided for otherwise in the Contract Documents, the Contractor shall provide a Warranty on the Work for an 18-Month period from the date of Substantial Completion. The Contractor shall warrant that the equipment,

materials and workmanship are of good quality and new, unless permitted elsewhere by the Contract Documents, and that the Work shall be free from defects not inherent in the quality required or permitted and that the Work conforms to the Contract Documents.

22.2 Disclaimers and limitations from manufactures, Subcontractors, suppliers or installers to the Contractor shall not relieve the Contractor of the Warranty on the Work. The Contract Documents detail the related damages, reinstatement of Warranty, replacement cost and Owner's recourse.

<u>ARTICLE 23</u> CUTTING, FITTING, PATCHING, AND DIGGING

23.1 The Contractor will perform or will cause the Subcontractors to perform all cutting, fitting, or patching of the portion(s) of the Work that may be required to make the several parts thereof joined and coordinated in a manner satisfactory to the Commissioner and in accordance with the Plans and Specifications.

23.2 The responsibility for defective or ill-timed Work shall be with the Contractor, but such responsibility shall not in any way relieve the Subcontractor who performed such Work. Except with the consent of the Commissioner, neither the Contractor nor any of its Subcontractors shall cut or alter the Work of any other Contractor or Subcontractor.

ARTICLE 24 CLEANING UP

24.1 The Contractor shall, on a daily basis, keep the premises free from accumulations of waste material or rubbish.

24.2 Prior to Acceptance of the Work, the Contractor shall remove from and about the site of the Work, all rubbish, all temporary structures, tools, scaffolding, and surplus materials, supplies, and equipment which may have been used in the performance of the Work. If the Commissioner in his sole discretion determines that the Contractor has failed to clean

the work site, the Owner may remove the rubbish and charge the cost of such removal to the Contractor. A deduct Change Order will be issued by the Owner to recover such cost.

ARTICLE 25 ALL WORK SUBJECT TO CONTROL OF THE COMMISSIONER

25.1 The Commissioner hereby declares that the DPW Project Manager is the Commissioner's only authorized repre-

sentative to act in matters involving the Owner's, and/or Architect's or Engineer's, ability to revoke, alter, enlarge or relax any requirement of the Contract Documents; to settle disputes between the Contractor and the Construction Administrator; and act on behalf of the Commissioner. In all such matters, the provisions of Articles 13 and 14 herein shall guide the DPW Project Manager.

25.2 In no event may the Contractor act on any instruction of the Agency without written consent of the Owner. In the event the Contractor acts without such consent, he does so at his own risk and at his own expense, not only for the Work performed, but for the removal of such Work as determined necessary by the Commissioner.

25.3 In the performance of the Work, The Contractor shall abide by all orders, directions, and requirements of the Commissioner at such time and places and by such methods and in such manner and sequence as the Commissioner may require.

25.4 The Commissioner shall determine the amount, quality, acceptability and fitness of all parts of the Work, shall interpret the plans, Specifications, Contract Documents and extra work orders and shall decide all other questions in connection with the Work.

25.5 The Contractor shall employ no plant, equipment, materials, methods, or persons to which the Commissioner objects and shall remove no plant materials, equipment, or other facilities from the site of the Work without the permission of the Commissioner. Upon request, the Commissioner shall confirm in writing any oral order, direction, requirement or determination.

25.6 In accordance with Section 4b-24 of the Connecticut General Statutes, the public auditors of the State of Connecticut and the auditors or accountants of the Commissioner of Public Works shall have the right to audit and make copies *of* the books of any Contractor employed by the Commissioner.

ARTICLE 26 AUTHORITY OF THE CONSTRUCTION ADMINISTRATOR

26.1 The Construction Administrator employed by the Commissioner is authorized to inspect all Work for conformance to the Contract Documents. The Construction Administrator is authorized to reject all Work found to be defective, unacceptable and nonconforming to the Contract Documents. Such inspections and rejections may extend to all or any part of the Work, and to the preparation or manufacture of the material to be used.

26.2 The Construction Administrator is not empowered to revoke, alter, enlarge, or relax any requirements of the Contract Documents, or to issue instructions contrary to the Contract Documents. The Construction Administrator shall in no case act as foreman or perform other duties for the Contractor, nor shall the Construction Administrator interfere with the management of the Work by the Contractor. Any advice, which the Construction Administrator may give the Contractor, shall in no way be construed as binding the Commissioner or Owner in any way, nor releasing the Contractor from the fulfillment of the terms of the Contract.

26.3 In any dispute arising between the Contractor and the Construction Administrator with reference to inspection and rejection of the Work, the Construction Administrator may suspend Work on the non-compliant portion of the Work until the dispute can be referred to and decided by the Commissioner.

ARTICLE 27 SCHEDULE OF VALUES, APPLICATION FOR PAYMENT

27.1 Immediately after the signing of the Contract, the Contractor shall furnish for the use of the Commissioner, as a basis for estimating partial payments, a certified Schedule of Values, totaling the Contract Sum and broken down into quantities and unit costs, as outlined in the Contract Documents and as directed by the Owner. The Schedule of Values must reflect true costs and be in sufficient detail to be an effective tool for monitoring the progress of the Work Upon request of the Commissioner; the Contractor shall supply copies of signed Contracts, vendor quotations, etc. as back up to the Schedule of Values.

27.2 Approval of the Schedule of Values by the Commissioner is required prior to any payment by the Owner.

27.3 The Schedule of Values shall include a breakdown of the Contractor's general condition costs.

27.3.1 Non-recurring costs, (i.e. Mobilization costs, utility hook-ups, temporary heat) will be paid at the time of occurrence.

27.3.2 Reoccurring costs will be paid in proportion to the percent of completion of the Project.

27.3.3 Further detail can be found in the General Requirements 01.29.76; paragraphs 1.3.B.4 for this project.

27.4 The Schedule of Values shall include a breakdown of Contract closeout costs including systems certification testing and acceptance, training, Warranties, Guarantees, As-Built Drawings and attic stock.

27.5 The Contractor shall make periodic applications for payment, which shall be subdivided into categories corresponding with the approved Schedule of Values and shall be in such numbers of copies as may be designated by the Commissioner.

ARTICLE 28 PARTIAL PAYMENTS

28.1 Commissioner will examine the Contractor's Applications For Payments to determine, in the opinion of the Commissioner, the amounts that properly represent the value of the Work completed and the materials suitably stored on the site.

28.2 In making such Application For Payment for the Work, there shall be deducted <u>seven and one-half</u> percent (7.5%) of the amount of each Application for Payment to be retained by the Owner as Retainage until Final Completion.

28.2.1 The Commissioner has the sole discretion in the determination of reduction in Retainage. At fifty percent (50%) completion of the Work the Owner shall issue a "Contractor's Performance Evaluation". If the Contractor receives a performance evaluation score of "Good" or better, then the Retainage withheld may be reduced to five percent (5%). All subsequent Applications for Payment shall be subject to five percent (5%) Retainage. Upon Substantial Completion, the Retainage may be reduced at the request of the Contractor and recommendation of the DPW Project Manager. In the event of a reduction in Retainage to below five percent (5%), the minimum Retainage withheld shall not be less than the DPW Project Manager's estimate of the remaining Work or two and one-half percent (2.5%), which ever is greater. All requests for Retainage Reduction shall be done on DPW Form 748F Retainage Reduction Request, which can be found at the end of the General Conditions.

28.2.2 Subsequent to Substantial Completion, in limited circumstances, at the sole discretion of the Commissioner, a reduction of Retainage below Two and one-half percent (2.5%) may be considered.

28.2.3 A "Good" Contractor's Performance Evaluation score shall be defined as a minimum total score of sixty percent (60%).

28.3 The decision of the Commissioner to reduce the Retainage rate will be based upon the Contractor's Performance Evaluation score for completed portions of the Work as set out above and other factors that the Commissioner may find appropriate as follows:

28.3.1 The Contractor's timely submission of an appropriate and complete CPM Schedule or Construction Schedule and Schedule of Values, in compliance with

the Contract requirements and the prompt resolution of the Owner's and/or Architect's or Engineer's comments on the submitted material resulting in an appropriate basis for progress of the Work.

28.3.2 The Contractor's timely and proper submission of all Contract Document required submissions: including, but not limited to, Shop Drawings, material certificates and material samples and the prompt resolution of the Owners and/or Architect's or Engineer's comments on the submitted material, resulting in an appropriate progress of the Work.

28.3.3 The Contractor's provision of proper and adequate supervision and home office support of the Project.

28.3.4 The Work completed to date has been installed or finished in a manner acceptable to the Owner.

28.3.5 The progress of the Work is consistent with the approved CPM Schedule or Construction Schedule.

28.3.6 All approved credit change orders have been invoiced.

28.3.7 All Change Order requests for pricing are current.

28.3.8 The Contractor has and is maintaining a clean worksite in accordance with the Contract Documents.

28.3.9 All Subcontractor payments are current at the time of reduction request.

28.3.10 Contractor is compliant with set-aside provisions of the contract.

28.4 No payments will be made for improperly stored or protected materials or unacceptable Work.

28.5 At his or her sole discretion, the Commissioner may allow to be included in the monthly requisitions payment requests for materials and equipment stored off the site.

28.5.1 In the event the Commissioner allows the Contractor to include in its requisitions payment requests for materials and equipment stored off the site, the Contractor shall also submit any additional bonds and/or insurance certificates relating to off-site stored materials and equipment, and follow such other procedures as may be required by the State to obtain the Commissioner's approval of such requests.

28.5.2 The Architect or Engineer, or Construction Administrator shall have inspected said materials and equipment and recommended payment therefore. The Contractor shall pay for the cost of the Architect's or Engineer's, or Construction Administrator's time and expense in performing these inspection services.

ARTICLE 29 DELIVERY OF STATEMENT SHOWING AMOUNTS DUE FOR WAGES, MATERIALS, AND SUPPLIES **29.1** For each Application for Payment under this Contract, the Owner reserves the right to require the Contractor and every Subcontractor to submit a written verified statement, in a form satisfactory to the Owner, showing in detail all amounts then due and unpaid by such Contractor or Subcontractor for daily or weekly wages to all laborers employed by it for the performance of the Work or to other persons for materials, equipment or supplies delivered at the site.

29.2 The term "laborers" as used herein shall include workmen, workwomen, and mechanics.

29.3 Failure to comply with this requirement may result in the Owner withholding the Application for Payment pursuant to Article 28.

ARTICLE 30 SUBSTANTIAL COMPLETION AND ACCEPTANCE

30.1 Substantial Completion:

30.1.1 When the Contractor considers that the Work or a portion thereof is Substantially Complete, the Contractor shall request an inspection of said Work in writing to the Construction Administrator. The request shall certify that the Contractor has completed its own inspection prior to the request and that the Contractor is compliant with all requirements of Section 01 77 00 of the General Requirements. The request must also include a statement that a principal or senior executive of the Contractor is ready, willing and able to attend a walk through inspection with the Architect or Engineer.

30.1.2 Upon receipt of the request, the Architect or Engineer, Construction Administrator and Owner, will make an inspection to determine if the Work or designated portion thereof is Substantially Complete. A principal or senior executive of the Contractor shall accompany the Architect or Engineer during each inspection/re-inspection. If the inspection discloses any item, whether or not included on the inspection list, which is not in accordance with the re-

quirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item.

30.1.3 The Contractor shall then submit a request for another inspection. The determination of Substantial Completion is solely within the discretion of the Owner. Any costs for re-inspection beyond one, shall be at the expense of the Contractor and such costs will be recovered by issuance of a credit Change Order. When the Work or designated portion thereof is determined to be Substantially Complete, the Contractor will be provided a Certificate of Substantial Completion from the Owner. The Certificate of Substantial Completion shall establish the date when the responsibilities of the Contractor for security, maintenance,

heat, utilities, damage to the Work, and insurance, are transferred to the Owner and shall fix the time within which the Contractor shall finish all items on the inspection list accompanying the Certificate. If the punch list is not complete in 90 Days, the Owner reserves the right to complete the outstanding punch list items with their own forces or by awarding separate contracts and to deduct the cost thereof from the amounts remaining due to the Contractor.

30.1.4 The Certificate of Substantial Completion shall be signed by the Construction Administrator, Owner, and Architect or Engineer. Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Construction Administrator and Architect or Engineer, the Owner shall make payment reflecting adjustment in Retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

30.2 Acceptance:

30.2.1 Upon completion of the Work, the Contractor shall forward to the Construction Administrator a written notice that the Work is ready for inspection and Acceptance.-**30.2.2** When the Work has been completed in accordance with terms and conditions of the Contract Document as determined by the Owner a Certificate of Acceptance shall be issued by the Owner.

ARTICLE 31 FINAL PAYMENT

31.1 The Owner reserves the right to retain for a period of thirty (30) Days after filing of the Certificate of Acceptance the amount therein stated less all prior payments and advances whatsoever to or for the account of the Contractor.

31.2 All prior estimates and payments, including those relating to extra or additional Work, shall be subject to correction by the Final Payment.

31.3 No Application for Payment, Final or Partial, shall act as a release to the Contractor or the Contractor's sureties from any obligations under this Contract.

31.4 The Architect or Engineer and Construction Administrator will promptly issue the Certificate for Payment, stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said Final Payment is due and payable.

31.5 Final Payment shall not be released until a Certificate of Acceptance and a Certificate of Compliance have been issued.

31.6 Neither Final Payment nor any Retainage shall become due until the Contractor submits to the Owner the following:

31.6.1 An affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied.

31.6.2 A certificate evidencing that insurance required by the Contract Documents to remain in force after Final Payment is currently in effect and will not be canceled or allowed to expire without at least 30 Days prior written notice to the Owner.

31.6.3 A written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents.

31.6.4 Written consent of surety, if any, to Final Payment.

31.6.5 If required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees.

<u>ARTICLE 32</u> OWNER'S RIGHT TO WITHHOLD PAYMENTS

32.1 The Commissioner may withhold a portion of any Payment due the Contractor that may, in the judgment of the Commissioner, be necessary:

32.1.1 To assure the payment of just claims then due and unpaid to any persons supplying labor or materials for the Work.

32.1.2 To protect Owner from loss due to defective, unacceptable or non-conforming Work not remedied by the Contractor.

32.1 To protect the Owner from loss due to injury to persons or damage to the Work or property of other Contractors, Subcontractors, or others caused by the act or neglect of the Contractor or any of its Subcontractors.

32.2 The Owner shall have the right to apply any amount 03/11/09

withheld under this Article as the Owner may deem proper to satisfy protection from claims. The amount withheld shall be considered a payment to the Contractor.

32.3 The Owner has the right to withhold payment if the Contractor fails to provide accurate submissions of Submittals, up date the status including but not limited to the following: As-Built Drawings, request for information (RFI) log, Schedule, submittal log, Change Order log, certified payrolls and daily reports and all other requirement of the Contract Documents.

32.4 If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees.

ARTICLE 33 OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

33.1 The Commissioner shall have the authority to suspend the Work wholly or in part, for such period or periods as the Commissioner considers being in the best interests of the State, or in the interests of public necessity, convenience or safety. During such periods the Contractor shall store all materials and equipment, in such a manner to prevent the materials and equipment from being damaged in any way, and the Contractor shall take precautions to protect the Work from damage.

33.1.1 If the Commissioner, in writing, orders the performance of all or any portion of the Work to be suspended or delayed for an unreasonable period of time (i.e. not originally anticipated, customary, or inherent in the construction industry) and the Contractor believes that additional compensation and/or Contract Time is due as a result of such suspension or delay, the Contractor shall submit to the Commissioner in writing a request for a Contract adjustment within 7 Days of receipt of the notice to resume Work. The request shall set forth the specific reasons and support for said adjustment.

33.1.2 The Commissioner shall evaluate any such requests received. If the Commissioner agrees that the cost and/or time required for the performance of the Contract has increased as a result of such suspension and that the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or Subcontractors, and was not caused by weather, then the Commissioner will make a reasonable adjustment, excluding profit, of the Contract terms. The Commissioner will notify the Contractor of the determination as to what adjustments of

the Contract, if any, that the Commissioner deems warranted.

33.1.3 No Contract adjustment will be made unless the Contractor has submitted the request for adjustment within the time prescribed.

33.1.4 No Contract adjustment will be made under this Article to the extent that performance would have been suspended or delayed by any other cause within the Contractor's control or by any factor for which the Contractor is responsible under the Contract; or that such an adjustment is provided for or excluded under other term or condition of this Contract.

33.2 Notwithstanding any provision or language in the Contract to the contrary, the State may terminate the Contract whenever the Commissioner determines at his sole discretion that such termination is in the best interests of the State. Any such termination shall be effected by delivery to the Contractor of a written Notice of Termination specifying the extent to which performance of Work under the Contract is terminated, and the date upon which such termination shall be effective.

33.2.1 In the event of such termination, the Contractor shall be entitled to reasonable compensation as determined by the Commissioner, however, no claim for lost Overhead or profits shall be allowed.

33.2.2 All Work and materials obtained by the Contractor for the Work, that have been incorporated into the Work, inspected, tested as required, accepted by the Commissioner, and paid for by the State, shall become the property of the State.

33.2.3 Materials obtained by the Contractor for the Work that have been inspected, tested as required, and accepted by the Commissioner, and that are not incorporated into the Work, shall, at the option of the Commissioner, be purchased from the Contractor at actual cost as shown by receipted bills. To this cost shall be added all actual costs for delivery at such points of delivery as may be designated by the Commissioner, as shown by actual cost records.

33.2.4 Termination of the Contract shall not relieve the Contractor or its Surety of their responsibilities for the completed Work, nor shall it relieve the Contractor's Surety of its obligations to ensure completion of the Work and to pay legitimate claims arising out of Work.

ARTICLE 34 SUBLETTING OR ASSIGNING OF CONTRACT

34.1 The Contract or any portion thereof, or the Work provided for therein, or the right, title, or interest of the Contractor therein may not be sublet, sold, transferred, assigned, or otherwise disposed of to any person, firm, or corporation without the written consent of the Commissioner.

34.2 No person, firm, or corporation other than the Contractor to whom the Contract was awarded shall be permitted to commence Work at the site of the Contract until such consent has been granted.

ARTICLE 35 CONTRACTOR'S INSURANCE

35.1 The Contractor shall not start Work under the Contract until they have obtained insurance as stated in SECTIONS 00 62 16 CERTIFICATE OF INSURANCE and 00 40 13 BID PROPOSAL FORM, subsections 4.4.2 and 4.4.3, of the Project Manual and until the insurance has been approved by the Owner. The Contractor shall not allow any Subcontractor to start Work until the same insurance has been obtained by the Subcontractor and approved by the Owner or the Contractor's insurance provides coverage on behalf of the Subcontractor. The Contractor shall send Certificates of Liability Insurance to the Bidding and Contracts Unit, Department of Public Works, 165 Capitol Avenue, Room G-35, Hartford, CT 06106 unless otherwise directed in writing. Presented below is a narrative summary of the insurance required.

35.1.1 Commercial General Liability Insurance including contractual liability, products/completed operations, broad form property damage and independent Contractors. The limits shall be no less than \$1,000,000 each occurrence and \$2,000,000 annual aggregate. Coverage for hazards of explosion, collapse and underground (X-C-U) and for asbestos abatement when applicable to this Contract, must also be included when applicable to the Work to be performed. The State of Connecticut, the Department of Public Works, and their respective officers, agents, and employees shall be named as an Additional Insured. This coverage shall be provided on a primary basis.

35.1.2 Owner's and Contractor's Protective Liability insurance providing a total limit of \$1,000,000 for all damages arising out of bodily injury or death of persons in any one accident or occurrence and for all damages arising out of injury or destruction of property in any one accident or occurrence and subject to a total (aggregate) limit of \$2,000,000 for all damages arising out of bodily injury to or death of persons in all accidents or occurrences and out of injury to or destruction of property during the policy period. This coverage shall be for and in the name of the State of Connecticut.

35.1.3 Automobile Liability The operation of all motor vehicles including those owned, non-owned and hired or used in connection with the Contract shall be covered by Automobile Liability insurance providing for a total limit of \$1,000,000 for all damages arising out of bodily injuries to or death of all persons in any one accident or occurrence

and for all damages arising out of injury to or destruction of property in any one accident or occurrence. In cases where an insurance policy shows an aggregate limit as part of the automobile liability coverage, the aggregate limit must be at least \$2,000,000. This coverage shall be provided on a primary basis. Should the Contractor not own any automobiles, the automobile & liability requirement shall be amended to allow the Contractor to maintain only hired and non-owned liability coverage.

35.1.4 Excess Liability (Other than Umbrella Form) insurance in the amount of \$5,000,000 for bids of \$1,000,000 - \$10,000,000 and in the amount of \$10,000,000 for bids of \$10,000,001 - \$20,000,000. Refer to Section 00 92 00 Amendments of the Project Manual for Excess Liability insurance requirements for bids exceeding \$20,000,000.

35.1.5 Workers' Compensation and Employer's Liability as required by Connecticut Law and **Employers' Liability** with a limit of not less than \$100,000 per occurrence, \$500,000 disease policy limit and \$100,000 disease each employee. When Work is on or contiguous to navigable bodies of waterways and ways adjoining, the Contractor shall include the Federal Act endorsement for the U.S. Longshoremen's and Harbor Workers Act.

35.1.6 Special Hazards Insurance, if required, will be stated in SECTION 00 40 13 BID PROPOSAL FORM, subsection 4.4.2 of this Project Manual. This includes coverage for explosion, collapse or underground damage and for asbestos abatement when applicable to this Contract and shall be no less than \$1,000,000 each occurrence.

35.1.7 Builder's Risk Insurance, if required, will be stated in Section 00 40 13 Bid Proposal Form, subsection 4.4.3 of this Project Manual.

35.1.8 Inland Marine/Transit Insurance: With respect to property with values in excess of \$100,000 which is rigged, hauled or situated at the site pending installation, the Contractor shall maintain inland marine/transit insurance provided the coverage is not afforded by a Builder's Risk policy.

35.1.9 When required to be maintained, the Builder's Risk and/or Inland Marine/Transit Insurance policy shall endorse the State of Connecticut as a Loss Payee and the policy shall state it is for the benefit of and payable to the State of Connecticut.

35.2 Satisfying Limits Under an Umbrella Policy: If necessary, the Contractor may satisfy the minimum limits required above for either Commercial General Liability, Automobile Liability, and Employer's Liability coverage under an

Umbrella or Excess Liability policy. The underlying limits may be set at the minimum amounts required by the Umbrella or Excess Liability policy provided the combined limits meet at least the minimum limit for each required policy. The Umbrella or Excess Liability policy shall have an Annual Aggregate at a limit not less than two (2) times the highest per occurrence minimum limit required above for any of the required coverages. The State of Connecticut shall be specifically endorsed as an Additional Insured on the Umbrella or Excess Liability policy, unless the Umbrella or Excess Liability policy provides continuous coverage to the underlying policies on a complete "Follow-Form" basis.

35.3 The Contractor shall, at its sole expense, maintain in full force and effect at all times during the life of the Contract or the performance of Work hereunder, insurance coverage as described herein. Certificates shall include a minimum thirty (30)-day endeavor to notify requirement to the Owner prior to any cancellation or non-renewal.

35.4 The Contractor shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, coinsurance penalty, or self-insured retention, including any loss not covered because of the operation of such deductible, coinsurance penalty, or self-insured retention.

35.5 The requirement contained herein as to types and limits of insurance coverage to be maintained by the Contractor are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor.

35.6 Hold Harmless Provisions: The Contractor shall at all times indemnify and save harmless the State of Connecticut, the Department of Public Works, and their respective officers, agents, and employees, on account of any and all claims, damages, losses, litigation, expenses, counsel fees and compensation arising out of injuries (including death) sustained by or alleged to have been sustained by the officers, agents, and employees of said State or Department, or of the Contractor, his Subcontractor, or materialmen and from injuries (including death) sustained by or alleged to have been sustained by the public, any or all persons on or near the Work, or by any other person or property, real or personal (including property of said State or Department) caused in whole or in part by the acts, omissions, or neglect or the Contractor including, but not limited to, any neglect in safeguarding the Work or through the use of unacceptable materials in constructing the Work of the Contractor, any Subcontractor, materialman, or anyone directly employed by them or any of them while engaged in the performance of the Contract, including the entire elapsed time from the date of the Notice to Proceed or the actual Commencement Of The Work whichever occurs first until its completion as certified by the Department of Public Works.

<u>ARTICLE 36</u> FOREIGN MATERIALS

36.1 Preference shall be given to articles or materials manufactured or produced in the United States, Canada, and Mexico, (the members of the North American Free Trade Agreement (NAFTA)); and the products shall meet all of the referenced standards and Specifications for conditions of performance, quality, and price with duty being equal.

36.2 Only articles or materials manufactured or produced in the United States, Canada, and Mexico, (the members of the North American Free Trade Agreement (NAFTA)), will be allowed. The foregoing provisions shall not apply to foreign articles or materials required by the Contract Documents.

ARTICLE 37 HOURS OF WORK

37.1 No person shall be employed to work or be permitted to work more than eight (8) hours in any Day or more than forty (40) hours in any week for any Work provided in the Contract, in accordance with Connecticut General Statute Section 31-57.

37.2 The operation of such limitation of hours of work may be suspended during an emergency, upon the approval of the Commissioner, in accordance with Connecticut General Statute Section 31-57.

ARTICLE 38 CLAIMS

38.1 General: When filing a formal claim under Section 4-61 (referred to as "Section 4-61" below) of the Connecticut General Statutes (as revised), either as a lawsuit in the Superior Court or as a demand for arbitration, the Contractor must follow the procedures and comply with the requirements set forth in this Article. This Section does not, unless so specified, govern informal claims for additional compensation which the Contractor may bring before the Department. The Contractor should understand, however, that the Department may need, before the Department can resolve such a claim, the same kinds of documentation and other substantiation that it requires under this Article. It is the intent of the Department to compensate the Contractor for actual increased costs caused by or arising from acts or omissions on the part of the Department that violate legal or contractual duties owed to the Contractor by the Department.

38.2 Notice of Claim: Whenever the Contractor intends to file a formal claim against the Department under Section 4-61, seeking compensation for additional costs, the Contractor shall notify the Commissioner in writing (in strict compliance with Section 4-61) of the details of said claim. Such written notice shall contain all pertinent information described in Paragraph 38.5 below.

Once formal notice of a claim under Section 4-61(b) (as revised) has been given to the Commissioner, the claimant may not change the claim in any way, in either concept or monetary amount, (1) without filing a new notice of claim and demand for arbitration to reflect any such change, and (2) without the minimum period of six months after filing of the new demand commencing again and running before any hearing on the merits of the claim may be held. The only exception to this limitation will be for damages that continue to accrue after submission of the notice, in ways described and anticipated in the notice.

38.3 Record Keeping: The Contractor shall keep daily records of all costs incurred in connection with its Work on behalf of the Department. The daily records shall identify each aspect of the Project affected by matters related to any claim for additional compensation that the Contractor has filed, intends to file, or has reason to believe that it may file against the Department; the specific Project locations where Project work has been so affected; the number of people working on the affected aspects of the Project at the pertinent time(s); and the types and number of pieces of equipment on the Project site at the pertinent time(s). Any potential or anticipated effect on the Project's progress or Schedule which may result in a claim by the Contractor shall be noted contemporaneously with the cause of the effect, or as soon thereafter as possible.

38.4 Claim Compensation: The payment of any claim, or any portion thereof, that is deemed valid by the Department shall be made in accordance with the following provisions of this Article:

38.4.1 Compensable Items: The liability of the Department for claims will be limited to the following specifically identified items of cost, insofar as they have not otherwise been paid for by the Department, and insofar as they were caused solely by the actions or omissions of the Department or its agents (except that with regard to payment for extra work, the Department will pay to the Contractor the Overhead and profit percentages provided for in Article 13.):

38.4.1.1 Additional Project-site labor expenses.

38.4.1.2 Additional costs for materials.

38.4.1.3 Additional, unabsorbed Project-site Overhead (e.g., for mobilization and demobilization).

38.4.1.4 Additional costs for active equipment.

38.4.1.5 For each Day of Project delay or suspension caused solely by actions or omissions of the Department either:

38.4.1.5.1 an additional ten percent (10%) of the total amount of the costs identified in Subparagraphs 38.4.1.1 through 38.4.1.4 above; except that if the delay or suspension period prevented the Contractor from incurring enough Project costs under Subparagraphs 38.4.1.1 through 38.4.1.4 during that period to require a payment by the Department that would be greater than the payment described in Subparagraph 38.4.1.5.2 below, then the payment for affected home office Overhead and profit shall instead be made in the following *per diem* amount :

38.4.1.5.2 six percent (6%) of the original total Contract amount divided by the original number of Days of Contract Time. Payment under either 38.4.1.5.1 or 38.4.1.5.2 hereof shall be deemed to be complete and mutually satisfactory compensation for any unabsorbed home office overhead and any profit related to the period of delay or suspension.

38.4.1.6 Additional equipment costs. Only actual equipment costs shall be used in the calculation of any compensation to be made in response to claims for additional Project compensation. Actual equipment costs shall be based upon records kept in the normal course of business and in accordance with generally- accepted accounting principles. Under no circumstances shall Blue Book or other guide or rental rates be used for this purpose (unless the Contractor had to rent the equipment from an unrelated party, in which case the actual rental charges paid by the Contractor, so long as they are reasonable, shall be used). Idle equipment, for instance, shall be paid for based only on its actual cost to the Contractor.

38.4.1.7 Subcontractor costs limited to, and determined in accordance with, Subparagraphs 38.4.1.1 through 38.4.1.5 above and applicable statutory and case law. Such Subcontractor costs may be paid for by the Department only: (a) in the context of an informal claims settlement; or (b) if the Contractor has itself paid or legally assumed, present unconditional liability for those Subcontractor costs.

38.4.2 Excusable But Not Compensable Items: The Contractor may be allowed Days but the Department will have no liability for the following non-compensable items:

38.4.2.1 Abnormal or unusually severe weather38.4.2.2 Acts of God

38.4.2.3 Force Majeure

38.4.2.4 Concurrent Delay

38.4.3 Non-Compensable Items: The Department will have no liability for the following specifically-identified non-compensable items:

38.4.3.1 Profit, in excess of that provided for herein.

38.4.3.2 Loss of anticipated profit.

38.4.3.3 Loss of bidding opportunities.

38.4.3.4 Reduction of bidding capacity.

38.4.3.5 Home office overhead in excess of that provided for in Subparagraph 38.4.1.5 hereof.

38.4.3.6 Attorneys fees, claims preparation expenses, or other costs of claims proceedings or resolution.

38.4.3.7 Subcontractor failure to perform

38.4.3.8 Any other consequential or indirect expenses or costs, such as tort damages, or any other form of expense or damages not provided for in these specifications or elsewhere in the Contract.

38.5 Required Claim Documentation: All claims shall be submitted in writing to the Commissioner, and shall be sufficient in detail to enable the Department to ascertain the basis and the amount of each claim, and to investigate and evaluate each claim in detail. As a minimum, the Contractor must provide the following information for each and every claim and sub-claim asserted:

38.5.1A detailed factual statement of the claim, with all dates, locations and items of Work pertinent to the claim.

38.5.2 A statement of whether each requested additional amount of compensation or extension of time is based on provisions of the Contract or on an alleged breach of the Contract. Each supporting or breached Contract provision and a statement of the reasons why each such provision supports the claim must be specifically identified or explained.

38.5.3 Excerpts from manuals or other texts which are standard in the industry, if available, that support the Contractor's claim.

38-5.4 The details of the circumstances that gave rise to the claim.

38.5.5 The date(s) on which any and all events resulting in the claim occurred, and the date(s) on which conditions resulting in the claim first became evident to the Contractor.

38.5.6 Specific identification of any pertinent document, and detailed description of the substance of any material oral communication, relating to the substance of such claim.
38.5.7 If an extension of time is sought, the specific dates and number of Days for which it is sought, and the basis or bases for the extension sought. A critical path method, bar chart, or other type of graphical schedule that supports the extension must be submitted.

38.5.8 When submitting any claim over \$50,000, the Contractor shall certify in writing, under oath and in accordance with the formalities required by the contract, as to the following:

38.5.8.1 That supporting data is accurate and complete to the Contractor's best knowledge and belief;

38.5.8.2 That the amount of the dispute and the dispute itself accurately reflects what the Contractor in good faith believes to be the Department's liability;

38.5.8.3 The certification shall be executed by:38.5.8.3.1 If the Contractor is an individual, the certification shall be executed by that individual.

38.5.8.3.2 If the Contractor is not an individual, the certification shall be executed by a senior company official in charge at the Contractor's plant or location involved or an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.

38.6 Auditing of Claims: All claims filed against the Department shall be subject to audit by the Department or its agents at any time following the filing of such claim. The Contractor and its Subcontractors and suppliers shall cooperate fully with the Department's auditors. Failure of the Contractor, its Subcontractors, or its suppliers to maintain and retain sufficient records to allow the Department or its agents to fully evaluate the claim shall constitute a waiver of any portion of such claim that cannot be verified by specific, adequate, contemporaneous records, and shall bar recovery on any claim or any portion of a claim for which such verification is not produced. Without limiting the foregoing requirements, and as a minimum, the Contractor shall make available to the Department and its agents the following documents in connection with any claim that the Contractor submits:

38.6.1 Daily time sheets and foreman's daily reports.

38.6.2 Union agreements, if any.

38.6.3 Insurance, welfare, and benefits records.

38.6.4 Payroll register.

38.6.5 Earnings records.

38.6.6 Payroll tax returns.

38.6.7 Records of property tax payments.

38.6.8 Material invoices, purchase orders, and all material and supply acquisition contracts.

38.6.9 Materials cost distribution worksheets.

38.6.10 Equipment records (list of company equipment, rates, etc.).

38.6.11 Vendor rental agreements.

38.6.12 Subcontractor invoices to the Contractor, and the Contractor's certificates of payments to Subcontractors.

38.6.13 Subcontractor payment certificates.

38.6.14 Canceled checks (payroll and vendors).

38.6.15 Job cost reports.

38.6.16 Job payroll ledger.

38.6.17 General ledger, general journal (if used), and all subsidiary ledgers and journals, together with all supporting documentation pertinent to entries made in these ledgers and journals.

38.6.18 Cash disbursements journals.

38.6.19 Financial statements for all years reflecting the operations on the Project.

38.6.20 Income tax returns for all years reflecting the operations on the Project.

38.6.21 Depreciation records on all company equipment, whether such records are maintained by the company involved, its accountant, or others.

38.6.22 If a source other than depreciation records is used to develop costs for the Contractor's internal purposes in establishing the actual cost of owning and operating equipment, all such other source documents.

38.6.23 All documents which reflect the Contractor's actual profit and overhead during the years that the Project was being performed, and for each of the five years prior to the commencement of the Project.

38.6.24 All documents related to the preparation of the Contractor's bid, including the final calculations on which the total proposed Contract bid price as stated in the Bid Proposal Form was based.

38.6.25 All documents which relate to the claim or to any sub-claim, together with all documents that support the amount of damages as to each claim or sub-claim.

38.6.26 Worksheets used to prepare the claim, which indicate the cost components of each item of the claim, including but not limited to the pertinent costs of labor, benefits and insurance, materials, equipment, and Subcontractors' damages, as well as all documents which establish the relevant time periods, individuals involved, and the Project hours and the rates for the individuals.

38.6.27 The name, function, and pertinent activity of each Contractor's or Subcontractor's official, or employee, in volved in or knowledgeable about events that give rise to, or facts that relate to, the claim.

38.6.28 The amount(s) of additional compensation sought and a break-down of the amount(s) into the categories specified as payable under Paragraph 38.4 above.

38.6.29 The name, function, and pertinent activity of each Department official, employee, or agent involved in or

knowledgeable about events that give rise to, or facts that relate to, the claim.

<u>ARTICLE 39</u> DIESEL VEHICLE EMISSIONS CONTROL

39.1 The Contractor shall be responsible for compliance with the following provisions:

39.1.1 All Contractor and Subcontractor diesel powered non-road construction equipment with engine horsepower (HP) ratings of 60 HP and above, that are on the Project or are assigned to the Contract for a period in excess of 30 consecutive Days, shall be retrofitted with emission control devices in order to reduce diesel emissions. In addition, all motor vehicles and/or construction equipment (both on-highway and non-road) shall comply with all pertinent State and Federal regulations relative to exhaust emission controls and safety.

39.1.2 Retrofit emission control devices shall consist of oxidation catalysts, or similar retrofit equipment control technology that is:

39.1.2.1 Included on the U.S. Environmental Protection Agency (EPA) "Verified Technology List," as may be amended from time to time

http://www.epa.gov/otaq/retrofit/retroverifiedlist.ht m and

39.1.2.2 Verified by EPA to provide a minimum emissions reduction of 20% particulate matter (PM_{10}), 40% carbon monoxide (CO), and 50% hydrocarbons (HC).

39.1.3 Construction shall not proceed until all diesel powered non- road construction equipment meeting the criteria in provision 39.1.1 have been retrofitted, unless the Commissioner grants a waiver under provision 39.2.

39.1.4 The Contractor shall at least monthly, assess which diesel powered non-road construction equipment are subject to these provisions. The Contractor shall notify the DPW Project Manager of any violations of these provisions.

39.1.5 Idling of delivery and/or dump trucks, or other diesel powered equipment shall be limited to three (3) minutes during non-active use in accordance with the Regulations of Connecticut State Agencies Section 22a-74-18(b)(3)(C), which states, in part:

"[N]o person shall cause or allow a Mobile Source to operate for more than three (3) consecutive minutes when such Mobile Source is not in motion, except as follows:

> When a Mobile Source is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control,

- When it is necessary to operate defrosting, heating or cooling equipment to ensure the safety or health of the driver or passengers,
- When it is necessary to operate auxiliary equipment that is located in or on the Mobile Source to accomplish the intended use of the Mobile Source,(To bring the Mobile Source to the manufacturer's recommended)
- When a Mobile Source is in queue to be inspected by U.S. military personnel prior to gaining access to a U.S. military installation."

39.1.6 All Work shall be conducted to ensure that no harmful effects are caused to adjacent Sensitive Receptor Sites. Diesel powered engines shall be located away from fresh air intakes, air conditioners, and windows.

39.1.7 If any diesel powered non-road construction equipment is found to be in non-compliance with these provisions by the DPW Project Manager, the Contractor will be issued a Non-Conformance Notice and given a 24 hour period in which to bring the equipment into compliance or remove it from the Project. The Contractor's failure to comply with these provisions shall be reason to withhold payment as described in Article 33.

39.1.8 Any costs associated with these provisions shall be included in the general cost of the contract. In addition, there shall be no time granted to the Contractor for compliance with these provisions. The Contractor's compliance with these provisions and any associated regulations shall not be grounds for a Change Order.

39.2 The Commissioner reserves the right to waive all or portions of these provisions at his/her discretion. The Contractor may request a waiver to all or portions of these provisions with written justification to the Commissioner as to why the Contractor cannot comply with these provisions. A waiver, to be effective, must be granted in writing by the Commissioner.

END

| State of | Connecticut | Retainage Reduction Request | Department of Public Works | | |
|-----------------------------------|---|--|--|--|--|
| To: | | David O'Hearn, P.E., Deputy Commissioner | · · · · · · · · · · · · · · · · · · · | | |
| _ | | Room 473B, 165 Capitol Avenue, Hartford, CT 06106 | | | |
| From: | | (), General Contractor | | | |
| Subject: | | Project No. () Reduction of Retainage at ()% project completion | | | |
| In acco of retain with th | ordance v inage to a e terms c | with the General Conditions, Article 28, (type general contractor's name) here an amount of XX %. The following list of items required under the general co of the contract and has been verified by the Contractor. | eby requests a reduction anditions is in compliance | | |
| | Perform | nance Evaluation is a minimum of 60% | | | |
| | Timely submission of an appropriate and complete CPM Schedule or Construction Schedule and Schedule of Values, in compliance with the Contract requirements and the prompt resolution of the Owner's and/or A-E's comments on the submitted material resulting in an appropriate basis for progress of the Work. | | | | |
| | Timely and proper submission of all Contract Document required submissions: including but not limited to Shop Drawings, material certificates and material samples and the prompt resolution of the Owner's and/or Architect's or Engineer's comments on the submitted material resulting in an appropriate progress of the Work. | | | | |
| | Proper | and adequate supervision and home office support of the Project. | | | |
| | The Wo | The Work completed to date has been installed or finished in a manner acceptable to the Owner. | | | |
| | The progress of the Work is consistent with the approved CPM Schedule or Construction Schedule. | | | | |
| | All appr | All approved credit Change Orders have been invoiced. | | | |
| | All Change Order requests for pricing are current. | | | | |
| | The Co | ntractor has and is maintaining a clean worksite in accordance with the Cont | ract Documents. | | |
| | All Subcontractor payments are current at the time of reduction request. | | | | |
| | Contrac | ctor is compliant with set-aside provisions of the contract. | | | |
| Contra Certifi | actor cation | name | date | | |
| D 1 | | | uuto | | |
| Project Manag Recommendat | | er ion name signature | date | | |
| Appro | ved | | | | |
| Deputy Commissioner David O'Hearn | | ssioner David O'Hearn signature | date | | |

SUPPLEMENTARY GENERAL CONDITIONS

1. SCOPE AND LOCATION OF WORK

- a. Generally, the work in connection with the subject project involves the installation of six standby generator systems with associated transfer switches for the Litchfield/Newbury, Grasso and Fairfield residence halls, the Midtown Student Center, Westside Campus Center, and the Westside Classroom Building. The scope shall also include site work, installation of fences, gates, and plantings.
- b. This contract will include all new items unless otherwise approved.
- c. The referencing project name and no. are as follows:

<u>Project Name</u>: Generator Installations for Residence Halls, Student Centers & Westside Classroom Building; DCS Project No.: BI-RD 289

<u>Bid No.</u>: 2016-ERB-0312

d. It is the intention of the project to end up with a complete, finished, code compliant, safe university facility.

2. <u>UNIVERSITY REPRESENTATIVE</u>

a. The University Representative/Construction Administrator is Eric J. Lessne, Associate Director for Project Management and Engineering, BOR Connecticut State Colleges & Universities, on behalf of Western Connecticut State University, 181 White Street, Danbury, CT 06810, mobile: 860-982-8364.

3. EXAMINATION OF SITE

a. It is <u>not</u> the intent of the drawings to show all existing conditions. <u>All bidders are</u> required to visit and examine the site prior to submitting bids. Failure to visit the site and note all conditions will in no way relieve the Contractor of his responsibility for completing the work called for in the contract documents.

4. <u>INTENT OF DOCUMENTS</u>

- a. The specifications are intended to describe all material and labor necessary to determine the intention of the subject project and assumes the inclusion of all miscellaneous and incidental items necessary to complete the work.
- b. These specifications are divided into titled divisions and sections under the divisions.

The divisions and sections do not, however, operate to make the University Representative an arbiter to establish the limits to the contract between the Contractor and his Subcontractors.

c. In the event of a conflict within the contract documents...the more stringent requirements will apply.

5. <u>USE OF PREMISES. SPECIAL WORKING CONDITIONS</u>

a. The Contractor shall confine the construction to the following time period:

Monday through Friday, 7:30 a.m. to 4:30 p.m.

- b. Parking for Contractor's employees will be limited to an area designated by the University. The Contractor shall be provided identification stickers for employees' cars.
- c. The contract shall be responsible for keeping the premises clean and shall pick up rubbish and debris daily.

6. MAINTENANCE OF TRAFFIC WAYS

- a. The Contractor shall be granted the use of paved roads and parking areas but shall not infringe in use of same, or access thereto, for passage over the Owner's property. Traffic ways shall not be blocked by standing trucks, parked cars, material storage, construction operations, or in any other manner.
- b. Public roads, and the existing paved roads and parking areas on Owner's property, shall be kept free from scrap and other material due to construction operations, and any damage to their surface caused by the Contractor shall be repaired by him at his own expense to the satisfaction of the University Representative.

7. PLANS AND SPECIFICATIONS AT THE SITE

The contractor shall maintain at the site of the work, one copy of all specifications, addenda, approved shop drawings, change orders, and other modifications, schedules and instructions, in good order and marked to record all changes made during construction. These shall be available at all times to the agency representative.

8. <u>SHOP DRAWINGS</u>

a. Shop drawings shall be submitted in sufficient number of copies and manner to facilitate the work and shall show all work in detail.

b. The Contractor shall review the shop drawings, stamped with his approval and submit them with reasonable promptness and in orderly sequence so as to cause no delay in his work or in the work of any sub-contractor. Shop drawings shall be properly identified as specified, for item, material, workmanship (when required) and project. At the submission, the Contractor shall inform the Architect, in writing, of any deviation in the shop drawing from the requirements of the Contract Documents.

9. <u>SAMPLES</u>

- a. Submit samples of all items where specifically required. Furnish information and data describing items or materials offered as being equal to those specified, as may be necessary to establish such quality. The Owner's decision will be final.
- b. Mark samples clearly to show:
 - (1) Name of trade, type quality or grade and any further designation necessary to identify the items or material
 - (2) Manufacturer's or producer's name
 - (3) Name of Contractor of Subcontractor, if any
 - (4) Name and number of project
- c. Submit samples of such size and/or number sufficient to show quality, type, range of color, finish and texture.
- d. Materials furnished shall be equal to approved samples.

10. CONSTRUCTION EQUIPMENT

- a. The contractor shall furnish and maintain, at his own cost and risk, all tools, apparatus and appliances necessary to insure speed, convenience and safety in the execution of his contract. All such items shall comply with OSHA REGULATIONS AND ALL APPLICABLE CODES, STATUTES, RULES AND REGULATIONS.
- b. All staging, supports, bracing and similar work, exterior and interior, shall be furnished erected and removed by this Contractor and maintained in safe condition by him without charge to and for the use of all trades as needed by them for proper execution of their work, except where specified to the contrary in the contract documents.

c. All hoisting equipment and machinery required for the property and expeditious prosecution and progress of the work shall be furnished, installed, operated and maintained in safe condition by this Contractor for the use of all subcontractors' materials and/or equipment delivered to the designated hoisting area except that which is specifically required in each appropriately related section of the specifications. All costs for hoisting operating services shall be borne by this Contractor, unless specifically excepted elsewhere.

RECORD DRAWINGS DURING CONSTRUCTION 11.

- The Contractor is to maintain at the project site two (2) sets of black (or blue) and a. white prints of the Contract Drawings on which he must record changes as they occur on the job.
- b. At the conclusion of construction, he is to turn one (1)-corrected set over to the Agency.

12. PROTECTION

- a. Fire protection: The contractor shall, during the progress of construction, assume all responsibilities for loss or damage by fire to the work included in his contract until completion of the contract. All fire used within structure for working purposes shall be extinguished when not in use. No flammable material shall be stored in the structure in excess of the amounts allowed by the authorities. No gasoline shall be stored in the structure outside of working hours.
- b. Protection from theft or vandalism: The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism.
- c. All building equipment, furnishings, grounds, planting, etc. shall be protected from damage of every description and any such damage thereto shall be repaired or otherwise made good at no expense to the University.
- d. Supply and install any and all protective coverings and barricades necessary to prevent damage or personal injury. The Contractor shall be held responsible for, and must make good, at his own expense, any water damage or any other type of damage due to improper protective coverings.
- e. Protect at all times the public and building personnel from injury due to construction activities

13. TEMPORARY OFFICES

Temporary offices will not be provided by the University for this project.

14. <u>TEMPORARY TELEPHONES</u>

Public telephones are not available on the Campus grounds.

15. TEMPORARY TOILET SERVICE

The University will permit the Contractor to use a specified existing toilet facility within the building. It shall be required of the Contractor to maintain and keep the toilet reasonably clean, or the privilege may be terminated in which case he must provide portable, chemical toilet facilities.

16. <u>TEMPORARY LIGHT AND POWER</u>

Power for construction purposes will be provided by the University. The Contractor will provide all necessary equipment, electrical cables, etc. that he may need in the use of the electric power.

17. DELIVERY, STORAGE AND HANDLING

All materials and equipment shall be so delivered, stored and handled as to prevent intrusion of foreign matter and any damage by weather or breakage. Packaged materials shall be delivered and stored in original packages. Packages, materials and equipment showing evidence of damage shall be rejected and replaced at no additional cost to owner. The contractor will make his own accommodations for deliveries and not use WCSU Receiving Department for deliveries.

18. CODE AND SPECIFICATIONS

All references to standard specifications and codes made throughout the specifications refer to the latest edition in effect at the dates of proposal. Such references include current addenda and errata, if any, and shall be considered a part of these specifications as much as if the pertinent portion of those standard specifications were printed herein in their entirety.

19. ADDENDA ISSUED DURING BIDDING PERIOD

When returning a bid, the Contractor will note receipt of any addenda received

20. DIMENSIONS AND MEASUREMENTS

The Contractor and each subcontractor shall <u>verify</u> all dimensions before ordering any material or doing any work, and shall be responsible for connection of same. Any

difference that may be found shall be submitted for clarification before submitting a bid and for construction.

21. FINAL CLEANING

The Contractor, preparatory to final inspection, shall provide final cleaning of all work in readiness for use.

22. SPECIAL REQUIREMENT, GUARANTEES AND WARRANTIES

The contractor shall guarantee all materials and workmanship for a period of eighteen (18) months, from the date of substantial completion. In addition, the Contractor shall provide special guarantees where indicated in the contract documents or where a manufacturer's guarantee exceeds eighteen (18) months.

23. FORMS, BONDS, GUARANTEES AND WARRANTIES

The Contractor shall furnish to the Agency Representative the foregoing documents in the following manner:

a. Addressed to:

Peter J. Visentin, AIA Director, Facilities Planning & Engineering Western Connecticut State University 181 White Street Danbury, CT 06810

b. Project Title and Number:

| c. | I (We) hereby guarantee (warranty) the | | work on the |
|----|--|---------------------|---------------------|
| | referenced project for a period of | years from | |
| | against failure of workmanship and | materials, etc., in | accordance with the |
| | requirements of Division | , Section | , Page, |
| | Paragraph, of the contract spe | ecifications. | - |

Signed _____

Contractor (By Authorized Agent)

d. All required bonds shall be by the respective Surety Companies, made out to Western Connecticut State University.

e. All guarantees supplied by Subcontractors, suppliers of manufacturers shall be countersigned by Contractor.

24. OPENINGS, CHASES, INSERTS, ETC.

- a. These may not be shown on the working drawings, and it shall be the responsibility of the Contractor to examine the electrical, heating, plumbing and ventilating drawings and consult with the contractors for same, and to provide all such chases, channels, openings definitely located by such trades previous to the construction by him of the work involved.
- b. The Contractor, his subcontractors and others shall furnish properly located and install sleeves, inserts, hangers, etc., required for the installation of their work.
- c. After the installation and completion of the work for which openings, channels, chases, etc., have been provided, the Contractor shall properly close and finish all openings, channels, chases, etc. as required to complete the work.

25. OCCUPANCY PRIOR TO FINAL INSPECTION

- a. Upon completion, and before final inspection, together with the status of completion and terms of occupancy will be issued by the University.
- b. The University will obtain from the General Contractor written approval of such occupancy and will determine whether such occupancy or use is possible and, if so, will make arrangements for holding a job inspection with the Contractor.
- c. A punch list based on this inspection, together with the status of completion and terms of occupancy will be issued by the University.

The letter granting such occupancy will state the terms and conditions of occupancy and that fire insurance coverage has been requested, the effective date of which will indicate to the Contractor that he may cancel the fire insurance coverage normally carried o the building by him.

26. OPERATING AND MAINTENANCE INSTRUCTIONS

a. Upon completion, and before final acceptance, the Contractor in coordination with the Architect, shall provide information concerning al mechanical equipment, alarm and safety equipment and shall furnish three (3) separately bound sets of operating and maintenance instructions, properly labeled for said equipment. These shall be typewritten or mimeographed, $8-1/2 \times 11$ inch sheets describing the equipment and

detailing the sequencing and settings. Complete data on lubrication, service repair, and parts listed shall be included in these instructions. Manufacturers' bulletins or catalogs will be acceptable for the above purpose, but shall be amplified as required to provide full instructions. Installed model, size, rating, operating and other applicable information shall be clearly identified.

Manufacturers' specific operating and servicing manuals are acceptable, provided they fully cover the requirements and any additional data is appended. Complete writing and control diagrams are required to explain the operating; services and repair are to be included, and their location in the building given. Valve identification shall include the assigned tab numbers in the valve directory. All copies shall be submitted by the University.

- b. In addition, the Contractor shall furnish and install enclosed in clear plastic with eyelet for fastening, one (1) set of operating instructions, with necessary diagrams, which shall be hung adjacent to the item of equipment or at the operating stations to which the instructions apply.
- c. Upon completion of all work and tests, the Contractor shall furnish the necessary skilled labor to fully instruct the University personnel in the location, operation and maintenance of the equipment.

END OF SECTION

PROJECT MANUAL

STATE OF CONNECTICUT Dannel P. Malloy Governor

Department of Administrative Services

Melody A. Currey Commissioner

GENERATOR INSTALLATION AT WESTERN CONNECTICUT STATE UNIVERSITY

181 White Street, Danbury, CT 06810

<u>March 2016</u>

CHA PROJECT #: 30176



Prepared by:

CHA

Hartford, CT (07) 2139 Silas Deane Highway Suite 212 Rocky Hill, CT 06067-2336 (860) 257-6955

TECHNICAL SPECIFICATIONS

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SECTION 220000 - GENERAL REQUIREMENTS FOR PLUMBING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general administrative and procedural requirements for all work. The administrative and procedural requirements included in this Section are to expand the requirements specified in Division 1.

1.2 SCOPE OF WORK

A. Provide all labor, material, equipment, and services necessary for and incidental to completion of all work as indicated on the Drawings and/or as specified herein. This includes all incidentals, equipment, appliances, services, hoisting, scaffolding, supports, sleeves, inserts, anchor bolts, tools, supervision, labor, consumable items, fees, licenses, etc., necessary to provide complete and workable systems.

1.3 DRAWING USE AND INTERPRETATION

- A. Unless indicated by specific dimensions, drawings are meant to be diagrammatic. Exact equipment locations and routing of utilities shall be governed by field conditions and/or Owner's Representative's instructions.
- B. All dimensions which relate to the building shall be taken as construction progresses. All errors incurred as result of the failure to check or verify dimensions, measurements, etc., shall be corrected.
- C. The drawings show the general arrangement of utilities, equipment, and accessories. Drawings do not indicate all offsets, fittings, accessories, and changes in elevation, which may be necessary. Make all changes in equipment, locations, etc., to accommodate the work and to avoid obstacles at no increase in contract price. Provide offsets, fittings, and accessories as may be required to meet such conditions.

1.4 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Streamlined Language: The Specifications generally use the imperative mood and streamlined language. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words "shall be" are implied where a colon (:) is used within a sentence or phrase.

1.5 DEFINITIONS

A. General: Basic Contract definitions are included in the conditions of the Contract.

GENERAL REQUIREMENTS FOR PLUMBING SYSTEMS 3/31/2016

- B. Indicated: The term "indicated" refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.
- C. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by the Engineer," "requested by the Engineer," and similar phrases.
- D. Approved: The term "approved," where used in conjunction with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- E. Regulations: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
- G. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
- H. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
- I. Installer: An "installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. The term "experienced," when used with the term "installer," means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
 - 2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades persons of the corresponding generic name.
 - 3. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility of fulfilling Contract requirement remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
- J. The term "concealed": embedded in masonry or other construction, installed behind wall furring, within partitions or hung ceilings (permanent or removable), in trenches, or in crawl spaces.
- K. The term "exposed": not installed underground or concealed. Equipment in rooms with exposed construction (i.e. mechanical rooms, electrical rooms, janitor's closets, etc.) are classified as exposed.

- L. The term "piping": piping fittings, flanges, valves, controls, hangers, traps, drains, insulation and items necessary or required in connection with or relating thereto.
- M. The "Project Site" is the space available to the contractor for performance of construction activities, either exclusively or in conjunction with other performing other work as part of the Project.
- N. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.6 COMPLETE SYSTEMS

- A. General: Provide all materials as required for complete systems, including all parts obviously or reasonably incidental to a complete installation, whether specifically indicated or not. All systems shall be completely assembled, tested, adjusted and demonstrated to be ready for operation prior to Owner's acceptance.
- B. Systems: The systems specified and/or shown on the Drawings are for complete and workable systems. Any deviation from these systems due to a particular manufacturer's requirements shall be made at no additional cost to the Owner.

1.7 CODES AND REGULATIONS

- A. General: Comply with all governing federal, state, and local laws, ordinances, codes, rules, and regulations. Where the Contract Documents exceed these requirements, the Contract Documents shall govern. In no case shall work be installed contrary to or below minimum legal standards.
- B. Utilities: Comply with all applicable rules, restrictions, and requirements of the utility companies serving the project site/facilities. Contractor shall be required to contact state regulated "call before you dig" service prior to any excavation work.
- C. Non-Compliance: Should any work be performed which is found not to comply with any of the above codes and regulations, provide all work and pay all costs necessary to correct the deficiencies.
- D. Natural gas piping shall be installed in strict conformance with NFPA 54 and the Connecticut State Fuel Gas Code.
- E. The propane tanks and propane piping shall be installed in strict conformance with NFPA 58 and the Connecticut State Fuel Gas Code.

1.8 REFERENCE STANDARDS

- A. All published standards of the following associations/organizations, as mandated by specific state standards, shall be followed and applied as a minimum.
 - 1. ACI, American Concrete Institute
 - 2. AGA, American Gas Assoc.
 - 3. AIA, The American Institute of Architects
 - 4. AISC, American Institute of Steel Construction
 - 5. ANSI, American National Standards Institute
 - 6. ASME, American Society of Mechanical Engineers
 - 7. ASPE, American Society of Plumbing Engineers
 - 8. ASTM, American Society for Testing and Materials

- 9. AWS, American Welding Society
- 10. CGA, Compressed Gas Assoc.
- 11. DIPRA, Ductile Iron Pipe Research Assoc.
- 12. ETL, ETL SEMKO a Division of Intertek Group
- 13. ISA, Instrument Society of America
- 14. MSS, Manufacturers Standardization Society
- 15. NACE, National Association of Corrosion Engineers International
- 16. NEC, National Electrical Code (from NFPA)
- 17. NEMA, National Electrical Manufacturers Assoc.
- 18. NFPA, National Fire Protection Assoc.
- 19. STI, Steel Tank Institute
- 20. UL, Underwriters Laboratories Inc.
- B. Federal Government Agencies: Names and titles of federal government standard- or Specificationproducing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard- or Specification-producing agencies of the federal government. Names are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.
 - 1. EPA, Environmental Protection Agency
 - 2. NIST, National Institute of Standards and Technology (U.S. Department of Commerce)
 - 3. OSHA, Occupational Safety and Health Administration (U.S. Department of Labor)
- C. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- D. Copies of Standards: Each entity engaged in construction on the project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed for performance of a required construction activity, the contractor shall obtain copies directly from the publication source.

1.9 QUALITY ASSURANCE

- A. Manufacturers' Qualifications: Not less than five years experience in the actual production of the specified products.
- B. Installers' Qualifications:
 - 1. Firm with not less than five years experience in the installation of mechanical systems and equipment similar in scope and complexity to those required for this Project, and having successfully completed at least ten comparable scale projects.
 - 2. Painting, patching, carpentry and the like related to or required for Division 22 work shall be performed by craftsman skilled in the appropriate trade.
 - 3. All welding shall be performed by ASME certified welders.

1.10 INSPECTIONS

A. General: During and upon completion of the work, arrange and pay all associated costs for inspections of all work installed under this Contract, in accordance with the Conditions of the Contract.

- B. Inspections Required: As per the laws and regulations of the local and/or state agencies having jurisdiction at the project site.
- C. Inspection Agency: Approved by the local and/or state agencies having jurisdiction at the project site.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Where Specified: Materials and equipment shall be as specified in subsequent sections of the Project Manual and/or as indicated on the Drawings.
- B. General: All materials and equipment to be new, clean, undamaged, and free of defects and corrosion.
- C. Acceptable Products: The product will be acceptable only when that product complies with all requirements of the Contract Documents as determined by the Engineer.
- D. Common Items: Where more than one of any specific item is required, all shall be of the same type and manufacturer.
- E. Listing: All materials and equipment shall be Underwriters' Laboratories (UL) or ETL SEMKO (ETL) listed and labeled, where UL or ETL standards and listings exist for the specified materials or equipment.
- F. Special Tools: Provide all special tools needed for proper operation, adjustment and maintenance of equipment.

PART 3 - EXECUTION

3.1 GENERAL

- A. The installation of all mechanical work shall be in accordance with the letter and intent of the Contract Documents, as determined by the Engineer.
- B. Installation Requirements: All materials and equipment shall be installed as recommended by the respective manufacturers, by mechanics experienced and skilled in their particular trade, in a neat and workmanlike manner, in accordance with the standards of the trade, and so as not to void any warranty, UL or ETL listing.

3.2 DELIVERY STORAGE AND HANDLING

- A. Packing and Shipping: Deliver products in original, unopened packaging, properly identified with manufacturer's identification, and compliance labels.
- B. Storage and Protection: Comply with all manufacturer's written recommendations. Protect all equipment, materials and work from the weather elements, paint, mortar, construction debris and damage throughout duration of project.
- C. Damaged Products: Do not install damaged products. Arrange for prompt replacement.

3.3 EXAMINATION

A. Conditions Verification: Examine the areas and conditions under which the work is to be performed. Identify and report any conditions detrimental to the proper and timely completion of the work to the Owner's Representative.

3.4 DIMENSIONS

- A. Building Dimensions: Exact locations of building elements shall be based on contractor's field measurements.
- B. Limiting Dimensions: Where equipment dimension and clearances are indicated on the Drawings, do not provide equipment larger than equipment dimensions or clearances specified.
- C. Verify all dimensions by field measurements.

3.5 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

3.6 ADMINISTRATION AND SUPERVISION

A. The Contractor shall supervise the work and shall have at all times some competent person, approved by the Owner, following the work to receive instructions and to act with authority.

3.7 TESTING AND ADJUSTING

- A. General: Provide testing equipment, materials, instruments, and personnel to perform all test procedures and adjustments required by other Division 22 Sections and/or deemed necessary by the Engineer to establish proper performance and installation of systems and equipment. All test instruments to be accurately calibrated and in good working order.
- B. Scheduling: Schedule tests at least three days in advance, and so as to allow Engineer and Owner representative(s) to witness the test, unless directed otherwise. Do not schedule tests until the system installation is complete and fully operational, unless indicated or directed otherwise.
- C. Correction/Replacement: After testing, correct any deficiencies, and replace materials and equipment shown to be defective or unable to perform at design or rated capacity. Retest without additional cost to the Owner or Contract. Submit finalization report indicating corrective measures taken, and satisfactory results of retest.

3.8 SYSTEMS DEMONSTRATION

A. Instruct the Owner's representative(s) in the start-up, operation and maintenance of all systems and equipment in accordance with the Contract Documents.

3.9 CLEANING

A. General: Remove from the project site, all waste, rubbish, and construction debris weekly unless indicated otherwise. The premises shall be left clean and free of any debris and unused construction materials, prior to final acceptance.

- B. Equipment: Remove all dust, dirt, debris, mortar, rust, and other foreign materials from the interior and exterior of all equipment and enclosures, and wipe down.
- C. Utilities: Thoroughly clean all utilities, just prior to final inspection.

3.10 TOUCH-UP PAINTING

A. Touch-Up Painting: Restore and refinish to original condition, all surfaces of equipment scratched, marred and/or dented during shipping, handling, or installation. Remove all rust, and prime and paint as recommended by the manufacturer.

END OF SECTION

SECTION 220004 - COORDINATION WITH OTHER TRADES

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

- A. This section describes the coordination and procedural requirements for Contractors.
- B. Definitions:
 - 1. Owners Representative Architect, Engineer, Construction Manager, General Contractor, Clerk of the works or any stipulated Agent or Representative of the Owner.
 - 2. GC General Contractor
 - 3. PC Plumbing Contractor/Subcontractor
 - 4. EC Electrical Contractor/Subcontractor

1.2 COMPLIANCE

A. Cost incurred including those of other contractors and/or Owner, due to non-compliance with this Section shall be the responsibility of the non-compliant contractor.

1.3 SUBMITTALS

A. Complete coordinated shop drawing shall be submitted in PDF format to the Engineer for their record by the MC. Submitted coordinated shop drawing shall include all signatures required by sign off procedure.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 COORDINATION

- A. General: Sequence, coordinate and integrate the installation of all materials and equipment for efficient flow of work, in conjunction with the other trades. Review and become familiar with all of the Drawings and work of all the other trades. Report and resolve any discovered discrepancies and/or interferences prior to commencing work.
- B. Cooperation: Cooperate with the other Contractors and individual disciplines for placement, anchorage and accomplishment of the work.
- C. Chases, Slots, and Openings: Arrange for chases, slots, and openings during the progress of construction, as required to allow for installation of the work.
- D. Supports and Sleeves: Coordinate the location installation of required supporting devices and sleeves to be set in concrete and other structural components, as they are constructed.
- E. Right-Of-Way:
 - 1. Adjust location of utilities, equipment, etc., to accommodate the work to prevent interferences, both anticipated and encountered.
 - 2. Determine the exact route and location prior to fabrication.

- 3. Pitched piping has the right-of-way over utilities which do not pitch.
- 4. Furnish and install ancillary materials & equipment including but not limited to traps, air vents, drains, etc., as required to accommodate offsets, transitions and changes in direction.
- F. Headroom: Install systems, materials, and equipment to maximize headroom unless noted otherwise.
- G. Utility Connections: Coordinate connection with underground and overhead utility services. Comply with requirements of governing regulations, utility providers, and controlling agencies. Provide required connection for each service.

3.2 COORDINATED SHOP DRAWINGS

- A. The coordination shop drawing process shall occur in the following manner:
 - 1. The EC shall create 3/8" scale AutoCAD (2013 or newer) base plans which shall incorporate and coordinate with existing structures, site utilities, and landscaping on the shop drawings. This shall include existing building components not shown on Contract Documents.
 - 2. The EC shall forward, with transmittal, the site electrical shop drawings (hard copy and electronic files) to the PC for coordination of the plumbing work. The EC shall forward a copy of the transmittal to the Owner's Representative.
 - 3. The PC shall (upon receipt of drawings from the EC) superimpose his scope of work on the AutoCAD electrical shop drawings illustrating all plumbing equipment, piping and supports.
 - 4. The PC shall include invert of pipes; elevations (top and bottom) and pipe sizes including at a maximum of 25 foot intervals and at each elevation change.
 - 5. Any conflicts between the plumbing and electrical shall be clouded by the PC on the AutoCAD ductwork shop drawing file.
 - 6. PC shall request coordination meeting to resolve the conflicts as clouded on the coordinated shop drawings. PC shall provide clouded shop drawing at the coordination meeting. All conflicts that arise between the plumbing and ductwork shall be resolved through and by the Owner's Representative.
 - 7. The EC and/or the PC shall correct and shall complete the AutoCAD drawings depicting all resolutions.
 - 8. When it is ascertained that no conflicts exist between the electrical and plumbing work, the PC shall forward the final ductwork/plumbing coordinated drawings (hard copy and electronic files) to the EC with transmittal, and provide the Owner's Representative with a copy of the transmittal.
 - 9. The EC and PC shall complete the AutoCAD drawings depicting all resolutions.
 - 10. Sign Off:
 - a. The EC shall provide the final coordinated shop drawing to the Engineer and the Owner's Representative. The final coordinated shop drawing shall contain signatures from EC and PC on each sheet.
 - b. Upon completion of the coordination process by all Contractors and Subcontractors as described above, they shall sign off on all drawings in ink indicating company, name, date of sign-off and signature of company representative.
 - c. Each contractor signature shall certify that each Contractor has shown their respective work on the drawings and have resolved all points of conflict and interference with other Contractors and Subcontractors.

3.3 COORDINATION MEETINGS

- A. During the coordination process, separate meetings apart from project meetings concerning the progress and schedules may be called by the Owner's Representative when required or at the request of one or more of the coordinating Contractors.
 - 1. The Owner's Representative shall contact the Contractors and make all required arrangements, e.g. time, place, etc.
 - 2. All Contractors shall place emphasis and importance on equipment purchases, so as to not delay approvals, shop drawings and the coordinated drawings.

3.4 SCHEDULE OF COORDINATED SHOP DRAWINGS

- A. The EC and PC shall complete the ductwork shop drawings within two (2) weeks after award of contract (or authorization to proceed).
- B. Turn-around time for each Contractor shall be two (2) weeks maximum.

3.5 "AS BUILT" DRAWINGS

A. At the completion of the project, "As Built" corrections shall be made to each AutoCAD drawing by each of the aforementioned Contractors and returned to the Owner's Representative for the Owner's permanent files and records. These "As Builts" do <u>not</u> remove the obligation of "As Builts" and record drawings as outlined under other sections of the specifications <u>unless</u> the Owner's Representative elects to do so.

END OF SECTION

SECTION 220500 - BASIC PLUMBING MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following basic materials and methods to complement other Division 22 Sections.
 - 1. Piping installation instructions common to most piping systems
 - 2. Dielectric fittings
 - 3. Flexible connectors
 - 4. Mechanical sleeve seals
 - 5. Sleeves
 - 6. Identifying devices and labels
 - 7. Grout
 - 8. Concrete housekeeping pads
 - 9. Installation requirements common to equipment specification sections
 - 10. Touch-up painting
 - 11. Repairs
- B. Pipe, pipe fittings and joining materials and methods are specified in Division 22 piping system sections.

1.2 **DEFINITIONS**

- A. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- B. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- C. The following are industry abbreviations for plastic materials:
 - 1. HDPE: High Density Polyethylene plastic.
- D. Existing: Condition present prior to award of this contract.

1.3 SUBMITTALS

A. Product Data: For all materials specified within this section

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end caps. Protect piping, flanges, fittings, and piping specialties to prevent pipe end damage. Maintain end caps through shipping, storage, and handling.
- B. Store plastic pipes in locations not subject to direct sunlight.
- C. Protect all stored materials from moisture and dirt. Elevate above grade and support to prevent sagging and bending. Do not exceed structural capacity of floor, if stored inside.

1.5 SEQUENCING AND SCHEDULING

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where identifying devices are to be applied.
- B. Install identifying devices before concealment.

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. Dielectric Components:
 - a. Watts Water Technologies, Inc.
 - b. Grinnell Corp.; Grinnell Supply Sales Co.
 - c. Victaulic Co. of America.
 - 2. Metal, Flexible Connectors:
 - a. Engineered Flexible Products
 - b. Flexicraft Industries.
 - c. Grinnell Corp.; Grinnell Supply Sales Co.
 - d. Mercer Rubber Co.
 - e. Metraflex Co.
 - 3. Mechanical Sleeve Seals:
 - a. Calpico, Inc.
 - b. Metraflex Co.
 - c. Proco Products, Inc.
 - d. Thunderline/Link-Seal.
 - 4. Identifying Devices:
 - a. Craftsmark Identification Systems
 - b. Seton Identification Products
 - c. W.H. Brady Company

2.1 DIELECTRIC FITTINGS

- A. General: Assembly or fitting with insulating material isolating joined dissimilar metals, to prevent galvanic action and stop corrosion.
- B. Description: Combination of copper alloy and ferrous; threaded, solder, plain, and weld-neck end types and matching piping system materials.
- C. Insulating Material: Suitable for system fluid, pressure, and temperature.
- D. Dielectric-Flange Kits: Field-assembled, companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers. Dielectric flange kit materials shall be compatible with system fluid, temperature and pressure.
- E. Dielectric Couplings: ARE NOT ALLOWED.

F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; and 300-psig (2070-kPa) minimum working pressure at 225° F (107° C). Coordinate end selection with piping system specifications.

2.2 FLEXIBLE CONNECTORS

- A. General: Fabricated from materials suitable for system fluid and that will provide flexible pipe connections. Include 125-psig (860-kPa) minimum working-pressure rating at 220°F, unless higher working pressure or temperature is indicated. Coordinate end selection with piping system specifications.
- B. Stainless-Steel-Hose/Stainless-Steel Pipe, Flexible Connectors: Corrugated, stainless-steel, inner tubing covered with stainless-steel wire braid. Include stainless-steel nipples or flanges, welded to hose.

2.3 SLEEVES

- A. General: The following materials are for wall, floor, slab and roof penetrations.
- B. Pipe:
 - 1. Steel Sheet Metal: 0.0359-inch (0.9-mm) minimum thickness, galvanized, round tube closed with welded longitudinal joint.
 - 2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, and plain ends. Provide integral waterstop where indicated.
 - 3. Cast Iron: Cast or fabricated pipe equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop.
 - 4. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
 - a. Underdeck Clamp: Clamping ring with set screws.

2.4 IDENTIFYING DEVICES AND LABELS

- A. Equipment Nameplates: Metal nameplate with operational data engraved or die-stamped; permanently fastened to equipment.
 - 1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data.
- B. Stick-on Pipe Markers: Manufacturer's standard preprinted, permanent adhesive, color-coded, pressure-sensitive vinyl, complying with ASME A13.1.
- C. Stick-on Flow Marker: Manufacturer's standard preprinted, permanent adhesive, color-coded, pressure-sensitive vinyl, two inch (2") wide band, color coded complying with ASME A13.1.
- D. Rigid Pipe Markers: Manufacturer's standard preprinted, color coded, rigid plastic with flow arrows and fluid medium designed to be applied to piping systems without the need of adhesives. For markers up to 6 inch, markers shall wrap completely around the pipe, and their own tension shall secure them in place. For markers over 6 inch, markers shall be provided with nylon ties to secure marker to piping system Markers comply with ANSI/ASME A13.1.
- E. Valve Tags: Stamped or engraved 0.032-inch- (0.8-mm-) thick, polished brass, 1-1/2-inches (40-mm) diameter, with 1/4-inch (6-mm) piping system abbreviation letters and 1/2-inch (13-mm)

sequenced numbers. Include 5/32-inch (4-mm) hole and brass, wire-link or beaded chain; or brass S-hook fastener.

F. Plastic Equipment Markers: ASME A13.1, color-coded, laminated plastic. Include lettering identifying name, equipment service, design capacity, pressure drop, entering and leaving conditions and RPM indicated on the contract documents. Size shall be 2-1/2 by 4 inches (65 by 100 mm) for control devices, dampers, and valves; and 4-1/2 by 6 inches (115 by 150 mm) for equipment. Identifying names and/or abbreviations shall match those indicated on the contract documents.

2.5 GROUT

A. Non-shrink, Non-metallic Grout: ASTM C 1107, Grade B, post-hardening, volume-adjusting, dry, non-staining, non-corrosive, non-gaseous, hydraulic-cement grout recommended for interior and exterior applications. Design mix shall be 5000-psig (34.5-MPa), 28-day compressive strength.

2.6 CONCRETE HOUSEKEEPING PADS

- A. Concrete: 3000-psig (20.7-MPa), 28-day compressive-strength concrete.
- B. Form work: 14 gauge galvanized steel frame
- C. Dowels: #4 rebar
- D. Reinforcement: 6 X 6 W2.9 X W 2.9 wire metal mesh at center

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. General: Install piping as described below, unless piping sections specify otherwise.
- B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.
- C. Install components with pressure and temperature ratings equal to or greater than system operating pressure and temperature.
- D. Install piping free of sags and bends. Install fittings for changes in direction and branch connections. Install fittings, couplings, and accessories according to manufacturer's written instructions.
- E. Install piping at parallel and perpendicular to building walls. Diagonal runs are prohibited, unless otherwise indicated. Locate groups of pipes parallel to each other, spaced to permit valve servicing.
- F. In areas of exposed piping, install piping to maximize headroom. In areas with ceilings, install piping to maximize clearance between ceiling and pipe. Allow sufficient space for ceiling panel removal.
- G. Install piping to allow application of insulation plus 1-inch (25-mm) clearance around insulation.
- H. Install pipe escutcheons for pipe penetrations of walls, partitions, floors and ceilings.
- I. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, ³/₄" ball valve, threaded nipple and chained cap.

- J. Install line size manual shutoff valve at each connection to each piece of equipment.
- K. Install piping so that accessories are accessible for operation, maintenance, repair and replacement.
- L. Install piping with sufficient clearance to allow for expansion and contraction.
- M. Sleeves are not required for core drilled holes through interior solid concrete walls and floors, above grade exterior solid concrete walls and existing underground solid concrete walls. Floors in mechanical equipment areas or other wet areas shall be provided with a sleeve with waterstop.
- N. Install sleeves for pipes passing through walls, partitions, and slabs.
 - 1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches (50 mm) above finished floor level. In floors with water stop extend cast-iron sleeve fittings below floor slab as required to secure clamping ring.
 - 2. Build sleeves into new walls and slabs as walls and slabs are being constructed.
 - 3. Install sleeves in non-fired rated assemblies large enough to provide 1/2-inch (12.7-mm) annular clear space between sleeve and pipe or pipe insulation.
 - 4. Install sleeves in fire rated assemblies per ASTM E 814 by Underwriters Laboratory, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.
- O. Verify final equipment locations for roughing-in.
- P. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping specification Sections:
 - 1. Threaded Steel Pipe Joints: Thread pipe with tapered pipe threads in accordance with ANSI B2.1 and ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint lubricant or sealant suitable for the service for which the pipe is intended on the male threads at each joint and tighten joint to leave not more than 3 threads exposed. Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds
 - 2. Welded Steel Pipe Joints: Weld pipe joints in accordance with applicable ASME Codes and AWS D10.12, "Recommended Practices and Procedures for Welding Low Carbon Steel Pipe".
 - 3. Flanged Steel Pipe Joints: Clean flange faces and install gaskets. Align flange surfaces parallel. Use suitable lubricants on bolt threads. Tighten bolts to torque specified by manufacturer of flange and flange bolts, to provide uniform compression of gaskets.
 - 4. Gasket Materials: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned.
 - 5. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
 - 6. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
 - 7. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following:
 - a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 8. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657 procedures and manufacturer's written instructions.
 - a. Plain-End Pipe and Fittings: Use butt fusion.
 - b. Plain-End Pipe and Socket Fittings: Use socket fusion.

- Q. Piping Connections: Make connections according to the following, unless otherwise indicated:
 - 1. Remake leaking joints using new materials.
 - 2. Install unions, in piping 2-inch NPS (DN50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 3. Install flanges, in piping 2-1/2-inch NPS (DN65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 - 4. Piping Systems: Install dielectric fittings to connect piping materials of dissimilar metals.

3.2 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting and without interference(s) to other installations.
- D. Extend grease fittings to accessible locations.

3.3 LABELING AND IDENTIFYING

- A. Piping Systems: Install pipe markers on all piping of each system (insulated and un-insulated), including pipe sizes, fluid medium and direction of flow arrows. Interior, non-metal jacketed piping systems: Provide stick-on markers. Install flow marker 360 degrees at each end of each pipe marker.
 - 2. Exterior piping systems: Provide rigid markers (for markers on piping over 6 inches provide nylon ties). Provide stick-on size marker attached to rigid marker.
 - 3. Markers shall be spaced at a maximum of 25-foot (7.5-m) intervals along each run. In addition to the 25 foot intervals, provide markers at the following locations:
 - a. Near each valve and control device.
 - b. Near each branch, excluding short takeoffs for fixtures and terminal units.
 - c. Near locations where pipes pass through or enter non-accessible enclosures.
 - d. At access doors, manholes, and similar access points that permit view of concealed piping.
 - e. Near major equipment items and other points of origination and termination.
- B. Valve Tags:
 - 1. Install on all valves and control devices (factory and field installed), except check valves, plumbing fixture supply stops, faucets, and hose connections. List tagged valves in valve schedule.
- C. Install plastic equipment marker on all equipment provided under this contract.
- D. Provide additional mechanical identification materials and devices to supplement field or factory supplied nameplates that have become visually blocked by work of this or other Divisions.
- E. Clean faces of identification devices and glass frames of valve charts.

3.4 TOUCH-UP PAINTING

A. Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.5 GROUTING

- A. Install nonmetallic, non-shrink, grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors. Mix and cure grout according to manufacturer's written instructions.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placing of grout.
- E. Place grout to provide smooth bearing surface for equipment base.
- F. Place grout, completely filling equipment bases.
- G. Place grout around anchors.

3.6 CONCRETE HOUSEKEEPING PADS

- A. Provide concrete housekeeping pads for all base mounted equipment. Provide 6" tall 3000 psi concrete pad having 6 X 6 –W2.9 X W 2.9 wire metal mesh at center. Extend pad a minimum of 4" greater than equipment footprint in all directions. Provide a smooth trowel finish on top surface of pad.
- B. Provide 14 gauge galvanized steel frame around entire perimeter of pad having a ³/₄" chamfer at all corners and at all edges. Frame to extend ¹/₂" over top of pad and 1" beneath bottom surface of pad. All corners to be welded.
- C. Anchor pad to existing or new concrete floor with #4 rebar dowels set at a minimum 12" on center in each direction, having the last 2" of dowel bent at a 90 degree angle.
 - 1. Existing floors: Drill 1" diameter bores into the existing concrete floor at a minimum depth of 2" to accept dowels. Fasten dowels within bores with epoxy grout.
 - 2. Newly poured floors: Provide rebar dowels embedded to a depth of 2" below floor surface, having the last 2" of dowel bent at a 90 degree angle.
- D. Prior to pouring concrete pad, place manufacture's recommended galvanized steel anchor bolts into pad using the equipment template provided.
- E. Provide 5000 psi level grout bedding beneath equipment prior to setting and final tightening of fasteners.

3.7 REPAIRS

A. If existing or new work is damaged or disturbed, remove damaged sections and install new products of equal capacity and quality.

END OF SECTION
SECTION 221123 - NATURAL GAS PIPING SYSTEMS

PART 1 - GENERAL

1.1 **SUMMARY**

- Α. This Section includes piping, specialties, and accessories for natural gas systems.
- Β. Approximate values of natural gas that will be supplied for these systems are the following:
 - 1. Heating Value: 1000 Btu/cu. ft.
 - 2. Specific Gravity: 0.6.
 - 3. Service Line Pressure: 15 to 20 psig.
- C. Approximate values of liquefied propane gas (LPG) that will be supplied for these systems are the following:
 - 1. Heating Value: 2,516 Btu/cu. ft.
 - 2. Specific Gravity: 0.5.
 - 3. Service Line Pressure: 0.4 to 0.5 psig.

DEFINITIONS 1.2

- Α. Low-Pressure Natural Gas Piping System: Operating at pressure of 0.5 psig or less.
- Medium-Pressure Natural Gas Piping System: Operating at pressure greater than 0.5 psig, but not B. greater than 2 psig.
- C. High-Pressure Natural Gas Piping System: Operating at pressure greater than 2 psig, but not greater than 5 psig.
- D. Natural Gas Service: Operating at pressure indicated.
- E. Gas Main or Distribution Main: Piping to convey gas to individual gas services or other gas mains.
- F. Gas Service: Pipe from the gas main or other source to gas point of delivery for the building being served. Piping includes gas service piping, gas valve, service pressure regulator, meter bar or meter support, and gas meter.
- G. Gas Delivery Point: Outlet of gas meter or service pressure regulator, or when no gas meter is provided, the gas service valve.
- H. Gas Piping System: Pipe within the building that conveys gas from point of delivery to points of usage. Piping includes dielectric fitting and gas valve immediately downstream from point of delivery.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- Minimum Working Pressure Ratings: Except where otherwise indicated, the following are minimum A. pressure requirements.
 - 1. Low-Pressure Natural Gas Piping Systems: 0.5 psig.
 - Medium-Pressure Natural Gas Piping Systems: 2.0 psig. 2.
 - 3. High-Pressure Natural Gas Piping Systems: 5.0 psig.

4. Natural Gas Service: 100 psig.

1.4 SUBMITTALS

- A. Product data for each type of natural gas specialty and special-duty valve. Include pressure rating in psig, rated capacity in cu. ft. per hour (CFH), and settings of selected models.
- B. Coordination drawings for natural gas piping systems, including required clearances and relationship to other services that serve the same work areas.
- C. Maintenance data for natural gas special ties and special-duty valves for inclusion in Operating and Maintenance Manuals.
- D. Test reports specified in "Field Quality Control" Article in Part 3.

1.5 QUALITY ASSURANCE

- A. Comply with NFPA 54 "National Fuel Gas Code" for gas piping materials and components; installations; and inspection, testing, and purging. Where applicable, also comply with natural gas utility company's standards.
- B. Comply with NFPA 70 "National Electrical Code" for electrical connections between wiring and electrically operated control devices.
- C. Provide listing/approval stamp, label, or other marking on equipment made to specified standards.
- D. Listing and Labeling: Provide equipment and accessories that are listed and labeled.
 - 1. Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
 - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.
- E. Product Options: Natural gas systems equipment, specialties, and accessories are based on specific types, manufacturers, and models indicated. Equipment and other components having equal performance characteristics by other manufacturers may be considered, provided deviations in dimensions, operation, and other characteristics do not change design concept or intended performance as judged by the Engineer. The burden of proof of equality of products is on the Contractor.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Handling Flammable Liquids: Remove and legally dispose of liquids from drips in existing gas piping. Handle cautiously to avoid spillage and ignition. Notify the gas supplier. Handle flammable liquids used by the Installer with proper precautions, and do not leave on the premises from end of one day to beginning of next day.

1.7 SEQUENCING AND SCHEDULING

- A. Notification of Interruption of Service: Notify each affected user when gas supply will be turned off.
- B. Work Interruptions: Leave gas systems in a safe condition when interruptions in work occur while repairs or alterations are being made to existing gas piping systems.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Gas Meters:
 - a. American Meter Co.
 - b. Badger Meter, Inc., Utility Products Div.
 - c. Equimeter, Inc., A BTR Co.
 - d. Lancaster by National Meter Parts, Inc.
 - e. Schlumberger Industries, Gas Div.
 - 2. Meter Bars:
 - a. Lancaster by National Meter Parts, Inc.
 - b. A.Y. McDonald Mfg. Co.
 - c. Rockford-Eclipse Div., Eclipse, Inc.
 - d. Schlumberger Industries, Gas Div.
 - 3. Gas Pressure Regulators:
 - a. American Meter Co.
 - b. Equimeter, Inc., A BTR Co.
 - c. Fisher Controls.
 - d. Gas Energy, Inc., Subsid., Brooklyn Union Gas.
 - e. Jordan Valve Div., Richards Industries, Inc.
 - f. Lancaster by National Meter Parts, Inc.
 - g. Maxitrol Co.
 - h. Schlumberger Industries, Gas Div.
 - 4. Low-Pressure Gas Stops:
 - a. Hammond Valve Corp.
 - b. Jomar International, Ltd.
 - c. Lancaster by National Meter Parts, Inc.
 - d. A.Y. McDonald Mfg. Co.
 - e. Rockford-Eclipse Div., Eclipse, Inc.
 - 5. Gas Valves, 2 Inches and Smaller:
 - a. Homestead by Olson Technologies, Inc.
 - b. Lancaster by National Meter Parts, Inc.
 - c. Lunkenheimer Co.
 - d. A.Y. McDonald Mfg. Co.
 - e. Milliken Valve Co., Inc.
 - f. Mueller Co., A Grinnell Co.
 - g. Mueller Steam Specialty Div., Core Industries, Inc.
 - h. Nordstrum Valves, Inc.
 - i. Resun by J.M. Huber Corp., Equipment Div.
 - j. Rockford-Eclipse Div., Eclipse, Inc.
 - 6. Gas Valves, 2-1/2 Inches and Larger:
 - a. Homestead by Olson Technologies, Inc.
 - b. Milliken Valve Co., Inc.
 - c. Mueller Steam Specialty Div., Core Industries, Inc.
 - d. Nordstrum Valves, Inc.

- e. Resun by J.M. Huber Corp.
- f. Xomox Corp.
- 7. Earthquake-Actuated Automatic Gas Shutoff Valves:
 - a. Koso by Pacific Seismic Products, Inc.
 - b. Pacific Seismic Products, Inc.
 - c. Quake Defense, Inc.
 - d. Quake Master, Inc.
- 8. Solenoid Valves:
 - a. Atkomatic Valve Co., Inc.
 - b. Automatic Switch Co.
 - c. Magnatrol Valve Corp.
 - d. Skinner Valve Div., Honeywell, Inc.

2.2 PIPES AND TUBES

- A. Steel Pipe, above grad: ASTM A 53, Type E, Electric-Resistance Welded or Type S, Seamless, Grade B, Schedule 80, black.
- B. Steel Pipe, below grade: ASTM A 53, Type E, Electric-Resistance Welded or Type S, Seamless, Grade B. Schedule 80 coated Steel pipe with threaded malleable iron fittings. Pipe coating shall be factory applied and pipe fittings and joints shall be field wrapped. Coatings and wraps shall be similar to Liberty Coating Pritec two layer P-E Coating.
- C. Plastic Pipe: ASTM D 2513, high density polyethylene (HDPE), SDR11.

2.3 PIPE AND TUBE FITTINGS

- A. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern, with threads conforming to ASME B1.20.1.
- B. Unions: ASME B16.39, Class 150, black malleable iron; female pattern; brass-to-iron seat; ground joint.
- C. Cast-Iron Fittings: ASME B16.1, Classes 125 and 250.
- D. Steel Fittings: ASME B16.9, wrought steel, butt-welding type; and ASME B16.11, forged steel.
- E. Steel Flanges and Flanged Fittings: ASME B16.5.
- F. Wrought Copper Fittings: ASME B16.22, streamlined pattern.
- G. Bronze Flanges and Flanged Fittings: ASME B16.24.
- H. Plastic Pipe Fittings: ASTM D 2513, high density polyethylene, butt-fusion type; and ASTM D 2683, polyethylene, socket-fusion type.
- I. Transition Fittings: Type, material, and end connections to match piping being joined.

2.4 JOINING MATERIALS

A. Common Joining Materials: Refer to Division 23 Section "Basic Mechanical Materials and Methods" for joining materials not included in this Section.

- B. Joint Compound and Tape: Suitable for natural gas.
- C. Gasket Material: Thickness, material, and type suitable for natural gas.

2.5 VALVES

- A. Manual Valves: Conform to standards listed, or where appropriate, valves according to ANSI Z21.15 and ANSI Z21.15a.
- B. Low-Pressure Gas Stops, 2 Inches and Smaller: AGA-certified design for 2 psig or less natural gas, with AGA stamp, plug or ball type, bronze body and bronze plug or chrome-plated brass ball. Include flat head, square head, or lever handle and threaded ends.
 - 1. Option: Include locking (tamperproof) feature.
- C. Gas Valves, 2 Inches and Smaller: ASME B16.33, 150 psi WOG, bronze body, bronze plug, nonlubricated, straightaway pattern, square head, tapered-plug type, with threaded ends.
 1. Option: Include locking (tamperproof) feature.
- D. Gas Valves, 2-1/2 Inches and Larger: MSS SP-78, Class 125 or 175 WOG, nonlubricated plug type with PTFE lining or sleeve, semisteel body, wrench operated, with flanged ends.
 - 1. Option: Include locking (tamperproof) device feature.
- E. Valve Boxes: Cast-iron, 2-section box. Top section includes cover with lettering "GAS." Bottom section includes base of size to fit over valve and barrel approximately 5 inches in diameter. Valve box includes adjustable cast-iron extension of length required for depth of bury of valve.
 - 1. Furnish 1 steel operating wrench with each valve box. Include tee-handle with 1 pointed end, stem of length required to operate valve, and socket fitting valve operating nut.
- F. Automatic Shutoff Valves: ANSI Z21.21 or ANSI Z21.21a, for operation by appliance automatic shutoff device. Two inches and smaller with threaded ends and 2-1/2 inches and larger with flanged ends.
 - 1. Operation: Mechanical.
 - 2. Operation: Electrical.
- G. Earthquake-Actuated Automatic Shutoff Valves: ANSI Z21.70, mechanical operation, with threaded ends for 2 inches and smaller and flanged ends for 2-1/2 inches and larger.
- H. Solenoid Valves: Bronze, aluminum, or cast-iron body; 120 volts a.c., 60 Hz, Class B continuous-duty molded coil; UL labeled and FM approved. Include ISC 6, NEMA 4 coil enclosure and electrically opened and electrically closed dual coils. Valve position is normally closed. Include threaded ends for 2 inches and smaller and flanged ends for 2-1/2 inches and larger.

2.6 PIPING SPECIALTIES

- A. Gas Meters: Diaphragm-type, positive displacement, with aluminum cases, temperature compensated, with internal corrosion-resistant components. Include threaded ends for 2 inches and smaller; flanged ends for 2-1/2 inches and larger. Meter pressure ratings and flow volume in standard cubic feet per hour of natural gas at specific gravity are as indicated.
 - 1. Capacity, 500 Cubic Feet per Hour or Less: ANSI B109.1.
 - 2. Capacity, Greater than 500 Cubic Feet per Hour: ANSI B109.2.

- B. Gas Meter Bars: Malleable-iron or cast-iron frame for supporting gas meter. Include meter offset swivel pipes, meter nuts with O-ring seal, factory- or field-installed dielectric unions, and threaded ends.
 - 1. Exception: Omit meter offset swivel pipes when meter bar dimensions match gas meter connections.
- C. Gas Pressure Regulators: ANSI Z21.18 or ANSI Z21.18a, single stage, steel jacketed, corrosion-resistant pressure regulators. Include atmospheric vent, elevation compensator, with threaded ends for 2 inches and smaller and flanged ends for 2-1/2 inches and larger. Regulator pressure ratings, inlet and outlet pressures, and flow volume in standard cubic feet per hour of natural gas at specific gravity are as indicated.
 - 1. Service Gas Pressure Regulators: Inlet pressure rating not less than natural gas distribution system service pressure.
 - 2. Line Gas Pressure Regulators: Inlet pressure rating not less than system pressure.
 - 3. Appliance Gas Pressure Regulators: Inlet pressure rating not less than system pressure, with capacity and pressure setting matching appliance.
 - 4. Gas Pressure Regulator Vents: Factory- or field-installed corrosion-resistant screen in opening when not connected to vent piping.
- D. Flexible Connectors: ANSI Z21.24 or ANSI Z21.24a, copper alloy.
- E. Strainers: Y pattern, full size of connecting piping. Include Type 304 stainless-steel screens with 3/64-inch perforations except where other screens are indicated.
 - 1. Pressure Rating: 125 psig minimum steam or 175 psig WOG working pressure except where otherwise indicated.
 - 2. Sizes 2 Inches and Smaller: Bronze body, with female threaded ends.
 - 3. Sizes 2-1/2 Inches and Larger: Cast-iron body, with flanged ends.
 - 4. Screwed screen retainer with centered blowdown and pipe plug.

2.7 PROTECTIVE COATING

- A. Furnish pipe and fittings with factory-applied, corrosion-resistant polyethylene coating for use in direct-bury application. Coating properties include:
 - 1. Applied to pipe and fittings treated with a compatible primer prior to application of tape.
 - 2. Overall Thickness: 20 mils minimum, synthetic adhesive.
 - 3. Water Vapor Transmission Rate: Maximum 0.10 gallon per 100 square inches.
 - 4. Water Absorption: 0.02 percent maximum.

2.8 CONCRETE BASES

A. Specified in other Sections.

PART 3 – EXECUTION

- 3.1 PREPARATION
 - A. Precautions: Close equipment shutoff valves before turning off gas to the premises or section of piping. Perform leakage test as specified in "Field Quality Control" Article to determine that all equipment is turned off in the piping section to be affected.
 - B. Comply with NFPA 54 "Prevention of Accidental Ignition."

3.2 EXCAVATION

A. Excavation, trenching, and backfilling is specified in Division 2.

3.3 PREPARATION OF FOUNDATION FOR BURIED PIPING

- A. Grade trench bottom to provide smooth, firm, stable, and rock-free foundation throughout length of piping.
- B. Remove unstable, soft, and unsuitable materials at surface on which piping is to be laid, and backfill with clean sand or pea gravel to indicated level.
- C. Shape bottom of trench to fit bottom of piping. Fill unevenness with tamped-sand backfill. Dig bell holes at each pipe joint to relieve bells of loads and to ensure continuous bearing of pipe barrel on foundation.

3.4 NATURAL GAS SERVICE PIPING TO EQUIPMENT

- A. Extend natural gas piping and connect to gas distribution system (gas service) piping in location and size indicated for gas service entrance to building.
 - 1. Gas distribution system piping, service gas pressure regulator, and gas meter will be provided by gas utility.
 - 2. Gas distribution system piping, service gas pressure regulator, and gas meter are specified in Division 2.
 - 3. Include gas distribution system piping to point indicated.
 - 4. Include gas distribution system piping to point indicated, gas service pressure regulator, and gas meter. Install in piping and specialty arrangement indicated.
- B. Install buried gas distribution system piping with 2 feet minimum cover.
- C. Install shutoff valve, downstream of gas meter, outside building at gas service entrance.

3.5 CONCRETE BASES

A. Install concrete bases, of dimensions indicated, where indicated, for gas meters, gas pressure regulators, and specialties.

3.6 PIPE APPLICATIONS

- A. General: Flanges, unions, transition and special fittings, and valves with pressure ratings same or higher than system pressure rating may be used in applications below, except where specified otherwise.
- B. Low-Pressure Natural Gas Systems, above Ground: Use the following:
 - 1. 2 Inches and Smaller: Steel pipe, malleable-iron, threaded fittings, and threaded joints.
 - 2. 2-1/2 Inches and Larger: Steel pipe, butt-welding fittings, and welded joints.
- C. Medium-Pressure Natural Gas Systems, above Ground: Use steel pipe, butt-welding fittings, and welded joints.
- D. High-Pressure Natural Gas Systems, above Ground: Use steel pipe, butt-welding fittings, and welded joints.

- E. Underground Containment Conduits: Use steel pipe, butt-welding fittings, and welded joints.
- F. Gas Service Piping, Underground: Use HDPE pipe, HDPE pipe fittings, and fusion joints.

3.7 VALVE APPLICATIONS

- A. Use low-pressure gas stops, tapered plug or ball type, for shutoff to appliances with 2-inch or smaller low-pressure gas supply.
- B. Use gas valves for shutoff to appliances.
- C. Use gas valves of sizes indicated for gas service piping, meters, mains, and where indicated.
- D. Use plastic gas valves on plastic gas distribution piping. Install on buried piping with valve box.

3.8 JOINT CONSTRUCTION

- A. Refer to Division 23 Section "Basic Mechanical Materials and Methods" for basic piping joint construction.
- B. Use materials suitable for natural gas service.

3.9 PIPING INSTALLATIONS

- A. Refer to Division 23 Section "Basic Mechanical Materials and Methods" for basic piping installation requirements.
- B. Drips and Sediment Traps: Install drips at points where condensate may collect. Include outlets of gas meters. Locate where readily accessible to permit cleaning and emptying. Do not install where condensate would be subject to freezing.
 - 1. Construct drips and sediment traps using tee fitting with bottom outlet plugged or capped. Use minimum-length nipple of 3 pipe diameters, but not less than 3 inches long, and same size as connected pipe. Install with space between bottom of drip and floor for removal of plug or cap.
- C. Conceal pipe installations below grade, except where indicated to be exposed to view.
- D. Install gas piping at a uniform grade of 1/4 inch in 15 feet, upward toward risers. Install piping upward from service risers to meters, service regulator when meter is not provided, and equipment.
- E. Make reductions in pipe sizes using eccentric reducer fittings installed with the level side down.
- F. Connect branch piping from top or side of horizontal piping.
- G. Install unions in pipes 2 inches and smaller, adjacent to each valve, at final connection to each piece of equipment, and elsewhere as indicated. Unions are not required on flanged devices.
- H. Install dielectric fittings (unions and flanges) with 1 ferrous and 1 brass or bronze-end connections, separated by insulating material, where piping of dissimilar metals are joined.
- I. Install dielectric fittings (unions and flanges) with 2 ferrous end connections, separated by insulating material, at outlet from gas meter and, where indicated, for ferrous piping.
- J. Install flanges on valves, specialties, and equipment having 2-1/2-inch and larger connections.

- Κ. Anchor piping to ensure proper direction of piping expansion and contraction. Install expansion joints, expansion loops, and pipe guides as indicated.
- L. Terminate vents for gas pressure regulators and gas trains with turned-down, reducing elbow fittings with corrosion-resistant insect screens in large end.
- M. Install underground HDPE gas distribution piping according to ASTM D 2774.

3.10 VALVE INSTALLATION

- Install valves in accessible locations, protected from physical damage. Tag valves with a metal tag A. attached with a metal chain indicating the piping systems supplied.
- Β. Install a gas valve upstream of each gas pressure regulator. Where two gas pressure regulators are installed in series in a single gas line, a manual valve is not required at the second regulator.
- C. Install pressure-relief or pressure-limiting devices so they can be readily operated to determine if valve is free; test to determine pressure at which they will operate; and examine for leakage when in closed position.

3.11 CONNECTIONS

- Α. Install gas piping next to gas-utilizing equipment and appliances to allow servicing and maintenance.
- B. Connect gas piping to gas-utilizing equipment and appliances with shutoff valves and unions. Make connections downstream of valves and unions, with flexible connectors where indicated.
- C. Electrical Connections: Wiring is specified in other Divisions.

3.12 TERMINAL EQUIPMENT CONNECTIONS

- Install a gas valve upstream and within 6 feet of each gas-utilizing appliance. Install a union or A. flanged connection downstream from the valve to permit removal of controls.
- Β. Sediment Traps: Install tee fittings forming drips, as close as practical to gas appliance inlets. Cap or plug bottom outlet.

3.13 ELECTRICAL BONDING AND GROUNDING

- A. Install above-ground portions of natural gas piping systems that are upstream from equipment shutoff valves, electrically continuous and bonded to a grounding electrode according to NFPA 70.
- Β. Do not use gas piping as a grounding electrode.

3.14 FIELD QUALITY CONTROL

- Inspect, test, and purge natural gas systems according to NFPA 54, Part 4 "Gas Piping Inspection, Α. Testing, and Purging" and local gas utility requirements.
- Repair leaks and defects with new materials, and retest system until satisfactory results are obtained. Β.
- C. Report test results promptly and in writing to the Architect and the authority having jurisdiction.
- Verify capacities and pressure ratings of gas meters, regulators, valves, and specialties. D.

- E. Verify correct pressure settings for pressure regulators.
- F. Verify that specified piping tests are complete.

3.15 ADJUSTING

A. Adjust controls and safety devices. Replace damaged and malfunctioning controls and safety devices.

END OF SECTION

SECTION 260500 - BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Basic administrative and procedural requirements, and general requirements for electrical products and installation applicable to all Division 26 work.

1.2 RELATED DOCUMENTS

- A. Bidding Requirements, Contract Forms, and Conditions of the Contract (General and Supplementary Conditions) apply to all work of Division 26.
- B. Comply with Division 1 General Requirements.
- C. All work under this Division shall be in accordance with the Contract Documents as defined in the General Conditions.

1.3 SCOPE OF WORK

- A. Provide all labor, materials, tools, equipment, transportation and services necessary for and incidental to completion of all electrical work as indicated on the Drawings and/or as specified herein.
- B. Owner will be pre-purchasing the generators for Fairfield Hall, Midtown Student Center, Litchfield and Newbury Dormitories, Grasso Hall, and Westside Campus Center. These generators will be housed in an offsite location. The successful bidder will be required to provide pick-up and delivery to the project site for these generators as well as a 130kW natural gas generator which is housed in the Midtown Campus facilities warehouse.
- C. Provide concrete pads for each generator as indicated within contract documents.
- D. Provide rigging of generators onto concrete pad.
- E. Provide all conduit and wiring in support of the generator installation including transfer switches and generator accessories.
- F. Provide all conduit and wiring required to install generator remote annunciator panels and connections to existing HVAC Building Management System.
- G. Provide underground structures as indicated within contract documents.
- H. Provide all conduit, wiring, trenching and backfill as required and as indicated on contract documents.
- I. Provide automatic transfer switches as indicated on contract documents.
- J. Provide branch circuit breakers as indicated on contract documents.
- K. Provide all excavation and backfill required for installation of (3) 1000 gallon underground propane tanks.
- L. Provide all propane piping, including required trenching and backfill, as indicated on contract documents.

M. Provide all miscellaneous hardware as required for a complete and operational stand-by power system.

1.4 DRAWING USE AND INTERPRETATION

A. The Drawings are diagrammatic and indicate the general arrangement of systems and equipment unless indicated otherwise by dimensions or details. Install work substantially as indicated. Exact equipment locations and raceway routing, etc. shall be governed by actual field conditions and/or instructions of the Engineer and/or Owner's Representative.

1.5 COMPLETE SYSTEMS

- A. General: Furnish and install all materials as required for complete systems, including all parts obviously or reasonably incidental to a complete installation, whether specifically indicated or not. All systems shall be completely assembled, tested, adjusted and demonstrated to be ready for operation prior to Owner's acceptance.
- B. Wiring: The wiring specified and/or shown on the Drawings is for complete and workable systems. Any deviations from the wiring shown due to a particular manufacturer's or subcontractor's requirements shall be made at no cost to either the Contract or the Owner.

1.6 CODES AND REGULATIONS

- A. General: Comply with the National Electrical Code (NEC) and all governing federal, state, and local laws, ordinances, codes, rules, and regulations. Where the Contract Documents exceed these requirements, the Contract Documents shall govern. In no case shall work be installed contrary to or below minimum legal standards.
- B. Utilities: Comply with all applicable rules, restrictions, and requirements of the utility companies serving the project site/facilities.
- C. Non-Compliance: Should any work be performed which is found not to comply with any of the above codes and regulations, provide all work and pay all costs necessary to correct the deficiencies.

1.7 REFERENCE STANDARDS

- A. The latest recognized by the State of Connecticut, published standards of the following associations/organizations shall be followed and applied where applicable, as minimum requirements:
 - 1. (ADA) Americans with Disabilities Act.
 - 2. (ANSI) American National Standards Institute.
 - 3. (ASTM) American Society for Testing and Materials.
 - 4. (IBC) International Building Code.
 - 5. (CBM) Certified Ballast Manufacturer.
 - 6. (ETL) Electrical Testing Laboratory.
 - 7. (EPACT) National Energy Policy Act of 1992.
 - 8. (ICEA) Insulated Cable Engineers Association.
 - 9. (IEEE) Institute of Electrical and Electronic Engineers.
 - 10. (IESNA) Illuminating Engineering Society of North America.
 - 11. (NBFU) National Board of Fire Underwriters.
 - 12. (NEMA) National Electrical Manufacturers Association.
 - 13. (NESC) National Electric Safety Code.
 - 14. (NFPA) National Fire Protection Association.
 - 15. (UL) Underwriter's Laboratories.
 - 16. NEC National Electrical Code

1.8 PERMITS

A. General: Obtain and pay for any and all permits required by all applicable agencies, prior to commencing work.

1.9 QUALITY ASSURANCE

- A. Manufacturers' Qualifications: Not less than three years experience in the actual production of the specified products.
- B. Installers' Qualifications: Firm with not less than five years experience in the installation of electrical systems and equipment similar in scope and complexity to those required for this Project, and having successfully completed at least ten comparable scale projects.
- C. Incidental Work: Painting, patching, welding, carpentry and the like related to or required for Division 26 work shall be performed by craftsman skilled in the appropriate trade, but shall be provided for under Division 26.

1.10 SUBMITTALS

- A. General: Prepare electronic submittals and submit for approval, per the procedures set forth in Division 1, all submittals required by Division 1, this section, and by all other Contract Documents.
- B. Types: Required submittals may include: Schedule of Values; List of Subcontractors; Product Data; Shop Drawings; Samples; Test Reports; Certifications; Warranties; Maintenance Manuals; Record Drawings; and various administrative submittals.
- C. Number of Copies: As indicated in Division 1, Division 26 or elsewhere in the Contract Documents. For quantities indicated in the Contract Documents or specification sections other than Division 26 sections, increase number of copies by one to allow for the Engineer's record copy. Minimum number of copies per submittal: three.
- D. Product Data: Submit for equipment, devices, and materials as required in subsequent individual Division 26 sections. Product data to consist of manufacturer's standard catalog cuts, descriptive literature and/or diagrams, in 8-1/2" x 11" format, and in sufficient detail so as to clearly indicate compliance with all specified requirements and standards. Mark each copy to clearly indicate proposed product, options, finishes, etc.
- E. Shop Drawings: Submit for equipment and systems as required in subsequent individual Division 26 sections. Shop Drawing to be newly prepared, specifically for this project, and shall include all information listed in the Shop Drawings submittal requirements in the respective specification section. Include all pertinent information such as equipment/system identification, manufacturer, dimensions, nameplate data, sizes, capacities, types, materials, performance data, features, accessories, wiring diagrams, etc, in sufficient detail so as to clearly indicate compliance with all specified requirements and standards.
- F. Maintenance Manuals: Include operating and maintenance data in accordance with Division 1, for each Division 26 section requiring a Product Data and/or Shop Drawing submittal. Include the respective Product Data/Shop Drawing submittals as well as descriptions of function, normal operating characteristics and limitations, and manufacturer's printed operating, maintenance, trouble shooting, repair, adjustment, and emergency instructions, and complete replacement parts listing.
- G. Record Documents: Prepare and submit in accordance with Division 1. In addition to Division 1 requirements, indicate actual installed locations for all equipment and devices, routing of major interior raceways, locations of all concealed and underground equipment and raceways, and all

approved modifications to the Contract Documents, and deviations necessitated by field conditions and change orders.

1.11 INSPECTIONS

- A. General: During and upon completion of the work, arrange and pay all associated costs for inspections of all electrical work installed under this contract, in accordance with the Conditions of the Contract.
- B. Inspections Required: As per the laws and regulations of the local and/or state agencies having jurisdiction at the project site.
- C. Inspection Agency: Approved by the local and/or state agencies having jurisdiction at the project site.
- D. Certificates: Submit all required inspection certificates.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Where Specified: Materials and equipment shall be as specified in subsequent sections of the Project Manual and/or as indicated on the Drawings.
- B. General Requirements: All materials and equipment shall be in accordance with the Contract Documents, and to the extent possible, standard products of the various manufacturers, except where special construction or performance features are called for. All materials and equipment to be new, clean, undamaged, and free of defects and corrosion.
- C. Acceptable Products: The product of a specified or approved manufacturer will be acceptable only when that product complies with or is modified as necessary to comply with all requirements of the Contract Documents.
- D. Common Items: Where more than one of any specific item is required, all shall be of the same type and manufacturer.
- E. UL Listing: All electrical materials and equipment shall be Underwriters' Laboratories (UL) listed and labeled, where UL standards and listings exist for such materials or equipment.

2.2 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Refer to the Conditions of the Contract, and Division 1.

PART 3 - EXECUTION

- 3.1 GENERAL
 - A. The installation of all electrical work shall be in accordance with the letter and intent of the Contract Documents, as determined by the Engineer.
 - B. Installation Requirements: All materials and equipment shall be installed as recommended by the respective manufacturers, by mechanics experienced and skilled in their particular trade, in a neat and workmanlike manner, in accordance with the standards of the trade, and so as not to void any warranty or UL listing.

C. Administration and Supervision: All electrical work shall be performed under the Contractor's direct supervision, using sufficient and qualified personnel as necessary to complete the work in accordance with the progress schedule. The Contractor shall assign one or more competent supervisors who shall have authority to accept and execute orders and instructions, and who shall cooperate with the other Contractors and subcontractors, the Engineer and Owner in all matters to resolve conflicts and avoid delays.

3.2 DELIVERY STORAGE AND HANDLING

- A. Comply with Division 1 requirements.
- B. Packing and Shipping: Deliver products in original, unopened packaging, properly identified with manufacturer's identification, and compliance labels.
- C. Storage and Protection: Comply with all manufacturer's written recommendations. Store all products in a manner which shall protect them from damage, weather, and entry of debris.
- D. Damaged Products: Do not install damaged products. Arrange for prompt replacement.

3.3 EXAMINATION

A. Conditions Verification: Examine the areas and conditions under which the work is to be performed, and identify any conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.4 COORDINATION

- A. General: Sequence, coordinate and integrate the installation of all electrical materials and equipment for efficient flow of work, in conjunction with the other trades. Review the Drawings for work of the other trades, and report and resolve any discovered discrepancies, prior to commencing work.
- B. Cooperation: Cooperate with the other Contractors and individual disciplines for placement, anchorage and accomplishment of the work. Resolve interferences between work of other disciplines or Contractors, prior to commencing installation.
- C. Chases, Slots, and Openings: Arrange for chases, slots, and openings during the progress of construction, as required to allow for installation of the electrical work.
- D. Supports and Sleeves: Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
- E. Obstacles and Interferences: When installing equipment and raceways, provide offsets, fittings, accessories and changes in elevation or location as necessary to avoid obstacles and interferences, per actual field conditions.

3.5 DIMENSIONS

- A. Building Dimensions: For exact locations of building elements, refer to dimensioned drawings. However, field measurements take precedence over dimensioned drawings.
- B. Limiting Dimensions: Equipment outlines shown on detail drawings of 1/4" = 1'-0" scale or larger and dimensions indicated on the Drawings are limiting dimensions. Do not install equipment exceeding dimensions indicated by outlines on Drawings, or equipment or arrangements that reduce

indicated clearances.

3.6 EQUIPMENT PROTECTION

A. Protect all electrical equipment, and materials and work from the weather elements, paint, mortar, construction debris and damage, until project is substantially complete. Repair, replace, clean all electrical work so affected.

3.7 OWNER FURNISHED EQUIPMENT

- A. The Owner has pre-purchased the generators.
- B. The contractor shall perform the following for all equipment furnished by the Owner:
 - 1. Provide pickup and delivery to the project site, rigging onto generator concrete pads, coordinate scheduling and delivery of the equipment with the equipment vendor.
 - 2. Inspect the equipment immediately after delivery to ensure that the equipment is free of damage. After the equipment is delivered and accepted, the contractor is responsible for any damage.
 - 3. Provide all installation, including mounting hardware, miscellaneous supports, and any ancillary devices required for complete operation of the equipment.
 - 4. Provide operation and maintenance manuals, start-up, and Owners training as required herein.
- C. Unless otherwise shown on drawings or specifications or specifically identified by the Owner, the following items have been pre-purchased: Generators for Fairfield Hall, Midtown Student Center, Litchfield and Newbury Dormitories, Grasso Hall, and Westside Campus Center. **Refer to the pre-purchased specifications included here-in, and dated** _____. Refer also to submittals and bill of materials to be provided by the Owner.

3.8 CHECKOUT, TESTING, AND ADJUSTING

- A. General: Schedule and provide testing equipment, materials, instruments, and personnel as necessary to checkout and to perform all test procedures and adjustments required by the Contract Documents and/or deemed necessary by the Engineer to establish proper performance and installation of electrical systems and equipment. All test instruments to be accurately calibrated and in good working order.
- B. Scheduling: Schedule tests at least three days in advance, and so as to allow Engineer and Owner representative(s) to witness the test, unless directed otherwise. Do not schedule tests until the system installation is complete and fully operational, unless indicated or directed otherwise.
- C. Manufacturer's Authorized Representatives: When required by subsequent Division 26 specification sections, arrange and pay for the services of the manufacturer's authorized representative(s) to be present at time of equipment or system start-up, to supervise the start-up, and to conduct and/or certify all required testing and adjusting.
- D. Test Reports: Submit test reports neatly typewritten on 8-1/2 x 11" sheets indicating system or equipment being tested, methodology of testing, date, and time of test, witnesses of test, and test results. Submit test reports in (3) copies to the Engineer for review, within (5) days after test is performed, and include a copy with the appropriate operation and maintenance data.
- E. Correction/Replacement: After testing, correct any deficiencies, and replace materials and equipment shown to be defective or unable to perform at design or rated capacity. Retest without additional cost to the Owner or Contract. Submit finalization report indicating corrective measures taken, and satisfactory results of retest.

3.9 SYSTEMS DEMONSTRATION

A. Instruct the Owner's representative(s) in the start-up, operation and maintenance of all electrical systems and equipment in accordance with Division 1, as required by subsequent sections, and as requested by the Owner's Representative.

3.10 CLEANING AND TOUCH-UP PAINTING

- A. Perform cleaning required by Division 1.
- B. General: Remove daily from the project site, all waste, rubbish and construction debris accumulated from construction operations, and maintain order. The premises shall be left clean and free of any debris and unused construction materials, prior to final acceptance.
- C. Electrical Equipment: Remove all dust, dirt, debris, mortar, wire scraps, rust, and other foreign materials from the interior and exterior of all electrical equipment and enclosures, and wipe down. Clean accessible current carrying elements and insulators prior to energizing.
- D. Touch-Up Painting: Restore and refinish to original condition, all surfaces of electrical equipment scratched, marred and/or dented during shipping, handling, or installation. Remove all rust, and prime and paint as recommended by the manufacturer.

END OF SECTION

SECTION 260501 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: General requirements, and basic electrical materials and methods applicable to all Division 26 work. Limited scope general construction materials and methods for application with electrical installations are also included.

1.2 SUBMITTALS

A. Product Data: Manufacturer's descriptive literature for each type of fire-stopping material to be used on the project.

1.3 COORDINATION

- A. Chases, slots, inserts, sleeves and openings: Coordinate with general construction work and arrange in building structure during progress of construction to facilitate the electrical installations that follow. Set inserts and sleeves in poured-in-place concrete, masonry work, and other structural components as they are constructed.
- B. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces.

PART 2 - PRODUCTS

2.1 PIPE SLEEVES

A. Rigid steel conduit or iron pipe.

2.2 CONDUIT SEALS

- A. For Cast-in-Place Concrete Applications: Acceptable Manufacturers: O-Z/Gedney Type "FSK"; Thunderline Corp. "Link Seal" with "Link Seal Wall Sleeve."
- B. For Core Drilled and Pre-cast Opening Applications: Acceptable Manufacturers: O-Z/Gedney Type "CSML"; Thunderline corp. "Link Seal."

2.3 FIRESTOPPING MATERIALS

- A. General: Firestop systems composed of firestop compounds and appropriate damming materials installed together with the penetrant (e.g., conduit) to form a complete firestop system, providing a fire resistant rating at least equal to the hourly fire resistance rating of the floor, wall or partition into which the firestop system is to be installed.
- B. Test Standards: Firestopping materials shall be tested together as a system to the time/temperature requirements of ASTM E119 and shall be tested to UL 1479 (ASTM E814) and be UL classified for up to 3 hours.

- C. Firestop Sealants: Non-hardening, conformable, intumescent putties, sealants or other compounds, containing no toxic solvents or asbestos, and exhibiting aggressive adhesion to all common building materials and penetrants, while allowing reasonable movement of the penetrants, without being displaced. Compounds shall be waterproof, non-toxic and smoke and gas tight.
- D. Firestop Mortars: Light-weight, water-based, cementatious, fast drying, low density mortar, nonshrinking and non-cracking during its cure, and which forms a surface capable of being sanded, bored and painted.
- E. Damming Materials: Mineral wool or ceramic fiber.
- F. Multi-Cable Transits: Assemblies consisting of a frame, a compression mechanism, and grooved insert sealing modules sized for multiple penetrating elements of various sizes.
- G. Acceptable Manufacturers: Dow Corning; Heavy Duty/Nelson; International Protective Coatings; Specified Technologies, Inc., HILTI.

2.4 SOIL MATERIALS

- A. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, or natural or crushed sand.
- B. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100 percent passing a 1-1/2 inch sieve, and not more than 5 percent passing a No. 4 sieve.
- C. Backfill and Fill Materials: Materials complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, and SP, free of clay, rock, or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetable, and other deleterious matter.

2.5 CONCRETE WORK

A. Concrete:

- 1. Strength: 3000 psi (20.7 MPa@ 28 days (compressive strength), Pads 2500 psi (17.3 MPa) @ 28 days (trench)
- 2. Aggregate: 3/4" aggregate
- 3. Cement: 588 #/cu. yd. minimum, type I or II
- 4. Slump: 4" maximum
- 5. Air: 5% 7%
- B. Reinforcing: Grade 60 bars, sized as indicated, and 6" x 6" W1.4 x W1.4 mesh, and other reinforcing as indicated.
- C. Forms: Wood, metal or other approved materials, constructed so as to withstand the forces of the newly placed concrete.
- Equipment Pads As indicated on contract documents, provide with 1" x 45° chamfer on all top edges.
 For on grade installations provide 18" layer of DOT type 1 & 2 (50% mix of each) crushed stone beneath pad.

2.6 TOUCH UP PAINT

- A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.
- B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 ELECTRICAL INSTALLATION - GENERAL

- A. Unfinished and Finished Areas: For the purposes of these electrical specifications, "unfinished" areas shall include mechanical, electrical and telephone equipment rooms. All other areas shall be considered "finished" spaces, unless indicated or approved otherwise.
- B. In Unfinished Areas: Raceways, equipment and devices may be installed, concealed or exposed, unless indicated otherwise.
- C. In Finished Areas: Conceal all raceway and flush mount all electrical boxes, equipment, and devices unless indicated or approved otherwise. The space above suspended ceilings or behind furred spaces is considered outside finished areas and electrical materials installed within these areas are considered concealed.
- D. Headroom: Arrange and install components and equipment to provide the maximum possible headroom, unless otherwise indicated.
- E. Dimensions and Clearances: Field measure all dimensions and clearances affecting the installation of electrical work, in relation to established datum, building openings and clearances, and work of other trades, as construction progresses.
- F. Rough-In Locations: Verify final locations for rough-ins with field measurements and requirements of actual equipment being installed.
- G. Door Swings: Verify the swings of all doors before switch outlets or other electrical devices are installed. If necessary, relocate devices so they are not obstructed by doors when doors are open.
- H. Ceiling Mounted Devices: The locations indicated on the architectural reflected ceiling plans take precedence over the electrical documents, in the event of conflict.

3.2 LAYOUT

- A. General: Install electrical systems, materials and equipment level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- B. Serviceability: Install electrical equipment and raceways, etc. to readily facilitate servicing, maintenance and repair or replacement of components, and so as to minimize interference with other equipment and installations.
- C. Clearances: Prior to commencing work, verify that all electrical equipment will adequately fit and conform to the indicated and code required clearances, in the spaces indicated on the Drawings. If rearrangement is required, submit plan and elevation drawings or sketches indicating proposed rearrangement, for the Engineer's approval. Do not rearrange without express written permission of the Engineer.
- D. Right-Of-Way: When laying out electrical work, give priority in available space to steam and condensate lines, sanitary lines, drain lines, fire protection piping and sheet metal duct work. Provide offsets as required to avoid conflicts. Resolve all conflicts before commencing installation.

3.3 HOLES, SLEEVES, AND OPENINGS

- A. General: Provide all holes, sleeves, and openings required for the completion of Division 26 work and restore all surfaces damaged, to match surrounding surfaces. Maintain integrity of all fire and smoke rated barriers using approved firestopping systems. When cutting holes or openings, or installing sleeves, do not cut, damage or disturb structural elements or reinforcing steel, unless approved, in writing, by the Project Structural Engineer.
- B. Conduit Penetrations: Size core drilled holes so that an annular space of not less than 1/4" and not more than 1" is left around the conduit. When openings are cut in lieu of core drilled, provide sleeve in rough opening. Size sleeves to provide and annular space of not less than 1/4" and not more than 1" around the conduit. Patch around sleeve to match surrounding surfaces.

3.4 CONDUIT SEALS

- A. Install conduit seal for each conduit penetrating an exterior building wall below grade (unless penetration is below lowest building floor slab), and elsewhere as indicated, and so as to achieve a sealed watertight installation.
- B. Install conduit seal for each conduit passing from a heated building to a non-heated building and vice versa.
- C. Install conduit seal for each conduit passing from a hazardous location to a non-hazardous location and vice versa.

3.5 FIRESTOPPING SYSTEMS

- A. General: Install firestopping at all electrical raceway and cable penetrations through floor structures and interior walls or partitions which are time-rated fire and/or smoke barriers.
- B. Preparation: Prior to installation, verify that all penetrating elements and supporting devices are permanently installed and that surfaces which will be in contact with penetration seal materials are clean and free of dust, dirt, grease, oil, loose materials, rust or other substances.
- C. Installation: Install firestop systems in accordance with UL approved design details and the manufacturer's instructions. Install sleeves, conduits and cables with required clearance spaces, allowing installation of sealing materials. Do not exceed the outside diameter of the sleeve, conduit or cable by more than one inch or by less than 1/4" when making openings for penetrations. Install firestop systems so as to completely seal openings to prevent passage of smoke and water.

3.6 CUTTING AND PATCHING

- A. General: Provide all cutting, drilling, chasing, fitting and patching necessary for accomplishing the work of Division 26. This includes any and all work necessary to: uncover work to provide for the installation of ill-timed work; remove and replace defective work and work not conforming to the requirements of the Contract Documents; install equipment and materials in existing structures; in addition to that required during the normal course of construction.
- B. Comply with the cutting and patching requirements of Division 1.
- C. Building Structure: Do not endanger the integrity of the building structure by cutting, drilling or otherwise modifying any structural member, without specific approval. Do not proceed with any structural modifications without written permission of the Project Structural Engineer.

D. Repairs: Repair any and all damage to work of other trades caused by cutting and patching operations, using skilled mechanics of the trades involved.

3.7 UNDERGROUND ELECTRICAL WORK

- A. General: Perform all excavating, trenching and backfilling, etc. as indicated or required for the installation of all underground electrical work. Coordinate work with other trades and verify existing underground services and conditions.
- B. Conduit Burial Depth: 30" below finished grade, unless indicated otherwise. All excavation and burial depths indicated are below finished grade.
- C. Excavating: Do not excavate below required depth, except as necessary for removal of unstable soil or when rock is encountered. When rock is encountered, excavate six inches below the required depth and backfill with a minimum 6" layer of crushed stone or gravel between rock bearing surface and the electrical installation. Stockpile satisfactory excavated materials where directed, until required for backfilling. Remove and legally dispose of excess excavated materials and materials not suitable for backfill use. Shore and brace as required for stability of excavation. Remove shoring and bracing when no longer required. Where sheeting is allowed to remain, cut top of sheeting off at an elevation of 30" below finished grade.
- D. Protection: Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by excavations.
- E. Existing Utilities: Remove existing electrical and other utility lines so indicated. Where existing utilities which are to remain exist within areas of excavation, locate such utilities and support and protect during excavation operations.
- F. Trenching: Cut all trenches neatly and uniformly and so as to provide ample working room and at least six inches clearance on both sides of raceways, etc. Take necessary precautions when working near existing underground utilities, and coordinate with the installation of concurrent utilities by other trades. Unless indicated otherwise, pitch all electrical conduit runs downward away from buildings, manholes, and pad mounted equipment. Excavate trenches to depth indicated or required. Limit length of open trench to that in which installations can be made and trenches backfilled within the same day.
- G. Sand Envelope: Install a minimum envelope of three inches (top, bottom, and sides: three inches each) of fine grain sand around all electrical cables and conduits installed below grade unless indicated otherwise.
- H. Preparation for Backfilling: Backfill excavations as promptly as work permits, but not until completion of inspection, testing, approvals, and recording of underground utility locations. Prior to backfilling, remove all concrete form work, shoring, bracing, trash and debris.
- I. Backfilling: Use only approved materials free from boulders, sharp objects and other unsuitable materials. Match the final elevations and materials of areas affected by electrical excavating, trenching and backfilling. Replace conduit and cables damaged by improper backfilling. Replace surface materials to match existing surface materials if no other utility or site work is being done in area. Place specified soil materials in 4" 8" layers to required subgrade elevations, for area classifications as follows:
 - 1. Under Sidewalks and Pavements: Use combination of subbase materials and excavated or borrowed materials.
 - 2. Under Building Slabs: Use drainage fill materials.

- 3. Under Piping and Equipment: Use subbase materials where required over rock bearing surfaces and for correction of unauthorized excavation.
- 4. For Raceways Less Than 30" Below Surface of Roadways: Provide 4" thick concrete base slab support. After raceway installation, provide 4" thick concrete encasement (sides and top) prior to backfilling and placement of roadway subbase.
- J. Backfill Placement: Place backfill and fill materials in layers of not more than 8" in loose depth for material compacted by heavy equipment, and not more than 4" in loose depth for material compacted by hand-operated tampers. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification specified below. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice. Place backfill and fill materials evenly adjacent to structures, piping, and equipment to required elevations. Prevent displacement of raceways and equipment by carrying material uniformly around them to approximately same elevation in each lift.
- K. Compaction: Control soil compaction during construction, providing minimum percentage of density specified for each area classification indicated below.
- L. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture-density relationship (cohesive soils), determined in accordance with ASTM D1557 and not less than the following percentages of relative density, determined in accordance with ASTM D2049, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).
 - 1. Areas under Structures, Building Slabs and Steps, Pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material to 90 percent maximum density for cohesive materials and 95 percent relative density for cohesionless materials.
 - 2. Areas Under Walkways: Compact top 6 inches of subgrade and each layer of backfill or fill material to 90 percent maximum density for cohesive materials, and 95 percent relative density for cohesionless materials.
 - 3. Other Areas: Compact top 6 inches of subgrade and each layer of backfill or fill material to 85 percent maximum density for cohesive materials, and 90 percent relative density for cohesionless materials.
- M. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water. Apply water in minimum quantity necessary to achieve required moisture content and to prevent water appearing on surface during, or subsequent to, compaction operations.
- N. Subsidence: Where subsidence occurs at electrical installation excavations during the period 12 months after Substantial Completion, remove surface treatment (i.e., pavement, lawn, or other finish), add backfill material, compact to specified conditions, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent areas.

3.8 CONCRETE WORK

- A. General: All concrete shall be prepared from approved materials and poured on clean, stable surfaces.
- B. Exterior Base Surfaces: Six-inch layer of crushed stone over well consolidated, stable, undisturbed soil. Where the underlying soil contains excess organic material, trash or voids, or fails to provide solid bearing for any other reason, excavate to the depth required for solid bearing and re-establish the required elevation with approved granular materials.
- C. Finishing: Trowel all exposed surfaces smooth. Round-off or chamfer all exposed edges.

D. Curing: Beginning immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures and mechanical injury. Maintain minimal moisture loss at relatively constant temperature throughout period necessary for hydration of cement and hardening of concrete.

3.9 REFINISHING AND TOUCH UP PAINTING

- A. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
- B. Repair damage to paint finishes with matching touch-up coating recommended by manufacturer.

3.10 CLEANING AND PROTECTION

A. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 260519 - BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.1 SUMMARY

A. Description of Work: Provide wire, cable, and connectors as indicated or required for all feeders, branch circuits, control circuits, etc.

1.2 SUBMITTALS

A. Product Data: Manufacturer's descriptive literature for each wire and connector type to be used on the project.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All wiring systems to consist of individual conductors installed in conduit or other raceway, unless specifically indicated otherwise.
- 2.2 600 VOLT CLASS WIRE
 - A. General: All wire and cable shall be constructed in accordance with all applicable ICEA, NEMA and IEEE published standards, and shall be UL-listed and labeled.
 - B. Single-conductor, 98% conductivity, annealed uncoated copper conductor, with 600-volt rated insulation.
 - C. #10 AWG and Smaller: Solid or stranded, 90°C with Type THNN/THWN insulation.
 - D. #8 AWG and Larger: Class B stranded, 90°C with Type THNN/THWN insulation.
 - E. Do not use aluminum, or copper-clad aluminum alloy conductors.
 - F. Acceptable Manufacturers: General Cable, Cerro Wire; Southwire, Encore Wire.

2.3 CONNECTORS

- A. General: UL-listed, factory fabricated, designed for the application.
- B. Splicing Connectors (#14-10 AWG): Nylon shell insulated metallic screw-on connectors.
- C. Cable Connectors (#8 AWG and Larger): Cable connectors for making terminations, tee-taps and splices shall be bolted pressure or compression type lugs and connectors, with molded plastic insulators.
- D. Terminations (#10 AWG and smaller, stranded): Nylon insulated, crimp ring or fork type terminals for connection to screw terminals.
- E. Acceptable Manufacturers: Amp; Burndy, Ilsco; Ideal; 3M; Thomas & Betts.

2.4 TAPES

A. Acceptable manufacturers: Plymouth; 3M Scotch Brand.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine all wire and cable prior to installation. Do not use wire and cable with bruised, cut, or abraded insulation; or wire that does not pass a continuity test.

3.2 CONDUCTOR SIZES AND QUANTITIES

- A. Minimum Conductor Size: All branch circuit wiring shall be minimum #12 AWG. All control circuit wiring shall be minimum #14 AWG. Provide larger sizes as indicated or required.
- B. Branch Circuit Conductor Sizes: Provide branch circuit conductor sizes as indicated on the panelboard schedules, plans, or elsewhere. Neutral conductor size to match phase conductors unless approved by Engineer.
- C. Equipment Grounding Conductor Required: For each branch circuit and feeder run, provide an equipment grounding conductor for continuous length of run, sized per NEC 250.122 (minimum), larger if so indicated.
- D. Separate Neutral: For branch circuit homeruns with two or three single-pole circuits (of different phases) use separate neutral conductors, unless approved by Engineer.
- E. Combining Homeruns: Do not combine separately indicated homeruns in single conduit unless indicated or approved by the Engineer.
- F. Switch Legs: Provide branch circuit switch legs and travelers as required for the switching indicated.
- G. Feeders: Provide feeder conductor sizes and quantities as indicated.

3.3 INSTALLATION

- A. General: Install all conductors and other associated items in compliance with applicable requirements of NEC, NEMA, UL and NECA's "Standards of Installation" and in accordance with manufacturer's recommendations.
- B. In Raceway: Install all wiring in conduit or other specified raceway, unless indicated otherwise.
- C. Terminations: Furnish and install terminations, including lugs if necessary, to make all electrical connections indicated or required. Make connections and terminations for all stranded AWG conductors using crimp, clamp, or box type connectors and terminators. Enclose all strands of stranded conductors in connectors, and lugs.
- D. Tightening: Tighten all connectors, lugs, screws, bolts, Allen-heads and other electrical fasteners to torque values per manufacturer's written instructions.
- E. Restrictions: Do not substitute smaller conductors with higher temperature rated insulations in lieu of conductor size shown on Drawings.

3.4 COLOR CODE

- A. Color code all branch circuit and feeder conductors as follows:
- B. 208/120 Volts:

| Phase | <u>Color</u> |
|---------|--------------|
| А | Black |
| В | Red |
| С | Blue |
| Neutral | White |

C. 480/277 Volts:

| Phase | <u>Color</u> |
|---------|--------------|
| А | Brown |
| В | Orange |
| С | Yellow |
| Neutral | Gray |

- D. Equipment Grounding Conductors: Green
- E. Conductors No. 10 AWG and Smaller: Color impregnated.
- F. Conductors No. 8 and larger may use color impregnated insulation, or conductor ends may be taped. Taping to be with solid color electrical tape, lap wound, visible without removing dead-front covers in electrical equipment, with at least three inches visible at all terminations and electrical boxes.

3.5 PHASE ARRANGEMENT

- A. Arrange phases in all electrical equipment as follows:
 - 1. A, B, C: Front to Rear.
 - 2. A, B, C: Top to Bottom.
 - 3. A, B, C: Left to Right When Facing Established Front of Equipment.

END OF SECTION

SECTION 260526 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes grounding and bonding systems and equipment.
- B. Section includes grounding and bonding systems and equipment, plus the following special applications:
 - 1. Underground distribution grounding.
 - 2. Foundation steel electrodes.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Burndy; Part of Hubbell Electrical Systems.
 - 2. Dossert; AFL Telecommunications LLC.
 - 3. ERICO International Corporation.
 - 4. Fushi Copperweld Inc.
 - 5. Galvan Industries, Inc.; Electrical Products Division, LLC.
 - 6. Harger Lightning and Grounding.
 - 7. ILSCO.
 - 8. O-Z/Gedney; A Brand of the EGS Electrical Group.
 - 9. Robbins Lightning, Inc.
 - 10. Siemens Power Transmission & Distribution, Inc.

2.2 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.3 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
 - 5. Bonding Conductor: No. 4 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick

2.4 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.5 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel 3/4 inch by 10 feet (19 mm by 3 m).

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum.
 - 1. Bury at least 24 inches (600 mm) below grade.
 - 2. Duct-Bank Grounding Conductor: Bury 12 inches (300 mm) above duct bank when indicated as part of duct-bank installation.
- C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

- D. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 GROUNDING SEPARATELY DERIVED SYSTEMS

A. Generator: Install grounding electrode(s) at the generator location. The electrode shall be connected to the equipment grounding conductor and to the frame of the generator.

3.4 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

- A. Comply with IEEE C2 grounding requirements.
- B. Grounding Manholes and Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, nonshrink grout.
- C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields according to written instructions by manufacturer of splicing and termination kits.
- D. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches (150 mm) from the foundation.

3.5 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.

3.6 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

- B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.
 - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.7 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 - 3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal at individual ground rods. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
 - 4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- B. Grounding system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.
- D. Report measured ground resistances that exceed the following values:
 - 1. Power or System with Capacity of 500 kVA and Less: 5 ohms.
 - 2. Manhole Grounds: 10 ohms.
- E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce ground resistance.

END OF SECTION

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of 5 (five) times the applied force.

1.5 QUALITY ASSURANCE

A. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Wesanco, Inc.
- 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
- 3. Channel Dimensions: Selected for applicable load criteria.
- B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- (14-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c., in at least 1 surface.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. Fabco Plastics Wholesale Limited.
 - d. Seasafe, Inc.
 - 2. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
 - 3. Rated Strength: Selected to suit applicable load criteria.
- C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
- 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
- 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
- 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
- 6. Toggle Bolts: All-steel springhead type.
- 7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with wo-bolt conduit clamps.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: Raceways may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To New Concrete: Bolt to concrete inserts.
 - 2. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

- 3. To Existing Concrete: Expansion anchor fasteners.
- 4. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
- 5. To Light Steel: Sheet metal screws.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Metal conduits, tubing, and fittings.
 - 2. Nonmetal conduits, tubing, and fittings.
 - 3. Metal wireways and auxiliary gutters.
 - 4. Nonmetal wireways and auxiliary gutters.
 - 5. Surface raceways.
 - 6. Boxes, enclosures, and cabinets.
 - 7. Handholes and boxes for exterior underground cabling.

1.3 DEFINITIONS

- A. GRC: Galvanized rigid steel conduit.
- B. EMT: Electrical Metallic Tubing.

1.4 ACTION SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Allied Tube & Conduit.
 - 3. Anamet Electrical, Inc.
 - 4. Electri-Flex Company.
 - 5. O-Z/Gedney.
 - 6. Picoma Industries.
 - 7. Republic Conduit.
 - 8. Robroy Industries.
 - 9. Southwire Company.
 - 10. Thomas & Betts Corporation.
 - 11. Western Tube and Conduit Corporation.
 - 12. Wheatland Tube Company.
- B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- C. GRC: Comply with ANSI C80.1 and UL 6.
- D. EMT: Comply with ANSI C80.3 and UL 797.
- E. FMC: Comply with UL 1; zinc-coated steel.
- F. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- G. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
 - 2. Fittings for EMT:
 - a. Material: Steel.
 - b. Type: compression.
 - 3. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
- H. Joint Compound for GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper B-Line, Inc.
 - 2. Hoffman.
 - 3. Mono-Systems, Inc.
 - 4. Square D.
- B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1, or Type 4X as indicated on contract document, and sized according to NFPA 70.
 - 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Hinged type or Flanged-and-gasketed type to suit NEMA rating unless otherwise indicated.
- E. Finish: Manufacturer's standard enamel finish.

2.3 BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Subject to compliance with requirements provide products by one of the following:
 - 1. Adalet.
 - 2. Cooper Technologies Company; Cooper Crouse-Hinds.
 - 3. EGS/Appleton Electric.
 - 4. Erickson Electrical Equipment Company.
 - 5. FSR Inc.
 - 6. Hoffman.

- 7. Hubbell Incorporated.
- 8. Kraloy.
- 9. Milbank Manufacturing Co.
- 10. Mono-Systems, Inc.
- 11. O-Z/Gedney.
- 12. RACO; Hubbell.
- 13. Robroy Industries.
- 14. Spring City Electrical Manufacturing Company.
- 15. Stahlin Non-Metallic Enclosures.
- 16. Thomas & Betts Corporation.
- 17. Wiremold / Legrand.
- B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.
- E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- F. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- G. Gangable boxes are allowed.

2.4 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. General Requirements for Handholes and Boxes:
 - 1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.
 - 2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Armorcast Products Company.
 - b. Carson Industries LLC.
 - c. NewBasis.
 - d. Oldcastle Precast, Inc.
 - e. Quazite: Hubbell Power System, Inc.
 - f. Synertech Moulded Products
 - 2. Standard: Comply with SCTE 77.
 - 3. Configuration: Designed for flush burial with open bottom unless otherwise indicated.
 - 4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and handhole location.
 - 5. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - 6. Cover Legend: Molded lettering, "ELECTRIC."
 - 7. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed Conduit: GRC or EMT in dry areas not subject to physical damage.
 - 2. Concealed Conduit, Aboveground Wet Locations: GRC.
 - 3. Concealed Conduit, Aboveground Dry Locations: EMT
 - 4. Underground Conduit: RNC, Type EPC-80-PVC direct buried in nonvehicle areas and concrete encased in areas subject to vehicle traffic.
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 6. Boxes and Enclosures, Aboveground: NEMA 250, Type 4X.
- B. Indoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed, Not Subject to Physical Damage: EMT.
 - 2. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - 3. Concealed in Ceilings and Interior Walls and Partitions: EMT
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 - 5. Damp or Wet Locations: GRC.
 - 6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4X in institutional and commercial kitchens and damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 - 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
 - 3. EMT: Use compression steel fittings. Comply with NEMA FB 2.10.
 - 4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- F. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- G. Install surface raceways only where indicated on Drawings.
- H. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C).

3.2 INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- E. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- H. Support conduit within 12 inches (300 mm) of enclosures to which attached.
- I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- J. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
- K. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- L. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- M. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- N. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- O. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- P. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

- Q. Surface Raceways:
 - 1. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.
 - 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- R. Expansion-Joint Fittings:
 - 1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F (17 deg C) and that has straight-run length that exceeds 25 feet (7.6 m). Install in each run of aboveground RMC and EMT conduit that is located where environmental temperature change may exceed 100 deg F (55 deg C) and that has straight-run length that exceeds 100 feet (30 m).
 - 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C temperature change.
 - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
 - 3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F (0.06 mm per meter of length of straight run per deg C) of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F (0.0115 mm per meter of length of straight run per deg C) of temperature change for metal conduits.
 - 4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
 - 5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- S. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
- T. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- U. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
 - 1. Excavate trench bottom to provide firm and uniform support for conduit
 - 2. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 312000 "Earth Moving."

- 3. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
- 4. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete for a minimum of 12 inches (300 mm) on each side of the coupling.
 - b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
- 5. Underground Warning Tape: Tape shall be detectable (by metal detector, etc.) and shall comply with requirements in Section 260553 "Identification for Electrical Systems."

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.5-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas, set so cover surface will be flush with finished grade.
- D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables but short enough to preserve adequate working clearances in enclosure.
- E. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.5 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies.

3.6 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies.

3.7 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

SECTION 260553 - ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

A. Description of Work: Provide nameplates, labeling and other identification means for electrical systems equipment, devices, raceways and wires, as indicated.

1.2 SUBMITTALS

A. Product Data: Manufacturer's descriptive literature and/or samples for each type of nameplate, signs, label, marker, etc. to be used on the project.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Amp, Brady, Hermes, Ideal, Panduit, Seton.

2.2 NAMEPLATES

A. Three-layer laminated plastic with minimum 3/16" high white engraved characters on black background, and punched for mechanical fastening. Fasteners: self-tapping stainless-steel screws or number 10-32 stainless steel machine screws with nuts and flat and lock washers.

2.3 UNDERGROUND WARNING TAPE

- A. Six-inch wide polyethylene tape, permanently bright colored with continuous-printed legend indicating general type of underground line below and "CAUTION." Colors are as follows:
 - 1. Red Electric.
 - 2. Orange Communications.

2.4 MARKING PENS

A. Permanent, waterproof, quick drying black ink. Acceptable Manufacturers: Sanford Fine Point "Sharpie," or equal.

2.5 WIRE TAGS

- A. Vinyl or vinyl-cloth self-adhesive wraparound type indicating appropriate circuit number, etc.
- 2.6 SIGNS
 - A. Provide a sign at the main building service entrance disconnect switch that indicates the type and location of on-site optional standby power source per NEC Art. 702-7A. Sign shall be a minimum of 12"sq with minimum text height of 3/8". Letters shall be white on black background.

PART 3 - EXECUTION

3.1 GENERAL

- A. Clean all surfaces to receive nameplates, label or marking, and prepare according to manufacturer's written instructions.
- B. Install nameplates centered and parallel to equipment lines, and secure with screws as indicated. Do not use rivets or adhesives.
- C. Locate nameplate, marking, or other identification means on outside of equipment or box front covers when above ceilings and when in mechanical or electrical equipment rooms or other unfinished areas, and on inside of front cover when in finished rooms/areas.
- D. Legends: Use Contract Document designations for identification unless indicated otherwise.
- E. Provide the following identification, in addition to identification required by the NEC, and equipment nameplates required by NEMA and UL.

3.2 NAMEPLATES

- A. Provide an engraved nameplate (with minimum height characters indicated) for each:
 - 1. Power center, switchboard, distribution panel, and motor control center (1/2" H.).
 - 2. Overcurrent device, motor starter, and any other device mounted in any of the above (5/16"H).
 - 3. Branch circuit panelboard, safety switch, individually mounted motor starter, individually mounted circuit breaker, transformer, relay and contactor enclosure, and miscellaneous electrical cabinet (5/16" H.).
 - 4. Motor control station, and toggle switch located remote from load served or where function is not easily evident (3/16" H).
 - 5. Communications and special system cabinet (5/16" H.).
- B. Embossed "Dymo" tapes will <u>not</u> be an acceptable substitute.

3.3 UNDERGROUND WARNING TAPES

A. During trench backfilling for each underground electrical, signal and communications line, provide a continuous traceable underground warning tape located directly above line, at six to eight inches below finished grade.

3.4 MARKING PEN LABELING

- A. Mark each of the following, as indicated:
 - 1. Distribution panel and branch circuit panelboard tubs (indicate panel designation on inside of tub so that panel may be identified when its cover is removed).
 - 2. Branch circuit panelboard pole spaces (indicate respective circuit numbers). Note -Panelboard manufacturer supplied pole space identification means may be used in lieu of marking pen, except that pre-printed stickers will not be accepted.
 - 3. Branch circuit and feeder pull and junction box covers (indicate appropriate panel and circuit number(s) of conductors enclosed).
 - 4. Safety switch, individual circuit breaker and motor starter covers (indicate appropriate panel and circuit number serving the equipment).
 - 5. Wiring device coverplates (indicate appropriate panel and circuit number(s) serving the device(s)).

3.5 WIRE TAGS

- A. Power Circuits: Apply wire tag indicating appropriate circuit or feeder number to each conductor present in distribution panel and panelboard gutters, and to each conductor in pull and junction boxes where more than one feeder or multi-wire branch circuit is present. Where only a single feeder or multi-wire branch circuit is present, box cover labeling and conductor color coding is sufficient.
- B. Control, Communications and Signal Circuits: Apply wire tag indicating circuit or termination number at all terminations and at all intermediate locations and boxes where more than one circuit is present.

3.6 BRANCH CIRCUIT PANELBOARD DIRECTORIES

A. For each panelboard, accurately complete the circuit directory card in typewritten form, identifying load served or "space" or "space" for each circuit pole space. Use actual Owner designated room numbers or names (not construction room designations).

3.7 FUSES AND OVERLOADS

- A. At each location where fuses are installed (safety switches, motor starters, control transformers, etc.) provide an adhesive label indicating fuse manufacturer, type, voltage and ampere rating, and affix to inside of enclosure front cover.
- B. For each motor starter, provide adhesive label indicating overload element manufacturer, type, size and catalog number, and affix to inside of enclosure front cover.

3.8 MANHOLE DUCT ENTRIES

A. Provide an engraved nameplate for each duct entry in each manhole. Lettering to be minimum 3/4" high. Indicate feeder designation for power lines, system designation for telecommunications lines, and designation of manhole at opposite end of ductline. Exact wording to be as approved by the Owner.

SECTION 263213 - ENGINE GENERATOR SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY OF WORK

- A. Description of Work: Provide pick-up, delivery from local storage facility and rigging of engine generator system(s) onto and securing to concrete pads. Coordinate with owner's engine generator system(s) vendor for scheduling a pick-up as well as obtaining manufactures rigging, shipping and installation requirements.
- B. Coordinate with owner's engine generator system(s) vendor for scheduling installation inspections, testing and commissioning of engine generator system(s).
- C. Provide concrete pads for each engine generator system(s) as indicated on contract documents.
- D. Provide all electrical connections to engine generator system(s) as required and as indicated on contract documents.
- E. Related Sections: All Division 26 sections are applicable to this section.

1.2 SYSTEM DESCRIPTION

- A. This section includes the installation of packaged engine-generator sets for standby power supply with the following features:
 - 1. Natural Gas and or Diesel engines at locations indicated on contract drawings.
 - 2. Unit-mounted cooling system.
 - 3. Unit-mounted controls and monitoring.
 - 4. Remote annunciator panel for each standby generator.
 - 5. Unit mounted load center to be factory wired to serve generator auxiliary loads (i.e. block heater, battery charger, battery heater, etc.)
 - 6. Connection to building BMS system to annunciate generator operating condition and alarm.
 - 7. Connection to BMS systems to step load HVAC loads onto generator.
 - 8. Sound Attenuated Outdoor enclosure
- B. System Includes: Engine coupled to an a.c. generator unit with specified and necessary components. Engine generator and components are factory-mounted and -aligned on a structural steel skid. Subsystems and auxiliary components and equipment are as indicated.
- C. Functional Description: When the mode selector switch on the control and monitoring panel is in the "automatic" position, remote control contacts in one or more separate automatic transfer switches initiate the starting and stopping of the generator set. When the mode selector switch is placed in the "on" position, the generator set starts manually. The "off" position of the same switch initiates shutdown of the generator set. When the unit is running, specified system or equipment failures or derangements automatically shut the unit down and initiate alarms. Operation of a remote emergency stop switch also shuts down the unit. Automatic transfer switches are specified in another Section of these Specifications.
- D. Functional Description: Switching an "on-off" switch on the generator control panel to the "on" position starts the generator set. The "off" position of the same switch initiates shutdown of the unit. When the unit is running, specified system or equipment failures or derangements automatically shut down the unit and initiate alarms. Operation of a remote emergency stop switch also shuts down the unit.

1.3 SYSTEM SERVICE CONDITIONS

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

1.4 SYSTEM PERFORMANCE

- A. Steady-State Voltage Operational Bandwidth: 2 percent of rated output voltage from no load to full load.
- B. Steady-State Voltage Modulation: Less than 1 Hz.
- C. Transient Voltage Performance: Not more than 10 percent variation for 100 percent step-load increase or decrease at .8 power factor. Voltage recovers to remain within the steady-state operating band within 2 seconds.
- D. Maximum Initial Voltage Dip: 30 percent.
- E. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
- F. Steady-State Frequency Stability: When the system is operating at any constant load within the rated load, there are no random speed variations outside the steady-state operational band and no regular or cyclical hunting or surging of speed.
- G. Transient Frequency Performance: Less than 3 Hz variation for a 50 percent step-load increase or decrease. Frequency recovers to remain within the steady-state operating band within 3 seconds.
- H. Output Waveform: At no load, the harmonic content measured line-to-line or line-to-neutral does not exceed 5 percent total and 3 percent for single harmonics. The telephone influence factor determined according to NEMA MG1, "Motors and Generators," does not exceed 50.
- I. Sustained Short-Circuit Current: For a 3-phase bolted short circuit at the system output terminals, the system will supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to any generator system component.
- J. Temperature Rise of Generator: Within acceptable limits for insulation systems used according to NEMA MG1 when operating continuously at standby rating conditions, including 2 hours per 24 hours at 110 percent of rated capacity.
- K. Starting Time: Maximum total time period for a cold start under full load, with ambient temperature at the low end of the specified range, is 30 seconds. Time period includes output voltage and frequency settlement within specified steady-state bands.
- L. Resistance to Seismic Forces: Internal and external supports for components, supports, and fastenings for batteries, wiring, and piping are designed to withstand static or anticipated seismic forces, or both, in any direction. For each item, use a minimum force value equal to the weight of the item.

1.5 QUALITY ASSURANCE

- A. Independent Field-Testing Organization Qualifications: To qualify for acceptance, an independent testing organization must demonstrate, based on evaluation of organization-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct the indicated testing satisfactorily.
- B. Comply with applicable EGSMA, IEEE, NSMA and UL Standards Code.
- C. Comply with ASME B15.1.
- D. Comply with NFPA 70.
- E. Safety Standard: Comply with ASME 15.1 "Safety Standard for Mechanical Power Transmission Apparatus."
- F. Source Quality Control:
 - 1. Project-Specific Equipment Tests: Coordinate with engine generator system(s) vendor for testing scheduling of the engine generator sets and other system components and accessories prior to completion of the project. The following is a listing of test to be performed by the engine generator system(s) vendor:
 - a. Test Equipment: Use instruments calibrated within the previous 12 months and with accuracy directly traceable to the National Institute of Standards and Technology (NIST).
 - b. Hydrostatic Test: Perform on radiator, heat exchanger, and engine water jacket.
 - c. Generator Tests: Conform to IEEE 115, "Test Procedures for Synchronous Machines."
 - d. Complete System Continuous Operation Test: Includes nonstop operation for a minimum of 8 hours, including at least 1 hour each at 1/2, 3/4, and full load, and 2 hours at 110 percent of full load. If unit stops during the 8-hour test, repeat the complete test. Record the following minimum data at the start and end of each load run, at 15-minimum intervals between those times, and at 15-minute intervals during the balance of the test:
 - 1.) Fuel consumption.
 - 2.) Exhaust temperature.
 - 3.) Jacket water temperature.
 - 4.) Lubricating oil temperature and pressure.
 - 5.) Generator load current and voltage, each phase.
 - 6.) Generator system gross and net output kW.
 - e. Complete System Performance Tests: Include the following to demonstrate conformance to specified performance requirements:
 - 1.) Single-step load pickup.
 - 2.) Transient and steady-state governing.
 - 3.) Transient and steady-state voltage performance.
 - 4.) Safety shutdown devices.
 - f. Compliance: Correct all equipment/systems which caused tests parameters to be outside of specified limits prior to shipment.
 - g. Observation of Test: Provide 2-week advance notice of tests and opportunity for observation of test by Owner's representatives.

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
 - 1. Notify Owner no fewer than 10 business days in advance of proposed interruption of electrical service.
 - 2. Do not proceed with interruption of electrical service without Owner's written permission.

1.7 COORDINATION

A. Coordinate size and location of concrete bases for package engine generators with engine generator system(s) vendor prior to construction of concrete forms. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are indicated on contract documents.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Provide pick-up and delivery of engine generator system(s) from local storage facility and rigging onto generator concrete pads. Maintain protective wrappings, containers, and other protection that will exclude dirt and moisture and prevent damage from construction operations, Remove protection only after equipment is made safe from such hazards.

1.9 GUARANTEE

- A. Provide certification from the engine generator set manufacturer that the final installation is proper and in no way voids any equipment warranty.
- B. Manufacturer's Warranty: Including all parts and labor to replace defective materials and workmanship for a period of five years or 1500 hours of engine running time, whichever is sooner.
- C. Provide certification from the generator set supplier that the engine generator system (with weatherproof housing and associated accessories), if properly maintained, will dependably start and operate under all weather conditions at the installation site.

PART 2 - PRODUCTS

2.1 ENGINE GENERATOR SET

A. Overall Dimensions: Verify engine generator set dimensions with engine generator system(s) vendor prior to any site work, verify generator will fit in the space provided. Generator sizes indicated on contract drawings are based on Generac, contractor shall adjust pad sizes as required to suit other generator manufactures.

2.2 CONTROL AND MONITORING

- A. Contractor shall install remote annunciator panels shipped loose with generators.
- B. Connection to Data Link: A separate terminal block factory-wired to Form C dry contacts for each alarm and status indication is reserved for connection for transmission of indications by data link to remote data terminals.

2.3 ACCESSORY POWER PANELBOARD

A. Provide feeder to factory provided 60 AMP 120V/208V 12 pole main circuit breaker panelboard located within generator enclosure.

2.4 VIBRATION ABSORPTION MOUNTS

A. Install combination neoprene pads and springs isolators per manufactures instructions.

PART 3 - EXECUTION

3.1 IDENTIFICATION

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

3.2 INSTALLATION

- A. Anchor generator set and other system components according to manufacturer's recommendations.
- B. Obtain Rigging Diagram from engine generator system(s) vendor. Rig generator onto generator pads per manufactures requirements.
- C. Field Installation of Piping: As specified in Division 22 Sections "Basic Mechanical Materials and Methods" and "Hydronic Piping."
- D. Coordinate with generator factory-authorized service representative to oversee installation of generator(s).

3.3 GENERAL

- A. Supervision: Installation of engine generator set to be under the direction of the manufacturer's authorized representative.
- B. Install engine generator system as indicated with all necessary auxiliary equipment, support and accessories. All work to be in compliance with the manufacturer's written instructions.

3.4 ELECTRICAL

- A. Wiring: Provide all auxiliary power and control wiring in conduit as required for proper operation of engine generator and all accessories. Make terminations at terminal blocks on engine generator set and in control panel. Identify all wires using conductor color coding and Brady (or other) numbered identification tape with identification corresponding to wiring schematic diagrams submitted with Shop Drawings. Use liquid-tight flexible metal conduit for all connections to engine generator set. Install all wiring and conduit of type suitable for temperatures encountered and so as to allow for thermal expansion.
- B. Phase Sequence: Verify that generator phase sequence matches normal building system phase sequence, and correct if necessary.
- C. Grounding: Ground all non-current carrying conductive parts of engine generator set to the generator grounding point as indicated. If generator is a separately derived system bond generator neutral per NEC 250 otherwise bond generator neutral to main service neutral bonding point.

- D. Battery and Battery Charger: Install storage battery on rack on floor or frame, with required cables to engine and to battery charger. Wall mount battery charger, connect to dedicated 120-volt circuit as indicated, and connect to battery via fuse block adjacent to battery charger. Size fuses as recommended by manufacturer. Interlock battery charger with control panel to indicate any battery or charger malfunction. "Top off" battery storage cells.
- E. Engine Start Circuit: Connect normally open engine start contacts at transfer switch(es) so that engine will be signaled to start upon loss of normal power at any or all transfer switch(es). Engine start circuit wiring to be #12AWG, and may run in emergency feeder conduits, and/or separate conduits.
- F. Remote Annunciator: Install where indicated, and provide all wiring to generator control panel as required for proper operation.

3.5 FUEL SUPPLY

A. Owner will completely fill the fuel tank (s) for each generator prior to testing. Once testing is complete and owner has accepted the installation contractor shall top off each tank.

3.6 TESTING

- A. Contractor shall coordinate and schedule engine generator system(s) vendor for testing of generator. Contractor shall be on site and shall witness all tests..
- B. Tests: Provide the services of a qualified independent testing agency to perform the tests listed below according to manufacturer's recommendations upon completion of installation of system. Use instruments bearing records of calibration within the last 12 months, traceable to NIST standards, and adequate for making positive observation of test results. Include the following tests:
 - 1. Insulation Tests: Test generator windings using 500 V d.c. for units rated up to 250 volts and 1000 V d.c. for units rated between 250 and 600 volts. Verify minimum insulation resistance is 25 megohms for units up to 250 volts, and 100 megohms for units 251 to 600 volts. Verify by dielectric absorption test that polarization index levels are according to IEEE 43, "Testing Insulation Resistance of Rotating Machinery."
 - 2. Battery Tests: Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery. Verify acceptance of charge for each element of battery after discharge. Verify measurements are within manufacturer's specifications.
 - 3. Battery Charger Tests: Verify specified rates of charge for both equalizing and floatcharging conditions.
 - 4. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
 - 5. Simulation of automatic operations, function and malfunctions to verify proper operation of local and remote protective, alarm, and monitoring devices.
 - 6. Load Test: Provide load test per NFPA 110- 7.13 (2002) Record voltage, frequency, load current, battery-charging current, power output, oil pressure, and coolant temperature periodically during the test.
 - Vibration Baseline Test: Measure amplitude for nominal frequency and for frequencies 5, 10, 15, and 20 percent above and below nominal at each main bearing cap. Vibration levels not exceeding those specified in NEMA MG1, "Motors and Generators," are acceptable.
 - 8. Cold Start Time: Record cold start time (only after generator set has been inoperative for at least 24 hours) required to bring generator set up to rated voltage and frequency.

- 9. Battery Test: Perform a battery test consisting of six cranking cycles of 10 seconds "On" and 10 seconds "Off." Replace batteries if they do not recharge to full value after test. Repeat until satisfactory conclusion.
- Exhaust System Back-Pressure Test: Use a manometer with a scale exceeding 40 inches of water. Connect to the exhaust line close to the engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's published allowable limits for the engine.
- 11. Exhaust Emissions Test: Conform to applicable government test criteria.
- 12. Voltage and Frequency Transient Stability Tests: Record voltage and frequency transients for 50-percent and 100-percent step-load increases and decreases and verify that performance is as specified.
- 13. Harmonic Content Tests: Measure harmonic content of input and output current under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
- 14. Battery Test: Test battery for 6 cranking cycles of 10 seconds on and 10 seconds off. Verify battery fully recharged after testing.
- 15. Efficiency Tests: Perform at 50 percent, 75 percent, and 100 percent of rated load.
- C. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

3.7 CLEANING

A. Upon completion of installation, inspect system components. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish. Clean components internally using methods and materials recommended by manufacturer.

3.8 DEMONSTRATION

A. Demonstrate to owner operation of each generator

SECTION 263600 - TRANSFER SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

- A. Description of Work: Obtain transfer switches from owner's storage facility and deliver to project site including all associated equipment. Provide all rigging as required to mount transfer switches.
- B. Coordinate with owner's transfer switch vendor for scheduling installation inspections, programming, testing and commissioning of transfer switch(s).
- C. Provide concrete pads and precast concrete vaults, as indicated on contract documents, for each transfer switch.
- D. Provide all electrical connections to transfer switch(s) as required and as indicated on contract documents.
- E. Related Sections: All Division 26 Sections contain requirements that relate to this Section.

1.2 RELATED DOCUMENTS

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

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Shop drawings of equipment pad and precast vaults indicating dimensions, steel reinforcing, and accessories.
- C. Submittals: All submittals shall be neatly bound 8-1/2" x 11" logically organized and with a table of contents.

1.4 QUALITY ASSURANCE

- A. Installer's Qualifications: Firms are experienced in the installation of the same or similar equipment of the types and capacities indicated for the last 5 years. Firms shall have a record of successful inservice performance and shall upon request submit examples of successful equipment applications, with project engineer and end user contacts and phone numbers.
- B. Emergency Service: Manufacturer maintains an authorized service center capable of providing emergency maintenance and repairs at the Project site with a 4-hour maximum response time.
- C. Comply with NFPA 70, "National Electrical Code," for components and installation.
- D. Comply with NFPA 110, "Standard for Emergency and Standby Power Systems."
- E. Comply with NEMA ICS 1, "General Standards for Industrial Control," ICS 2, "Industrial Control Devices, Controllers and Assemblies," and ICS 6, "Enclosures for Industrial Controls and Systems."

F. Single-Source Responsibility: Obtain all equipment and accessories for each ATS from a single manufacturer that assumes responsibility for all system components furnished.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Transfer switch's furnished to electrical contractor will be by one of the following manufactures:
 - 1. Automatic Switch Co.
 - 2. Caterpillar, Inc.
 - 3. Generac
 - 4. Kohler Co.
 - 5. Onan Corp.
 - 6. Russelectric, Inc.

2.2 TRANSFER SWITCH PRODUCTS

General: Install Service Entrance rated transfer switch for Litchfield and Newbury Halls, Midtown Campus Center, Fairfield Hall and Grasso Hall. Provide Double throw, mechanically held power transfer switches for Westside Campus Center and West Side Campus Classroom Building.

- A. Number of Poles and Current and Voltage Ratings: As indicated.
 - 1. Service Entrance rated transfer switches shall be housed in a lockable NEMA 3R pad mounted enclosure. All others shall be in a lockable NEMA 1 enclosure.
- B. Terminals: Wiring terminals are furnished for:
 - 1. Remote indication of switch transfer to emergency source
 - 2. Prevent transfer to either source.
- 2.3 AUTOMATIC TRANSFER SWITCHES (ATSs) To be furnished to Electrical Contractor and will have the following features:
 - A. NFPA Compliance:
 - 1. NFPA 101: Comply with Level 2 equipment according to NFPA 110, "Standard for Emergency and Standby Power Systems."
 - B. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning except as indicated.
 - C. Digital Communications Interface: Full-duplex RS 422 type, matched to capability of remote annunciator or annunciator and control panel.
 - D. ATS control of HVAC Loads: Provide control signal to building BMS systems to delay restarting of HVAC equipment as indicated below:
 - 1. 5 minutes after building load is transferred to generator boilers are allowed to operate.
 - 2. After boilers are operational boiler pumps are sequenced to operate, provide 3 minute delay between each boiler system pump.
 - 3. 15 minutes after building load is transferred to generator sequence start HVAC units one at a time with 5 minute delay between each unit.
 - E. Automatic Transfer Switch Features:
 - 1. Settings: All adjustable settings shall be field adjustable without the use of tools, meters, and power supplies.

- a. Voltage sensing for each phase of normal source. Pick-up voltage is adjustable from 85 percent to 100 percent nominal, and drop-out voltage is adjustable from 75 percent to 98 percent pick-up value with 1% increments. Factory set for pick-up at 90 percent and drop-out at 85 percent.
- b. Voltage and frequency sensing for one ungrounded phase of the emergency power source.
- c. Time-delay override of normal source voltage-sensing delays transfer and engine start signals. Adjustable 0 to 5 minutes, and factory set at 1 second.
- d. Voltage/Frequency Lockout Relay: Prevent premature transfer. Voltage pick-up is adjustable from 85 percent to 100 percent nominal. Factory set to pick-up at 90 percent. Pick-up frequency is adjustable from 90 percent to 100 percent nominal. Factory set to pick-up at 95 percent.
- e. Retransfer Time Delay: Adjustable from 0 to 30 minutes and factory set at 10 minutes. Provides automatic defeat of the delay upon loss of voltage or sustained undervoltage of the emergency source, provided the normal supply has been restored.
- 2. Operating Switches:
 - a. Manual Switch Operation: Manually operated under load with the door closed with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.
 - b. Test Switch: Simulates normal source failure.
 - c. Transfer Override Switch: Overrides automatic retransfer control so the ATS will remain connected to the emergency power source regardless of the condition of the normal source. A pilot light indicates the override status.
- 3. Indicating Lights:
 - a. Switch-Position Pilot Lights: Indicate source to which the load is connected.
 - b. Source-Available Indicating Lights: Supervise sources via the transfer switch normal and emergency source-sensing circuits.
 - 1.) Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
 - 2.) Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."
- 4. Contacts:
 - a. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval is adjustable from 1 to 30 seconds.
 - b. Unassigned Auxiliary Contacts: Two normally open SPDT contacts for each switch position.
 - 1.) Rating: 10 amperes at 240 V a.c.
 - c. Engine Starting Contacts: One isolated normally closed and 1 isolated normally open. Contacts are gold flashed or gold plated and rated 10 amperes at 32 V d.c. minimum.
 - d. Engine Shut-Down Contacts: Instantaneous, to initiate shut-down sequence at remote engine-generator controls after retransfer of the load to normal or preferred source.
 - e. Engine Shut-Down Contacts: Time delay adjustable from 0 to 5 minutes; factory set at 5 minutes.
- 5. Engine-Generator Exerciser: Solid-state programmable time switch starts engine-generator set and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiate exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods are adjustable from 10 to 30 minutes. Factory-set periods are for 7 days and 20 minutes, respectively. Exerciser features include:
 - a. Exerciser transfer selector switch, which permits selection between exercise with and without load transfer.

- b. Push button programming controls with digital display of settings.
- c. Integral battery operation of time switch when normal control power is not available.

2.4 REMOTE ANNUNCIATOR PANEL

- A. Description: Hard-wired lamp type with audible signal and silencing switch. Indicating lights are grouped for each transfer switch monitored. Label each group indicating the transfer switch it monitors, the location of the switch, and the identity of the load it serves. Indication shall be for the following:
 - 1. Sources available (as defined by actual pick-up and drop-out settings of transfer switch controls).
 - 2. Switch position.
 - 3. Switch in test mode.
- B. Mounting: Flush, modular, steel cabinet except as indicated.
- C. Lamp Test: Push-to-test or "lamp test" switch on front panel.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mounting of Transfer Switches: Level and anchor the unit to the floor, concrete slab or precast concrete vault.
- B. Obtain the services of the Campus BMS vendor to provide BMS system programming as indicated in Paragraph 2.3D above.
- C. Annunciator Panel Mounting: Surface wall mount at location indicated.
- D. Identify components according to Division 26 Section "Electrical Identification."

3.2 WIRING TO REMOTE COMPONENTS

A. Match the type and number of cables and conductors to the control and communications requirements of the transfer switches used. Increase raceway sizes at no additional cost to the owner if necessary to accommodate required wiring.

3.3 CONNECTIONS

A. Tighten factory-made connections, including connectors, terminals, bus joints, mountings, and grounding. Tighten field-connected connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque tightening values. When manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and 486B.

3.4 GROUNDING

A. Make equipment grounding connections for transfer switch units as indicated and as required by the NEC.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Coordinate with Manufacturer's Field services to schedule field tests.
- B. Adjustments and Calibrations: Verify all settings are accurate and test/calibrate all sensing, timing, meters, and control devices.
- C. Preliminary Tests: Manufacturer's Field Services shall perform electrical tests as recommended by the manufacturer and as follows:
 - 1. Measure phase-to-phase and phase-to-ground insulation resistance levels with insulation resistance tester, including external annunciator and control circuits. Use test voltages and procedure recommended by the manufacturer. Meet manufacturer's specified minimum resistance.
 - 2. Check for electrical continuity of circuits and for short circuits.
- D. Field Tests: Give 7-day advance notice of the tests and perform tests in presence of owner's representative.
- E. Tests: As recommended by the manufacturer and as follows:
 - 1. Contact Resistance Test: Measure resistance of power contacts for ATSs, NATSs, and BP/ISs. Resolve values in excess of 500 micro-ohms and differences between adjacent poles exceeding 50 percent.
 - 2. Ground Fault Tests: Coordinate with testing specified in Division 26 Section "Overcurrent Protective Devices" to ensure sensors are properly selected and located to optimize ground-fault protection where power is being delivered from either source.
 - a. Verify grounding points and sensor ratings and locations.
 - b. Apply simulated fault current at the sensors and observe reaction of circuit interrupting devices.
 - 3. Operational Tests: Demonstrate interlock, sequence, and operational function for each switch at least 3 times.
 - a. Simulate power failures of normal source to ATSs and of emergency source with normal source available.
 - b. Simulate low phase-to-ground voltage for each phase of normal source of ATSs.
 - c. Verify time-delay settings and pick-up and drop-out voltages.
- F. Test Failures: Manufacturer's Field Services shall correct deficiencies identified by tests and prepare for retest. Installation contractor shall include his time and material required to verify that equipment meets the specified requirements.
- G. Reports: Maintain a written record of observations and tests. Report defective materials and workmanship and retest corrected items. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

3.6 DEMONSTRATION

A. Training: Factory-authorized service representative to instruct Owner's personnel in the operation, maintenance, and adjustment of transfer switches and related equipment, they shall provide a minimum of 4 hours of instruction scheduled 7 days in advance.

SECTION 328200 - FENCES GATES AND HARDWARE

These specifications were current at the time of publication but are subject to change at any time without notice. Please confirm the accuracy of these specifications with the manufacturer and/or distributor prior to installation.

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract apply to this section.

1.2 SUMMARY

- A. This section includes the following:
 - 1. Polyvinyl chloride (PVC) fence and gate components.
 - 2. Gate hardware.
 - 3. Reinforcing steel for concrete-filled, reinforced fence posts.
 - 4. Concrete for post footings and for concrete filled reinforced fence posts
- B. Related sections: The following sections contain requirements that relate to this section.
 - 1. Section 02200-Earthwork
 - 2. Section 03300-Cast-in-Place concrete

1.3 **DEFINITIONS**

- A. Posts are the vertical structure support members of the fence.
- B. Rails are the horizontal structural support members of the fence or gate frame.
- C. Pickets are the vertical, non-structural members between bottom and top rails.
- D. Gate Uprights are the vertical structural support members of the gate frame.

1.4 SUBMITTALS

- A. General: Submit the following according to the conditions of the contract.
- B. Product Data: In the form of manufacturer's technical data, specifications, and installations for fence, posts, gate uprights, post caps, gates, gate hardware and accessories.
- C. Samples for verification of PVC color in form of 3-inch lengths of actual product to be used in color selection.
- D. Shop Drawings showing fence design.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has at least three years experience and has completed at least five PVC fence projects with same material and of similar scope to that indicated for this project with a successful construction record of in-service performance.

B. Single-Source Responsibility: Obtain PVC fences and gates, including accessories, fittings, and fastenings, from a single source.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for fences and gates shown on the drawings in relation to the property survey and existing structures. Verify dimensions by field measurements.

1.7 1.07 WARRANTY

A. Manufacturer's Warranty: Lifetime non-prorated limited transferable warranty applies to original homeowner/consumer, or 30 year non-prorated limited warranty applies to commercial applications.

PART 2 – PRODUCTS

2.1 FENCE MATERIALS

- A. General: Provide PVC fence materials recognized to be of type indicated and tested to show compliance with indicated performances.
- B. Available Manufacturer: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include:
 - 1. A Vinyl Fence and Deck Wholesaler, <u>www.vinylfenceanddeck.com</u>, 1-507-206-4154
 - 2. Style Name Rainier Height 4', 6', 10', 12' minimum.
 - 3. Color Match (White, Natural Clay, Tan, Gray available)

2.2 POLYVINYL CHLORIDE (PVC) FENCE COMPONENTS

- A. General: posts, rails, pickets, gate uprights, post caps, and accessories shall be of high impact, Ultra Violet (U.V.) resistant, rigid PVC, and shall comply with ASTM D 1784, Class 14344B.
- B. Fence Posts: One piece extruded, of lengths indicated and pre-routed to receive rails at spacing indicated.
 - 1. Surface to contain woodgrain texture
 - 2. Cross Section: 5" x 5" minimum
 - 3. Wall Thickness: 0.150" minimum
 - 4. Corner Radius: 3/8"R minimum
- C. Rails: One piece extruded, of lengths indicated pre-routed to receive pickets at spacing indicated.
 - 1. Cross Section: 2" X 6" Rail minimum
 - 2. Wall Thickness: 0.110" minimum
 - 3. Corner Radius: 5/16"R minimum
- D. Pickets: One piece extruded, of lengths indicated.
 - 1. Surface to contain woodgrain texture
 - 2. Cross Section: .875 X 6" T&G minimum
 - 3. Wall Thickness: 0.065" minimum

- E. Corner Radius: 3/16"R minimum
 - 1. Picket Spacing: <u>full privacy</u>.
 - 2. Pickets per section: <u>13 pickets</u>.
- F. Gate Uprights: One piece extruded, of lengths indicated with aluminum U channel insert.
 - 1. Surface to contain woodgrain texture
 - 2. Cross Section: <u>2-1/2" X 4"</u> minimum
 - 3. Wall Thickness: <u>0.120</u>" minimum
 - 4. Corner Radius: <u>3/16"R</u> minimum
- G. Aluminum: One piece extruded, of lengths indicated with aluminum U channel insert.
 - 1. 5" post insert: <u>.018"</u> recommended for each side of gate
 - 2. 1.5" x 5.5" I-channel: .075"
 - 3. 1.75" x 3.5" U-channel: .070"
 - 4. 2" x 3.5" H-channel: .070"
- H. Post Caps: Molded, one piece.
 - 1. Surface to contain woodgrain texture
 - 2. Cross Section: Match post or gate upright cross section.
 - 3. Thickness: 0.080" minimum.
 - 4. Configuration: Flat or four-sided as required for installation to top of posts and gate.
- I. Accessories: Manufacturers' standard gate brace, screw caps, rail end reinforcers, and other accessories as required.
- J. T102/Titanium Dioxide 10-12 parts per 100 (uv protection)

2.3 MISCELLANEOUS MATERIALS

- A. Fasteners and Anchorage: Stainless Steel. All fasteners to be concealed or colored heads to match. Provide sizes as recommended by fence manufacturer.
- B. PVC Cement: As recommended by fence manufacturer.

2.4 GATE HARDWARE AND ACCESSORIES

- A. General: Provide hardware and accessories for each gate according to the following requirements:
- B. Hinges: Size and material to suit gate size, non lift-off type, self closing, glass filled nylon with adjuster plate, offset to permit 120 degree gate opening. Provide one pair of hinges for each gate.
 1. Color: Black.
- C. Latch: Manufacturers' standard self latching, glass filled nylon and stainless steel composition single or dual access gravity latch. Provide one latch per gate.
 - 1. Finish: Match gate hinge finish.
- D. Hardware: Stainless Steel. Provide sizes as recommended by fence manufacturer.
 - 1. Finish: Match gate hinge finish.

2.5 CONCRETE

- A. Concrete: Provide concrete consisting of portland cement per ASTM C 150, aggregates per ASTM C 33, and potable water. Mix materials to obtain concrete with a minimum 28-day compressive strength of 2000 psi. Use at lease four sacks of cement per cubic yard, 1-inch maximum size aggregate, 3-inch maximum slump. Use ½ inch maximum size aggregate in post where required.
- B. Packages Concrete Mix: Mix dry-packaged normal-weight concrete conforming to ASTM C 387 with clean water to obtain a 2 to 3 inch slump.

2.6 REINFORCEMENT FOR FILLED POSTS

- A. Reinforcing Steel:
 - 1. Steel Reinforcing Bars: ASTM A 615. Grade 60. Deformed (#4 or ½"). Install 2 bars for each post to a length of 4' feet.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

- A. Install fence in compliance with manufacturer's written instructions. During installation, PVC components shall be carefully handled and stored to avoid contact with abrasive surfaces. Install components in sequence as recommended by fence manufacturer.
 - 1. Install fencing as indicated on the drawings provided.
 - 2. Variations from the installation indicated must be approved.
 - 3. Variations from the fence and gate installation indicated and all costs for removal and replacement will be the responsibility of the contractor.

3.2 FENCE INSTALLATION

- A. Excavation: Drill or hand-excavate (using post hole digger) holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.
 - 1. If not indicated on drawings, excavate holes for each post to a minimum diameter of 12" inches.
 - 2. Unless otherwise indicated, excavate hole depths not less than 30 inches or to frost line.
- B. Posts: Install posts in one piece, plumb and in line. Space a maximum of 8' feet o.c. unless otherwise indicated. Enlarge excavation as required to provide clearance indicated between post and side of excavation.
 - 1. Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operations.
 - a. Unless otherwise indicated, terminate top of concrete footings 3 inches below adjacent grade and trowel to a crown to shed water.
 - b. Secure posts in position for manufacturers' recommendations until concrete sets.
 - c. After installation of rails and unless otherwise indicated, install reinforcing in posts in opposing corners of post as shown and fill end and gate posts with concrete to level as indicated. Concrete fill shall completely cover the reinforcing steel and gate hardware fasteners. Consolidate the concrete by striking the post face with a rubber mallet, carefully tamping around the exposed post bottom.
 - d. Install post caps. Use #8 screws, nylon washers and snap caps.

- e. Remove concrete splatters from PVC fence materials with care to avoid scratching.
- C. Top and Bottom Rails: Install rails in one piece into routed hole fabricated into posts to receive top and bottom rails, and middle where necessary. Except at sloping terrain, install rails level.
 - 1. Prior to installation of rails into posts, insert concealed steel channel stiffeners in top rail, where necessary. Bottom rails shall include minimum (2) ¹/₄" drainage holes.
 - 2. At posts to receive concrete fill, tape rail ends to prevent seepage when filling post with concrete.
- D. Middle Rails: Where necessary, install middle rails in one piece into routed hole in posts with larger holes facing down. Except at sloping terrain, install middle rails level. Secure mid rail to pickets with 2-#8 x 1-1/2" screws evenly spaced.
 - 1. At posts to receive concrete fill, tape rail ends to prevent seepage when filling post with concrete.
- E. Pickets: Install pickets in one piece as per manufacturer recommendations. Install pickets plumb.
- F. Fence Installation at Sloping Terrain: At sloping terrain rails may be racked (sloped) or stepped to comply with manufacturers' recommendations.

3.3 GATE INSTALLATION

- A. Assemble gate per manufacturer's recommendations. Bottom rail shall include minimum (2) ¹/₄" drainage holes.
- B. Assemble gate prior to fence installation to accurately locate hinge and latch post. Align gate horizontal rails with fence horizontal rails.
- C. Install gates plumb, level, and secure for full opening without interference according to manufacturer's instructions.
- D. Gate Latch Installation. Install gate latch according to manufacturer's instructions. Adjust for smooth, trouble-free operation.
- E. Allow minimum 72 hours to let concrete set-up before opening gates.

3.4 ADJUSTING AND CLEANING

A. Remove all traces of dirt and soiled areas.

3.5 DEMONSTRATION

A. Instruct the owner's personnel on proper operation and maintenance of fence components.

INSTALLATION PACKET

Always consult the following installation instructions as well as the CAD diagrams when installing your fence.

GENERAL POST INSTALLATION



Recommended: drill holes (1/4" bit) through the underside of rails to allow water to escape. If your bottom rails have ribs as 7 shown in figure 2, you will need a bit long enough (1/4"x4") to drill through the upper rib. **Recommended: If you are filling the inside of your post with concrete you must drill holes to prevent sagging.**
HELPFUL HINTS: HIGH WIND INSTALLATION If the fence is over 6' tall or you are If post does not already have a concrete hole from the factory, drill a hole at least 3/4" dia. 12" up from bottom of post. This will help located in a high wind area it is concrete get into post. When gluing picket caps, place a thin bead of recommended that you will fill the glue inside the picket and press picket cap into place. Figure 2 inside of the posts half way up with Concrete & Rebar (optional) Post caps should not be glued in the event Figure 3 concrete AFTER THE PANELS ARE you want to upgrade to a different style. A 1.5" to 2" Minimum small amount of clear silicone on the inside String Line **INSTALLED.** Prior to installing panels corner of post cap will secure cap to post. into the posts tape the lower rail to 3" of soil Clean fence using a formula of 1/3 Cup - 36' 30 Concrete powdered detergent, 2/3 Cup household prevent concrete backflow. cleaner and 1 gallon water. Rinse thoroughly.

For stain removal use either lacquer thinner or soft scrub with bleach. Rinse thoroughly with water after using either of these.

INSTALLATION STEPS



Follow instructions for digging holes and layout. Install 1 post (post A) with concrete around

the post – level and plumb. Have another post (post B) sitting in the adjacent hole.

4 Install the bottom and top-rail in post A. Slide the T&G pickets between the bottom

and top-rail (don't forget the U-channel on 5 first and last pickets).

6 Install the bottom rail in post B.

Install the top rail in post B.

Put concrete around post B and level and plumb.



Concrete Hole



Solid Privacy Closed Spindle Top



Solid Privacy Closed Spindle Top – All heights

Solid Privacy with Mid Rail – All heights

- 1 Follow instructions for digging holes and layout.
- 2 Install 1 post (post A) with concrete around the post level and plumb.
- 3 Have another post (post B) sitting in the adjacent hole.
- 4 Install the bottom and mid-rail in post A.
- 5 Slide the T&G pickets between the bottom and mid-rail (don't forget the U-channel on first and last pickets).
- ⁶ Install the bottom rail in post B.
- 7 Install the top rail in post A.
- 8 Slide the T&G pickets between the mid-rail and the top-rail (don't forget the U-channel on first and last pickets).
- ⁹ Install the mid-rail and the top-rail into post B.
- ¹¹ Put concrete around post B and level and plumb.
- 12 Repeat down the fence line.

Semi - Privacy and Pool styles that have a middle rail (5' or taller).

- 1 Follow instructions for digging holes and layout located on page one.
- 2 Install 1 post (post A) with concrete around the post. Level and plumb.
- 3 Have another post (post B) sitting in the adjacent hole.
- Insert the bottom and middle rails into post A. The middle rails will have routed holes on the top and bottom of the rail. The larger routed holes
- 4 should face towards the ground.
- 5 Insert the bottom and mid-rails in post B.
- ⁶ Insert the top rail into post A with the opposite end (at post B) upward towards the sky at an angle.
- 7 Slowly insert the pickets one at a time as you lower the rail into place.
- 8 As you near the last few pickets it will be necessary to pull post B outward to insert the top rail.
- ⁹ Put concrete around post B and level (horizontal) and plumb (vertical).
- 10 Repeat the above method down the fence line.

Pool styles with no middle rails.

- 1 Follow instructions for digging holes and layout located on page one.
- 2 Install 1 post (post A) with concrete around the post. Level and plumb.
- 3 Have another post (post B) sitting in the adjacent hole.
- 4 Assemble the panel using rails and pickets. The rail with aluminum is the bottom rail.
- 5 Insert the rails of the assembled panel into post A first. Then, insert the rails of the assembled panel into the opposite post, (post B)
- 6 Put concrete around post B, level and plumb the post. Repeat the above steps down the fence line.



PANEL ADJUSTMENTS "CUTTING DOWN THE RAILS"

Under many conditions panels may be "cut down," or reduced in length. Please consider the following information and suggestions regarding these particular styles of fence:

<u>Privacy Fence</u> - the privacy panels include 6" wide T&G pickets, it is best to reduce the length of the panel in increments of 6". If you do not follow this course, you may have to "rip" the length of the picket, which would likely require the use of a saw. Once you have determined the actual length of panel needed, cut only one end of the rails to achieve the desired measurement. Note: The middle and top rails of the "picket top style fence" will likely need to be cut at both ends.

<u>Picket Fence</u> - Both ends of rails may need to be cut down to have the pickets fit uniformly between posts. Be sure to cut the top and bottom rails the same to insure proper picket alignment. When eliminating pickets from a "scalloped" panel, remember that you will have to insert the pickets in such a way that it resembles the scallop, or slope of the original panel.

SECURING SHORTENED PANELS

In instances where rails must be cut down, try to cut material from one end only when possible as this will ensure that you replace only one set of notches. After cutting any rail, you will need to make accomodations to replace the notches that you have removed. Notches are required on the ends of the rails to keep the rail snugly secured inside the post.

OPTION 1 (RECOMMENDED)

After the rails are installed, insert a screw at each end of the rail on the face of the rails, outside of the post. (See figure 4). We recommend a small pan head size number 12 stainless steel screw. After the screws are installed you may want to paint it to match the color of your material. You can use standard spray-paint or you may even use auto touch up paint found at your local auto parts store. Snap caps can be purchased at www.pro-dec.com



OPTION 2 If option 1 does not fit your needs you may want to consider this option. A simple method for replacing notches on the top rail is to drive a stainless steel screw into the rail through the opening in the top of the post. See Figure 5. This will make certain that the top rail remains inside the post if force is applied to pull it out. A method for replacing the notches on a bottom rail also utilizes a stainless steel screw. Instead of driving the screw partially into the top wall of the rail, insert it fully into the front face of the rail as close to the end as possible. See Figure 6. While simultaneously inserting the rail into the post, use applied pressure from your thumbs to deflect or "bow in" the face of the rail enough so that the head of the screw passes through the routed opening of the post. This method will also ensure that the top rail remains inside the post if force is applied to pull it out. Page 5 of 10



Insert screw here.



GATE ASSEMBLY INSTRUCTIONS ASSEMBLY OF PRIVACY GATE





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GATE INSTALLATION INSTRUCTIONS

The following is based on an assembled gate that is properly sized for opening.

SINGLE GATE INSTRUCTIONS

- A. Determine the direction the gate is to swing, usually swings into yard. Be sure to check your local codes!
- B. If you have aluminum post inserts, install prior to the installation of the gate. If you do not have inserts you must fill the hinge post with concrete and rebar after the gate installation.
- C. Locate and follow hardware installation instructions.

The gate will be mounted to be flush with the side of the fence that the gate will be swinging. See the illustration to the right. Be sure the gate will be high enough to clear

obstructions such as snow. The gate posts should be cut on site as needed. Some

installers cut the gate posts off at the bottom of the bottom gate pocket. **DO NOT** cut into

the gate pocket.



DOUBLE GATE INSTRUCTIONS

Typical gate installation based on an assembled gate that has been properly sized for the opening

- A. Follow the same instructions as per a single gate when installing the hinges for both gates.
- **B.** To calculate the variances for the latch you must treat the fixed gate as if it were a standard fence panel.
- C. The ideal hardware installation on a double gate should have equal spacing between posts and gates.
- **D.** Install the Drop Rod to post of the fixed gate.



HIGH WIND INSTALLATION INSTRUCTIONS FOR PRIVACY PANELS

All of our vinyl privacy panels (up to 6' in height) have been tested and certified to achieve high wind loads. In order to meet the wind rating requirements, the panels must be installed as noted below. These steps are the same steps used for the certification and must be followed exactly the same as used in testing. We tested the full privacy panels as the lowest common denominator.

ALL PRIVACY PANELS

After the fence is installed, all posts are to be filled with "Quickrete" brand of concrete to at least 22" above the ground (inside the post) as shown in the following figure 1 drawings. Next, install the screws on the back side of the panel (the side you will not see) using #10 x 1" self-tapping stainless steel or galvanized pan head screws which can be purchased from your local hardware store. Be careful not to overtighten or strip the screws. Every picket will have one screw at the top rail and at the bottom rail on one side of the fence only. Every rail will have one screw installed on each end of the rail "Inside" the post as shown on the following drawings as Figure 2.

SELECT YOUR PANEL STYLE FROM THE FOLLOWING DRAWINGS FOR AN ILLUSTRATION OF THE SCREW PLACEMENT FOR THE HIGH WIND INSTALLATION.









* Purchaser has the sole responsibility to determine whether these products comply with applicable codes and is appropriate for the intended use. The purchaser and installer should review the intended use of the products with a licensed professional engineer to determine code compliance and intended use.

SECTION 329300 - PLANTING

PART 1 – GENERAL

1.1 CONTRACT PROVISIONS INCORPORATED BY REFERENCE

- A. The General Provisions of the Contract, including the General and Supplementary Conditions and Division 1, apply to the work specified in this Section.
- B. "Lead Safe Work Practices: Exposure levels for lead in the construction industry are regulated by the Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62. Additionally, the Commonwealth of Massachusetts, Department of Labor Standards (DLS) regulation 453 CMR 22.00 for Renovation and "Lead Safe Renovation" shall apply to this "Residential Property". Construction activities disturbing surfaces with lead-containing paint that are likely to be employed, such as demolition, sanding, grinding, welding, cutting and burning, have been known to expose workers to levels of lead in excess of the OSHA Permissible Exposure Limit (PEL). All work specified in the technical sections of the Contract Documents shall also be in conformance with the above regulations."

1.2 ITEMS REQUIRED BUT NOT SPECIFIED

A. If an item or material of this trade is indicated in the Drawings but not specifically listed in this Section, provide such item or material at a standard of quality equal to the standard established for the balance of the Work specified, in accordance with the Landscape Architect's interpretation.

1.3 EXECUTION, CORRELATION AND INTENT

A. In case of an inconsistency between Drawings and Specifications, or within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided, in accordance with the Landscape Architect's interpretation.

1.4 SECTION INCLUDES

A. Planting required for the Work is indicated on the Drawings and, in general, includes planting of trees and/or shrubs throughout the Work including furnishing all materials, equipment, and labor necessary for root protection, and tree guards where applicable.

1.5 QUALITY ASSURANCE

A. Qualifications of Workmen

Provide at least one person who shall be present at all times during execution of this portion of the Work, thoroughly familiar with the type of materials being installed and the best methods of their installation, and direct all work performed under this Section.

- B. Standards
 - 1. All plants and planting material shall meet or exceed the specifications of Federal and State laws requiring inspection for plant disease and insect control.
 - 2. Quality and size shall conform with the current edition of "American Standard for Nursery Stock" for number one grade nursery stock, as published by the American Nursery and Landscape Association.

3. All plants shall be true to name and one of each bundle or lot shall be tagged with the name and size of the plants, in accordance with the standards of practice of the American Nursery and Landscape Association. In all cases, botanical names shall take precedence over common names.

1.6 SUBMITTALS

A. Materials List

Thirty days before any planting materials are delivered to the job site, submit to the Landscape Architect a complete list of all plants and other items proposed to be installed:

- 1. Include a complete data on source, size, and quality.
- 2. Demonstrate complete conformance with the requirements of this section.
- 3. This shall in no way be construed as permitting substitution for specific items described in the Drawings or these Specifications unless the substitution has been approved in advance by the Landscape Architect.
- B. Certificates
 - 1. All certificates required by law shall accompany shipments.
 - 2. Upon completion of the installation, deliver all certificates to the Landscape Architect.

1.7 PRODUCT HANDLING

- A. Delivery and Storage
 - 1. Deliver all items to the site in their original containers with all labels intact and legible at time of Landscape Architect's inspection.
 - 2. Immediately remove from the site all plants that are not true to name and all materials that do not comply with the provisions of this Section of these Specifications.
 - 3. Use all means necessary to protect plant materials before, during and after installation and to protect the installed work and materials of all trades.
- B. Replacements
- C. In the event of damage or rejection, immediately make all repairs and replacements necessary to the approval of the Landscape Architect, at no additional cost to the Owner.
- D. Planting Season
 - Planting shall be done within the following dates: Deciduous Material: March 1 - May 15 October 15 - December 1 Evergreen Material: March 1 - June 1 August 15 - October 15
 - 2. If special conditions exist which may warrant a variance in the above planting dates, a written request shall be submitted to the Project Landscape Architect stating the special conditions and the proposed variance. Permission for the variance will be given if warranted in the opinion of the Landscape Architect. Variances permitted will not relieve the Contractor from liability for damages caused by planting out of season.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil shall be "fine sandy loam" or "sandy loam" determined by mechanical analysis (ASTM d-422) and based on the USDA Classification System. Topsoil shall have the following mechanical analysis:

| Textural Class | Percentage of Total Weight | Average Percentage |
|---------------------|----------------------------|--------------------|
| Sand | 45-75 | 60 |
| (0.05-2.0mm dia.) | | |
| Silt | 15-35 | 25 |
| (0.002-0.05mm dia.) | | |
| Clay | 5-20 | 15 |
| (<0.002mm dia.) | | |

- B. Topsoil shall not contain less than 5 percent nor more than 10 percent organic matter as determined by the loss on ignition of oven-dried samples, at 100 degrees C, +/- 5 degrees C.
- C. Topsoil shall consist of fertile, friable natural loam capable of sustaining vigorous plant growth. Topsoil shall be without admixture of subsoil and refuse, resulting in a homogenous material free of stones greater than ½" in the greatest dimension, be free of lumps, plants, glass, roots, sticks, excessive stone content, debris and extraneous matter as determined by the Landscape Architect. Topsoil shall fall within the pH range of 6.0-6.5 except as noted on plans and details. It shall be uncontaminated by salt water, foreign matter and substances harmful to plant growth. The maximum soluble salt index shall be 100. Topsoil shall not have levels of aluminum greater than 200 parts per million.

If limestone is required to amend the topsoil to bring it within the pH range of 6.0-6.5, no more than 200 pounds of limestone per 1000 square feet of loam, incorporated into the soil, or 50 pounds of limestone per 1000 square feet of loam, surface application, per season.

The Landscape Architect will reject any material delivered to the site which, after post-delivery testing does not meet these specifications. If the delivered topsoil does not meet the specifications in this document, the delivered topsoil will be removed by the contractor at the contractor's expense and at the time of rejection.

D. Testing

The Contractor shall take representative samples of topsoil from the site and from topsoil to be hauled in and shall submit samples to a Soil Testing Laboratory for chemical analysis, and physical analysis. The Contractor shall indicate to the testing agencies that turf is to be planted and who the Owner is. The Contractor shall forward to the Landscape Architect two copies of analysis and recommendations of the testing agencies.

2.2 MYCORRHIZAL FUNGI/FERTILIZER AMENDMENT

- A. All plantings shall incorporate a granular mycorrhizal fungi root inoculant/slow-release fertilizer combination, applied in conformance with the manufacturer's specifications. The product shall be:
 - 1. MycoApply All Purpose Granular, by Mycorrhizal Applications, Inc., <u>www.mycorrhizae.com</u>
 - 2. Plant Success Granular, by Mycorrhizal Online, <u>www.mycorrhizelonline.com</u>

3. Granular Root Growth Enhancer, by Down To Earth Products, <u>www.downtoearthdistributors.com</u> or approved equal

2.3 BARK MULCH

Shredded cedar bark mulch shall consist of a standard size, free of chunks and pieces of wood thicker than 1/4" and approved by the Landscape Architect. The mulch must be partially decomposed and dark brown in color.

2.4 TREE STAKES

Unless otherwise indicated on the Drawings, all tree stakes shall be spruce or fir construction grade, rough-sawn, 2" x 2" x 8' long.

2.5 PEAT MOSS

Brown; acid reaction about 4 to 5 pH; low in content of wood material and free of mineral matter harmful to plant life; water absorbing capacity, 1100 to 2000 percent; moisture content 30 percent natural, shredded or granulated.

2.6 WATER

Contractor shall make, at his expense, whatever arrangements may be necessary to ensure an adequate supply of potable water to meet the needs of this contract. He shall also furnish all necessary hose, equipment, attachments, and accessories for the adequate irrigation of lawns and planted areas as may be required to complete the work as specified.

2.7 PLANTING SOIL

Planting soil mix shall consist of seven parts topsoil and one part peat moss by volume, mixed thoroughly.. It shall have pH value between pH 6.0 to pH 6.5. Place controlled-release fertilizer during the planting process, in accordance with manufacturer's instructions. Soil shall not be used for planting while in a frozen or muddy condition. Mix all materials at the proportions or amounts specified herein. Mixing shall be done by an approved method. Under no conditions shall mixing be done if materials are wet or in otherwise unsatisfactory condition, as determined by the Landscape Architect.

2.8 PLANT MATERIALS

Plant materials shall be true to species and variety specified and shall be nursery grown in accordance with good horticultural practice under climatic conditions similar to those in the locality of the project for at least two years. They shall have been root-pruned within the last two years and shall be freshly dug. No heeled-in plants or plants from cold storage will be accepted.

A. Unless specifically noted otherwise, all plants shall be of specimen quality; exceptionally heavy; and symmetrical, so trained or favored in development and appearance as to be unquestionable and outstandingly superior in form, compactness and symmetry. They shall be sound; healthy; vigorous; well-branched and densely foliated when in leaf; free of disease; insects; eggs or larvae; and shall be free from physical damage or conditions that would prevent thriving growth.

- B. Plants shall not be pruned before delivery. Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, abrasion of bark, sunscalds, disfiguring knots, insect damage, or cuts of limbs over 3/4" in diameter, not completely calloused, will be rejected.
- C. Plants shall conform to measurements specified in the Plant Lists, except that plants larger than specified may be used if approved by the Landscape Architect. Use of such plants shall not increase the Contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.
- D. Caliper measurement shall be taken on the trunk 6" above natural ground line for trees up to 4" in caliper and 12" above the natural ground line for trees over 4" in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to tip. Plants shall be measured when branches are in their normal position. If a range of size is given, no plant shall be less than the minimum size, and not less than 50 percent of the plants shall be as large as the maximum size specified. Measurements specified are minimum size, acceptable after pruning where pruning is required. Plants that meet measurements but do not possess a normal balance between height and spread shall be rejected.
- E. All plants shall be labeled with correct plant name and size. Labels shall be attached securely to all plants, bundles, and containers of plant materials delivered with care that those attached directly to plants will not restrict growth.
- F. Substitutions of plant materials will not be permitted, unless authorized in writing by the Landscape Architect. If proof is submitted and substantiated in writing that any plant specified is not obtainable, a proposal will be considered for use of the nearest available size or similar variety with a corresponding adjustment of Contract price.
- G. Type of Protection to Roots
 - 1. Balled and Burlapped Plants

Plants designated "B&B" in the Plant List shall be balled and burlapped. They shall be dug with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap or similar material and bound with twine, cord, or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, the ball may be secured to a platform.

2. Protection After Delivery

The balls of "B&B" plants that cannot be planted immediately on delivery shall be covered with moist soil or mulch, or other protection from drying winds and sun. Bare-rooted plants shall be planted or heeled-in immediately upon delivery. All plants shall be watered as necessary until planted.

2.9 INSPECTIONS

Certificates of inspection shall accompany invoices for each shipment of plants as may be required by law for transportation. File certificates with the Landscape Architect prior to acceptance of the material. Inspection by Federal or State Governments at place of growth does not preclude rejection of plants at the work site.

2.10 SELECTION AND TAGGING

- A. Plants shall be subject to inspection and approval by the Landscape Architect at their place of growth and upon delivery for conformity to specification requirements. Such approval shall not impair the right of inspection and rejection during the progress of the work. A Contractor's representative shall be present at all inspections.
- B. Written requests for inspection of plant material at their place of growth shall be submitted to the Landscape Architect at least 10 calendar days prior to digging. Written requests shall state the place of growth and quantity of plants to be inspected. The Landscape Architect may refuse inspection at this time if, in his judgement, a sufficient quantity of plants are not available for inspection.
- C. Plants identified as "selection specimen" shall be approved and tagged at their place of growth. For distant material, submit photographs for pre-inspection review.

2.11 PLANT LABELS

A. Plant labels shall be durable, legible stating the correct plant name and size in weather-resistant ink or embossed process lettering.

2.12 GUYING, STAKING, AND WRAPPING MATERIALS

Ground anchors shall be castings, stamped steel, or deadmen of wood or other material approved by the Landscape Architect. Width across top span and length, exclusive of pin from top to arrowed tip, shall conform to the following list. Assemblies for anchors shall also conform to the following list:

Tree Caliper2 - 5 inchesAnchor Size4 inchesTypeWireCapacity3,500 lbs.Assembly36" length; .120 diameter

Guying cable shall be five strand, 3/16" diameter steel cable. Turnbuckles shall be galvanized or dippainted, having a 3" minimum lengthwise opening fitted with screw eyes. Eyebolts shall be galvanized, having a 1" opening fitted with screw length of 1>". Hose shall be suitable lengths of two-ply, reinforced, black rubber hose, 3/4" in diameter. Stakes for supporting trees shall be 2-1/2 inches square of round, by 8 feet sound wood, treated for one half their length with creosote or equal.

Flags to be fastened to guys shall be of sound wood about 1/2 inch by 3 inches by 12 inches with a 3/8 inch hole centered 1-1/2 inches from each end, or 1-1/2 inches by 12 inches sheet metal with corners clipped and punched both ends, painted white.

Hose to encase guy wires or wires used for fastening trees to stakes shall be new or used 2-ply reinforced rubber garden hose.

Wrapping material for tree trunks shall be standard burlap, heavy crepe paper, or other suitable material, in strips 6 to 10 inches wide.

2.13 ANTI-DESICCANT

Anti-desiccant shall be an emulsion which provides a protective film over plant surfaces, permeable enough to permit transpiration. It shall be delivered in containers of the manufacturer and mixed according to the manufacturer's directions. Recommended anti-desiccant is "Wiltpruf" manufactured by Nursery Specialty Products Inc., Stubbings Road, Groton Falls, New York, or approved equal).

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspection
 - 1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 - 2. Verify that planting may be completed in accordance with the original design and the referenced standards.

B. Discrepancies

- 1. In the event of discrepancy, immediately notify the Landscape Architect.
- 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 EXCAVATION OF PLANTING AREAS

- A. Stake out the ground locations for plants and outlines of areas to be planted and obtain approval of the Landscape Architect before excavation is begun. A minimum of 30 percent of total planting must be staked before inspection will be made.
- B. Excavate tree and shrub pits as shown on the Drawings.
- C. Separate subgrade soils from the upper topsoil portions and remove immediately wherever encountered during planting operations.
- D. Notify the Landscape Architect in writing of all soil condition that the Contractor considers detrimental to growth of plant material. State condition and submit proposal in writing to the Landscape Architect for correcting condition.

Notify the Landscape Architect in writing of all soil or drainage conditions that the Contractor considers detrimental growth of plant material.

- E. Test drainage of suspect plant beds and pits by filling with water twice in succession. Conditions permitting the retention of water in planting beds for more than 12 hours shall be brought to the attention of the Landscape Architect.
- F. If rock, underground construction work, tree roots, or obstructions are encountered in the excavation of plant pits, alternate locations may be considered by the Landscape Architect. Where location cannot be changed, as determined by the Landscape Architect, submit cost required to remove the obstructions to a depth of not less than 6" below the required pit depth. Proceed with work after approval of the Landscape Architect.

3.3 PLANTING OPERATIONS

- A. Planting Trees and Shrubs
 - 1. Protect plants at all times from sun or drying winds. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet moss, or other acceptable material and shall be kept well watered. Plants shall not remain unplanted for longer than three days after digging. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only.

- 2. Set plants at same relationship to finished grade as they bore to the ground from which they were dug. Set plant plumb and brace rigidly in position until prepared topsoil has been tamped solidly around ball and roots.
- 3. Cut and remove ropes, strings and wrappings from top 1/3 of ball after plant has been set. Leave balance of wrappings intact around ball. If wrapping is plastic, remove top 2/3.
- 4. Backfill plant pits with prepared planting soil. When plant pits have been backfilled approximately 2/3 full, water thoroughly, eliminating all air pockets. After watering, install planting soil to top of pit and repeat watering.
- 5. Form saucer around tree as indicated on the Drawings.
- 6. Finish grade planting areas to conform to grades on Drawings.
- 7. Mulch all pits and beds with a 4" layer of shredded bark mulch immediately after planting.
- 8. Immediately after planting, water all plants thoroughly.
- 9. On completion of planting, thoroughly spray all evergreen plant materials with anti-desiccant in accordance with manufacturer's specifications.
- B. Guying, Staking, Wrapping and Pruning
 - 1. Guying shall be completed immediately after planting. Drive ground anchors into ground by manual or machine method at approximately 45 degree angle to ground plane and distributed at 120 degree intervals around trunk of tree. Anchors shall be driven to minimum vertical depth after preloading as follows:

Tree Caliper3 to 5 inchesAnchor Size4 inchesMinimum Dept (feet)2-1/2

Preload anchors after driving until anchor turns in the ground at 90 degree angle to line of driving force. Anchor assembly will rise 2 to 6 inches during pre-loading. Attach guying cables, turnbuckles and hose, and secure until tree is rigidly guyed. On all guys, 1/3 distance up from ground to trunk, secure white plastic flagging 1" wide x 18", ties securely.

- a. Trees 3: in caliper or greater shall be guyed using the 120 degree, three guy method, or as shown on the Drawings.
- b. Trees less than 3" in caliper shall be staked using the 180 degree, two stake method.
- c. Remove all wrapping and guying material at the end of guarantee period.
- 2. Wrap trunks of deciduous tress of 1-1/2: or more caliper with a spiral overlapping wrapping to minimum height of third branch. Wrap from bottom and tie wrapping securely in place. Remove wrapping at end of guarantee period.
- 3. Prune plants only at time of planting and according to standard horticultural practice to preserve the natural character of the plant. Pruning to be done under supervision of the Project Landscape Architect. Pruning and trimming shall be done only to remove dead wood, suckers, and broken or badly bruised branches, unless otherwise directed by the Landscape Architect. Contractor shall not cut main leader of tree.
 - a. Use only clean sharp tools.

3.4 MAINTENANCE OF TREES AND SHRUBS

A. Maintenance shall begin immediately after each plant is planted and shall continue until acceptance of the project by the Owner after final inspection or 60 days, whichever is longer.

- B. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, tightening and repairing guys, resetting plants to proper grades or upright position, restoration of the planting saucer, and furnishing and applying such sprays or other items as are necessary to keep the planting free of insects and disease and in thriving condition.
- C. Planting areas and plants shall be protected at all times against trespassing and damage of all kinds for the duration of the maintenance period. If any plants become damaged or injured, they shall be treated or replaced as directed by the Landscape Architect at no additional cost to the Owner.
- D. Provide all equipment and means for proper application of water to those planted areas not equipped with an irrigation system.

3.5 INSPECTION

In addition to normal progress inspection, schedule and conduct the following formal inspections, giving the Landscape Architect at least 24 hours prior notice of readiness for inspection:

- A. Inspection of plants in containers prior to planting.
- B. Inspection of plant locations to verify compliance with the Drawings.
- C. Schedule the final inspection sufficiently in advance and in cooperation with the Landscape Architect so that the final inspection may be conducted within 24 hours after completion of planting.
- D. Final inspection will be at the end of the maintenance period, provided that all previous deficiencies have been corrected.

3.6 ACCEPTANCE

A. The Landscape Architect shall inspect all work for acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection.

Acceptance of plant material by the Landscape Architect shall be for general conformance to specified size, character, and quality and shall not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.

- B. Upon completion and reinspection of all repairs or renewals necessary in the judgment of the Landscape Architect, he shall certify in writing to the Contractor as to the acceptance of the work.
- C. Acceptance in Part
- D. The work may be accepted in parts when it is deemed to be in the Owner's best interest to do so and when approval is given to the Contractor in writing to complete work in parts. Acceptance and use of such areas by the Owner shall not waive any other provisions of this Contract.

3.7 GUARANTEE PERIOD AND REPLACEMENTS

- A. A. The guarantee period for trees and shrubs shall begin at the date of acceptance.
- B. All plant material shall be guaranteed by the Contractor for a period of one year from the date of Acceptance to be in good, healthy and flourishing condition.

- C. When work is accepted in parts, the guarantee periods extend from each of the partial acceptances to the terminal date of the last guarantee period. Thus, all guarantee periods terminate at one time.
- D. The Contractor shall replace, without cost to the Owner and as soon as possible as weather conditions permit and within a specified planting period, all dead plants and all plants not in a vigorous thriving condition, as determined by the Landscape Architect during and at the end of the guarantee period. Plants shall be free of dead or dying branches and branch tips and shall bear foliage of a normal density, size, and color. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this Specification.

Replacements required because of vandalism or other causes beyond control of the Contractor are not part of the Contract.

- E. The guarantee of all replacement plants shall extend for an additional period of one year from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended guarantee period, the Owner may elect subsequent replacement or credit for each item.
- F. The Contractor shall make periodic inspection at no extra cost to the Owner during the guarantee period to determine what changes, if any, should be made to the Owner's maintenance program. Submit in writing to the Landscape Architect any recommended changes.

3.8 CARE OF EXISTING TREES

Upon completion of the work under this Section, all existing trees shall be pruned and any injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of construction operations. Roots greater than 2" shall be hand-cut to provide clean, concise, cutting and removal. Pruning shall be done in such a manner as not to change the natural habit or shape of the plant. All cuts shall be made flush, leaving no stubs. On all cuts over 3/4" diameter and bruises or scars on the bark, the injured cambium shall be traced back to living tissue and removed; wounds shall be smoothed and shaped so as not to retain water.

3.9 CLEANUP

- A. When any of this work is done while buildings are occupied, pavements shall be kept clear at all times, broom cleaned to prevent tracking dirt into buildings.
- B. After completion of all planting operations, dispose of all debris and excess material to the satisfaction of the Landscape Architect. All pavements shall be swept and hosed clean.

3.10 FINAL INSPECTION AND ACCEPTANCE

- A. At the end of the guarantee period, the Landscape Architect will inspect all guaranteed work for final acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date for final inspection.
- B. Upon completion and reinspection of all repairs or renewals necessary in the judgment of the Landscape Architect at that time, he shall certify in writing to the Contractor as to the final acceptance of the Project.

END OF SECTION