WESTERN CONNECTICUT STATE UNIVERSITY	REQUEST FOR PROPOSAL This is NOT an order to ship.	Please quote on the commodities or services listed below. All prices must be FOB Destination. You must show unit price, amount and total or bid may be rejected. The State of Connecticut is exempt from payment of Federal Excise taxes and the Connecticut Sales Tax. Do not include such taxes in bid prices. WCSU reserves the right to reject in whole or part any or all bids submitted.

VENDOR NAME , ADDRESS and EMAIL ADDRESS:	BID NUMBER: 2016-ERB-300 BID DUE DATE: June 16, 2015 by 2:30pm
RETURN TO: Western Connecticut State University Purchasing Department 181 White Street Danbury, CT 06810	DATE ISSUED: May 12, 2015

SIGNED (for agency) E.R. Boriss	PREPARED BY: E.R Boriss Associate Director – Administrative Services Phone: (203) 837-8758 Fax: (203) 837-8659	PURCHASING AUTHORITY: Public Acts 91-256/92-154 CGS 10a-151b

Description

Western Connecticut State University is seeking bid proposals for all labor and materials required for the installation of an approximately 60kW DC STC Rated Rooftop Photovoltaic Array System on Western Connecticut State University's Midtown Student Center building. Said Array shall be configured for (Solar Electric) Grid-Interactive Tie-In with Northeast Utilities, Connecticut Light and Power (CL&P) at 208 Volt, 3-Phase, 60 Hertz. The qualifying contractor must hold an Electrical Contractor ELC-E1 License or a PV-1 Limited Solar Electric Contractor License issued by the State of Connecticut Department of Consumer Protection. Please note: **The CT Dept. of Labor's Prevailing Wage Rates shall apply to this project.**

All contractors are required to visit the site and verify existing conditions. **A mandatory pre-bid meeting is scheduled for Thursday, May 21, 2014 at 2:00 p.m.**, beginning in the lobby area of the main entrance to The Midtown Student Center. http://www.wcsu.edu/campustour/directions.asp

Any questions or discrepancies should be submitted in writing no later than Monday June 1, 2015 by 4:00 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 4:00 p.m., Tuesday June 9 , 2015 by 12:00pm. Any and all addenda shall be posted on the DAS contracting portal.

Plans and Specifications will be posted on the DAS purchasing portal.

All work shall commence within two weeks of issuance of PO or letter of intent, and work must be completed within three months of commencement of work.

TO BE COMPLETED BY BIDDER	Vendor Authorized Signature_____ Date_____ Printed Name_____ Phone_____ Extension_____ Cash discount Payment Terms _____%_____days, net 45 days Company FEIN_____

WESTERN CONNECTICUT STATE UNIVERSITY	REQUEST FOR PROPOSAL This is NOT an order to ship.	Please quote on the commodities or services listed below. All prices must be FOB Destination. You must show unit price, amount and total or bid may be rejected. The State of Connecticut is exempt from payment of Federal Excise taxes and the Connecticut Sales Tax. Do not include such taxes in bid prices. WCSU reserves the right to reject in whole or part any or all bids submitted.

VENDOR NAME, ADDRESS AND PROJECT CONTACT EMAIL ADDRESS:	BID # 2016-ERB-0300

Return to:

Western Connecticut State University
Purchasing Department
181 White Street
Danbury, CT. 06810

PAGE 2

The contractor who is selected to perform this state project must file and receive an approved Affirmative Action Plan by the Commission on Human Rights and Opportunities.

This project is subject to the State SET ASIDE goals and NEW STATUTORY CHANGES TO4a-60g effective 10/1/13. as it relates to 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 Program (DAS). (set-aside).

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 least15% 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 MBE requirement is still 6.25% of the entire bid total.

FORM OF PROPOSAL SET ASIDE WORKSHEET MUST BE SUBMITTED WITH THE BID PACKAGE

Bid Parameters 2016-ERB-300
Compliance with Western Connecticut State University Bid Submission forms located in the specification package must be completed and submitted with the proposal.

Proposers shall submit a clearly marked original and (1) one copy of the proposal.

Submitted Bid pricing must be held for a period of 90 calendar days following the date of bid opening.

Note that this is a sealed bid. Late bids, e-mailed bids, faxed bids, or unsealed bids will not be accepted. Please note the sealed bid number 2016-ERB-0300 on the exterior of the sealed envelope so that proper identification of the proposal can be made.

Sealed bid opening is June 16, 2015 at 2:30pm in the Purchasing Office of Western Connecticut State University, located on the lower level of University Hall, 181 White St., Danbury, CT. 06810.

Note that Western Connecticut State University reserves the right to reject any and all solicitations and to order or to not order any and all goods or services in this solicitation.

Bids are to be based on the work called for on the sketches 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 must 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.

To be completed by bidder	Vendor Authorized Signature_____ Date_____

Form of Proposal

Bid # 2016-ERB-0300

Roftop Solar Photovoltaic System Installation

Set Aside Worksheet

	Subcontractor Name	Class of work	SBE	MBE	Prime Contractor self performing $$	Subcontract amounts
1						
2						
3						
4						
5						
6						$
7						$
8						$
9	Prime Contractor Total	Bidder is the Prime Contractor				
10	SBE Subtotal	Add SBE subcontract amounts from above list and enter total at right				
11	MBE/WBE Subtotal	Add MBE/WBE subcontract amounts from the list and enter total to the right				
12	Lump Sum base bid	Enter total lump sum base bid from bid submittal form				
13	Bidding Prime Contractor % and $$$$				75%	
14	Remaining value subject to SBE/MBE = lump sum line 12 minus prime contractor total					
15	SBE Percentage	Divide line 10 by line 14. Enter % to the right				
16	MBE/WBE Percentage	Divide line 11 by line 14. Enter % to the right.				
17	**Total SBE/MBE/WBE %**	**Must = 50% of line 14 /add line 15+16 for total %**				

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.

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 (Prime Contractor)_____

Authorized signature_____ Date_____

STATE OF CONNECTICUT

NONDISCRIMINATION CERTIFICATION – Affidavit

By Entity

For Contracts Valued at $50,000 or More

Documentation in the form of an affidavit signed under penalty of false statement by a chief executive 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

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INSTRUCTIONS:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at $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 Entity

duly formed and existing under the laws of _____.
Name of State or Commonwealth

I certify that I am authorized to execute and deliver this affidavit on behalf of

_____ and that _____
Name of Entity — Name of Entity

has a policy in place that complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1)and 4a-60a(a)(1), as amended.

_____
Authorized Signatory

_____
Printed Name

Sworn and subscribed to before me on this _____ day of _____, 20____.

_____ _____
Commissioner of the Superior Court/ Notary Public — **Commission Expiration Date**

STATE OF CONNECTICUT

NONDISCRIMINATION CERTIFICATION – New Resolution By Entity

For Contracts Valued at $50,000 or More

Documentation in the form of a corporate, company, or partnership policy adopted by resolution of the board of directors, shareholders, managers, members or other governing body 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

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INSTRUCTIONS:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at $50,000 or more 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:

I, _____ , _____ , of _____ ,
Authorized Signatory Title Name of Entity

an entity duly formed and existing under the laws of _____ ,
Name of State or Commonwealth

certify that the following is a true and correct copy of a resolution adopted on the _____ day of

_____ , 20_____ by the governing body of _____ ,
Name of Entity

in accordance with all of its documents of governance and management and the laws of

_____ , and further certify that such resolution has not been modified
Name of State or Commonwealth

or revoked, and is in full force and effect.

RESOLVED: That the policies of _____ comply with the
Name of Entity

nondiscrimination agreements and warranties of Connecticut General Statutes

§§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

The undersigned has executed this certificate this _____ day of _____ , 20_____ .

_____ _____
Authorized Signatory Date

_____
Printed Name

STATE OF CONNECTICUT

NONDISCRIMINATION CERTIFICATION – Prior Resolution By Entity

For Contracts Valued at $50,000 or More

Documentation in the form of a corporate, company, or partnership policy adopted by a prior resolution of the board of directors, shareholders, managers, members or other governing body 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

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INSTRUCTIONS:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at $50,000 or more 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 Title

_____ _____
Printed Name Date

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 §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

_____ _____
Signature of Agency Head (or designee) Date

_____
Awarding State Agency

STATE OF CONNECTICUT
CONSULTING AGREEMENT AFFIDAVIT

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 the Superior Court or 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 Services Provided: _____

_____

_____

Is the consultant a former State employee or former public official? ☐ YES ☐ NO

If YES: _____ _____
Name of Former State Agency Termination Date of Employment

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

_____ _____ _____
Printed Name of Bidder or Contractor **Signature of Principal or Key Personnel** **Date**

_____ _____
Printed Name (of above) Awarding State Agency

Sworn and subscribed before me on this _____ day of _____, 20___.

_____
Commissioner of the Superior Court or Notary Public

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 and 4-252(c); Governor M. Jodi Rell's Executive Orders No. 1, Para. 8, and No. 7C, Para. 10; and C.G.S. §9-612(f)(2)

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:

1) "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;
2) 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 who participates substantially in the preparation of bid solicitations or request for 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 statewide public office, 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 statewide public office or the General Assembly, are listed below:

Lawful Campaign Contributions to Candidates for Statewide Public Office:

Contribution Date	Name of Contributor	Recipient	Value	Description

Lawful Campaign Contributions to Candidates for the General Assembly:

Contribution Date	Name of Contributor	Recipient	Value	Description

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

_____
Printed Contractor Name

_____
Printed Name of Authorized Official

_____
Signature of Authorized Official

Subscribed and acknowledged before me this _____ day of _____, 20___.

_____
Commissioner of the Superior Court (or Notary Public)

_____
My Commission Expires

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative — title

for _____, located at _____,
contracting agency — address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
project name and number — address

shall be $_____, which includes all work, regardless of whether such project

consists of one or more contracts.

CONTRACTOR INFORMATION

Name:_____

Address:_____
Authorized Representative:_____
Approximate Starting Date: _____

Approximate Completion Date:_____

_____ _____
Signature Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: _____

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

I,_____of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

Subscribed and sworn to before me this _____ day of _____, _____.

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

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 BIDDER CONTRACT COMPLIANCE MONITORING REPORT 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)

White (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black(not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- 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. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and 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? Yes__ No__	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes__ No__
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes__ No__	9. Does your company have a mandatory retirement age for all employees? Yes__ No__
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? Yes__ No__ NA__
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__ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? Yes__ No__	12. Does your company have a written affirmative action Plan? Yes__ No__ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes__ No__ If yes, give name and phone number. _____ _____

Part III - Bidder Subcontracting Practices

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

Date:

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		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											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*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

1. 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)

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:

1. "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.
3. "Person" shall mean an individual, partnership, corporation or other business entity, as the context requires.
4. "Proposal" shall mean a response to a request for proposal, request for bid, or request for quotation.
5. "Proposer" shall mean a contractor that submits a response to a request for proposal, request for bid, or request for quotation.
6. "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

1. 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.
2. Proposals received from proposers debarred by the State of Connecticut will not be considered for award.
3. 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.
4. 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.
6. CSU reserves the right to negotiate, as it may deem necessary, with any or all of the proposers that submit proposals.
7. Any alleged oral agreement or arrangement made by any proposer with CSU or any employee thereof shall not be binding.

B. Submission of Proposals

1. 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.
4. 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. Failure 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.
8. 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.
9. 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.
13. 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.biznet.ct.gov/SCP_search/default.aspx?acclast 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.
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

1. 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.
3. 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

1. 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.
2. 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

1. 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.
2. 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.
3. 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.
4. 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

1. 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.
2. 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.
4. 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.
5. The contract shall be interpreted and governed by the laws of the State of Connecticut, without regard to its principles of conflicts of laws.
6. The contractor agrees that it shall be subject to and abide by all applicable federal and state laws and regulations.
7. 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 7C.
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 acknowledgment by them.
11. 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.
14. 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

1. 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.
2. 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.
3. 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.
4. The contractor shall assume responsibility for payment of any and all deductibles applicable to the insurance policies described in Section IV.B.1 above.
5. The contractor's insurer shall have no right of recovery or subrogation against the State and the described insurance shall be primary coverage.
6. 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.
7. "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:

1. A Performance Bond in the amount of one hundred percent (100%) of the total proposal price; and
2. 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

1. 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.
3. 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.
4. All deliveries shall be in compliance with Sections 22a-194 to 22a-194g of the Connecticut General Statutes related to product packaging.
5. 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.
6. 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.
7. Monies owed to CSU or the Department of Revenue Services (DRS) by the contractor shall be deducted from current obligations.

E. Inspection and Tests

1. 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.
2. 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

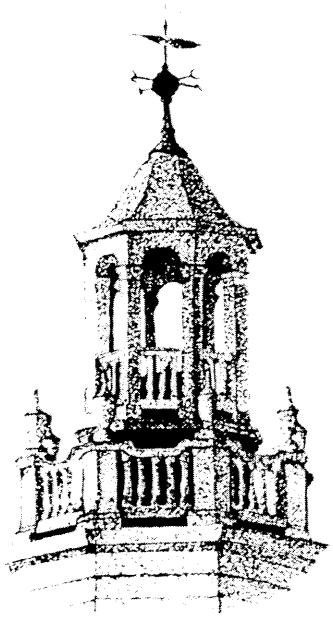
Reference by the contractor to sales to CSU for advertising and promotional purposes without the prior approval of CSU shall be expressly prohibited.

PROJECT MANUAL

FOR

ROOFTOP SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION
MIDTOWN STUDENT CENTER
WCSU MIDTOWN CAMPUS
MAY 1, 2015

BID NO. 2016-ERB-0300



FACILITIES PLANNING & ENGINEERING

WESTERN CONNECTICUT STATE UNIVERSITY
181 WHITE STREET
DANBURY, CONNECTICUT 06810

ROOFTOP SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION
MIDTOWN STUDENT CENTER
WCSU MIDTOWN CAMPUS
BID NO. 2016-ERB-0300

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MIDTOWN STUDENT CENTER - WCSU MIDTOWN CAMPUS
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INVITATION TO BID

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

ROOFTOP SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION
MIDTOWN STUDENT CENTER
WCSU BID NO. 2016-ERB-0300

Western Connecticut State University is seeking bid proposals for all labor and materials required for the installation of an approximately 60kW DC STC Rated Rooftop Photovoltaic Array System on Western Connecticut State University's Midtown Student Center building. Said Array shall be configured for (Solar Electric) Grid-Interactive Tie-In with Northeast Utilities, Eversource (formerly CL&P) at 208 Volt, 3-Phase, 60 Hertz.

The qualifying contractor must hold an Electrical Contractor ELC-E1 License or a PV-1 Limited Solar Electric Contractor License issued by the State of Connecticut Department of Consumer Protection.

Please note: The CT Dept. of Labor's Prevailing Wage Rates' requirement shall apply to this project.

The Project Manual and project related drawings are available on the State of Connecticut's DAS Contracting Portal. Reference Bid No.:2016-ERB-0300.

All contractors are required to visit the site and verify existing conditions. A mandatory pre-bid meeting is scheduled for Thursday, May 21, 2015 at 2:00 p.m., beginning in the lobby area of the main entrance to The Student Center. The Construction Administrator for this project is Eric J. Lessne, Associate Director for Project Management and Engineering; ConnSCU/WCSU; phone no. 860-982-8364; lessnee@ct.edu.

Any questions or discrepancies should be submitted in writing no later than Monday, June 1, 2015 by 4:00 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 12:00 noon, Tuesday, June 9, 2015. Any and all addenda shall be posted on the DAS contracting portal.

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 on or before 2:30 p.m, Tuesday, June 16, 2015. 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-0300**," 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 sketches 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 must 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.

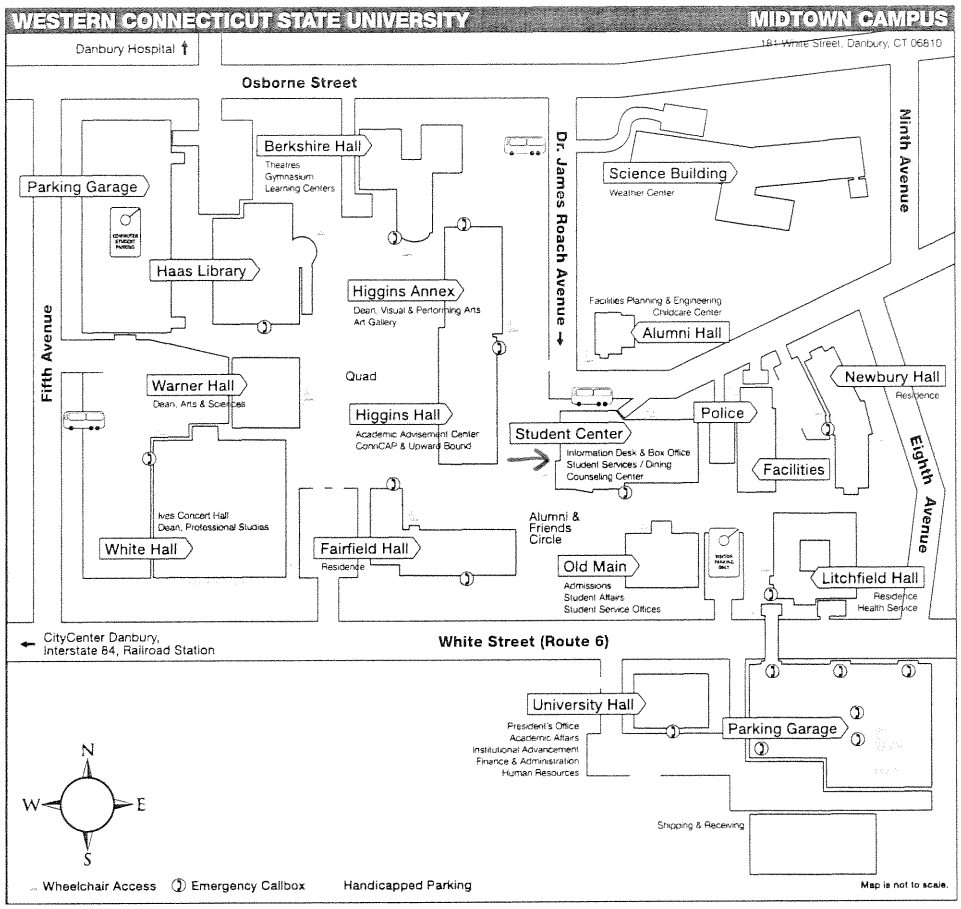
Bids must be held for a period of 90 calendar days following the date of the bid opening. Following 90 calendar days, if attempted negotiations with the lowest bidder fail to result in a contract, the University reserves the right to re-bid the project.

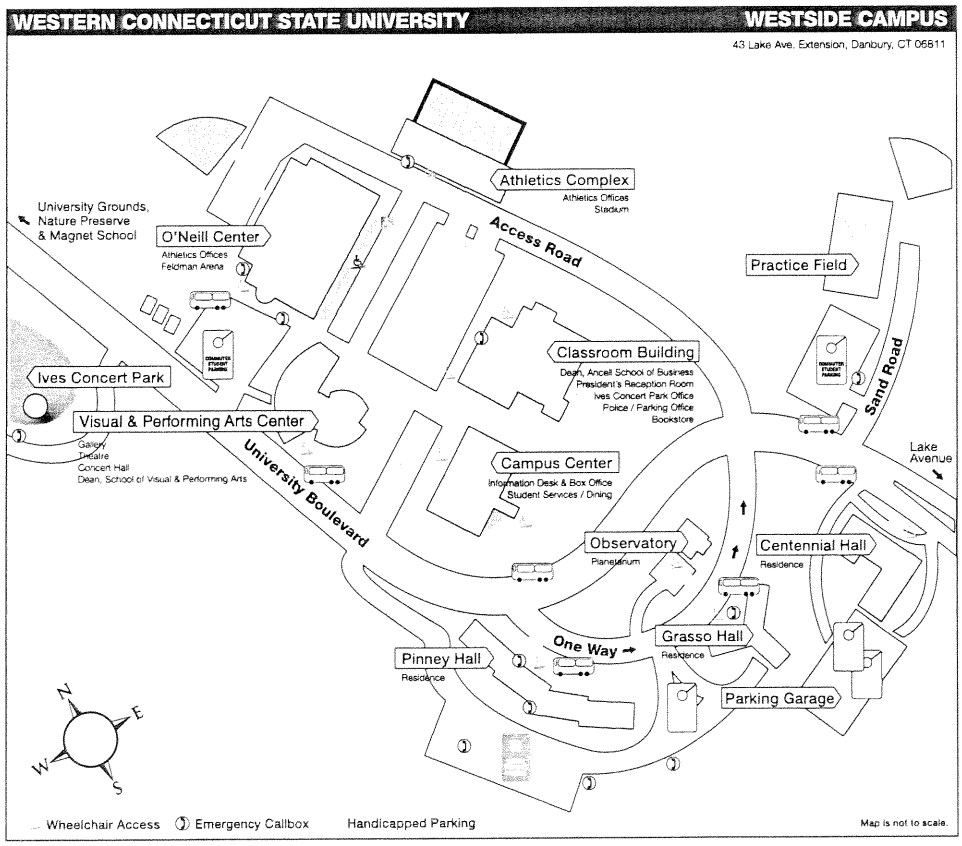
All work shall commence within two weeks of issuance of a purchase order or letter of intent; all work must be completed within three months of commencement of work.

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





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

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.

WESTERN
CONNECTICUT
STATE UNIVERSITY

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 two weeks of issuance of a purchase order or letter of intent.

2. All work must be completed no later than three months from commencement of work.

C. Addenda – 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 www.das.state.ct.us. Each bidder must note receipt of any Addenda or bulletins when submitting a bid.

D. The bidding documents are as follows:

1. Project Manual entitled "Rooftop Solar Photovoltaic System Installation – Midtown Student Center" dated May 1, 2015.

2. Drawings entitled "Solar Electric Design, Midtown Student Center," revision date 12-04-14.

E. The bid package will contain the following:

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

All other required documentation must be submitted, as per the "Bid Submission Checklist Form."

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. Pre-bid Meeting – All contractors are required to visit the site and become familiar with existing conditions. A mandatory pre-bid meeting is scheduled for Thursday, May 21, 2015 at 2:00 p.m., beginning at the lobby area of the main entrance of the Student Center, on WCSU's Midtown Campus. The Construction Administrator for this project is Eric J. Lessne, Associate Director for Project Management and Engineering; ConnSCU/WCSU; phone no. 860-982-8364; lessnee@ct.edu.

J. Inquiry Period - Any questions or discrepancies should be submitted in writing by 4:00 p.m., Monday, June 1, 2015, 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.

K. Response/Addenda Period: Responses to any and all inquiries shall be issued via addenda, no later than 12:00 noon, Tuesday, June 9, 2015. Any and all addenda shall be posted on the DAS contracting portal.

L. Bid Opening – 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 on or before Tuesday, June 16, 2015 by 2:30 p.m. 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 their bid in a sealed envelope with words, "Sealed Bid No. 2016-ERB-0300" and the due date.

END

WESTERN CONNECTICUT STATE UNIVERSITY
BID SUBMISSION CHECKLIST FORM

Project: Midtown Student Center Solar Photovoltaic System Installation
WCSU Bid No.: 2016-ERB-0300

Listed below are the following forms/documentation that must 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
- ☐ CHRO Notification to Bidders/Bidder Contract Compliance Monitoring Report
- ☐ Bidders Qualification Statement
- ☐ OPM Ethics Form 5 - Consulting Agreement Affidavit
- ☐ OPM Ethics Form 7 – Iran Certification Form
- ☐ Bid Bond – ON PROJECTS $50,000 OR OVER (10%)
- ☐ Certificate of Insurance
- ☐ Dept. of Labor - Contractors Wage Certification Form
- ☐ 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 7 – Iran Certification Form
- ☐ 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.

END

WESTERN CONNECTICUT STATE UNIVERSITY

BID FORM

BIDDER:_____

_____ _____
Address Telephone No.

BID PROPOSAL FOR:

ROOFTOP SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION
MIDTOWN STUDENT CENTER
BID NO. 2016-ERB-0300

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 Specifications prepared by Western Connecticut State University and entitled:

"Rooftop Solar Photovoltaic System Installation – Midtown Student Center"

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 work shall commence within two weeks of issuance of a purchase order or letter of intent, and all work shall be completed within three months of commencement of work.

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) (partnership) (corporation). Names and titles of other officers or partners are:

_____

_____

_____

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

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 in a calendar or fiscal year, pursuant to C.G.S. §§ 4-250 and 4-252(c); Governor M. Jodi Rell's Executive Orders No. 1, Para. 8, and No. 7C, Para. 10; and C.G.S. §9-612(g)(2)

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:

1) "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;
2) 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 who participates substantially in the preparation of bid solicitations or request for 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 December 31, 2006, neither the Contractor nor any of its principals, as defined in C.G.S. § 9-612(g)(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 statewide public office, in violation of C.G.S. § 9-612(g)(2)(A). I further certify that **all lawful campaign contributions** that have been made on or after December 31, 2006 by the Contractor or any of its principals, as defined in C.G.S. § 9-612(g)(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 statewide public office or the General Assembly, are listed below:

Lawful Campaign Contributions to Candidates for Statewide Public Office:

Contribution Date	Name of Contributor	Recipient	Value	Description

Lawful Campaign Contributions to Candidates for the General Assembly:

Contribution Date	Name of Contributor	Recipient	Value	Description

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

_____ _____

Printed Contractor Name **Printed Name of Authorized Official**

_____

Signature of Authorized Official

Subscribed and acknowledged before me this _____ day of _____, 20____.

_____

Commissioner of the Superior Court (or Notary Public)

STATE OF CONNECTICUT
CONSULTING AGREEMENT AFFIDAVIT

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 the Superior Court or 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 Services Provided: _____

_____

_____

Is the consultant a former State employee or former public official? ☐ YES ☐ NO

If YES: _____ _____
Name of Former State Agency Termination Date of Employment

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

_____ _____ _____
Printed Name of Bidder or Contractor **Signature of Principal or Key Personnel** **Date**

_____ _____
Printed Name (of above) Awarding State Agency

Sworn and subscribed before me on this _____ day of _____, 20____.

_____
Commissioner of the Superior Court or Notary Public

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: _____

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.

1) "Large state contract" has the same meaning as defined in section 4–250 of the Connecticut General Statutes;
2) "Respondent" means the person whose name is set forth at the beginning of this form; and
3) "State agency" and "quasi-public agency" have the same meanings as provided in section 1–79 of the Connecticut General 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 _____, 20____.

_____
Commissioner of the Superior Court (or Notary Public)

Office of Policy and Management

REQUIRED FOR ALL CONTRACT TYPES
Nondiscrimination Certification
Effective Date: June 30, 2009

Form A Representation By Individual
Form B Representation By Entity
Form C Affidavit By Entity
Form D New Resolution By Entity
Form E Prior Resolution By Entity

DESCRIPTION

The Office of the Attorney General has approved the above nondiscrimination certification forms to assist executive branch agencies in complying with the State's contracting requirements under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

By law, a contractor must provide an awarding State agency with *written representation* or *documentation* that certifies the contractor complies with the State's nondiscrimination agreements and warranties prior to the award of a contract. If after the initial submission there is any change in such representation, the contractor shall provide the updated representation to the State or such political subdivision not later than thirty (30) days after such change or upon the execution of a new contract with the state or political subdivision of the state whichever is earlier. Such contractor shall also certify no later than fourteen (14) days after the twelve (12) month anniversary of the most recently filed non-discrimination certification that the representation on file is current and accurate.

A nondiscrimination certification is generally required for all State contracts – regardless of type, term, cost, or value. ***See list of exempt entities (below).***

FORMS

There are five different certification forms one of which must be submitted in writing or electronically. Form A is *always* used for contracts with an individual who is not an entity, regardless of the contract value. Form B is *always* used for contracts with an entity when the contract value is less than $50,000. Form C is *recommended* for contracts valued at $50,000 or more with an entity. If Form C is not used, either Form D or E must be used; both require a resolution (new or prior).

For Use By:	Value **Less Than $50,000**	Value **$50,000 or More**
Individual	**Form A** *Representation*	
Entity		**Form C** *Affidavit*
	Form B	**Form D**

Representation *New Resolution*
Form E
Prior Resolution

Definitions

- *individual:* a person who is not an entity
- *entity:* corporation, limited liability company, or partnership

EXPLANATION OF FORMS

Form A. *Representation:* For use by an individual when entering into any contract, regardless of contract value.

Form B. *Representation:* For use by an entity when entering into any contract valued at less than $50,000 for any year of the contract.

Form C. *Affidavit:* (Recommended for contracts at or above $50,000) For use by an entity when entering into any contract valued at $50,000 or more for any year of the contract **and** the entity certifies through an affidavit that a complying nondiscrimination policy is currently in place.

Form D. *New Resolution:* For use by a entity when entering into any contract valued at $50,000 or more for any year of the contract **and** the entity has a complying nondiscrimination policy adopted by a new resolution of the board of directors, shareholders, managers, members, or other governing body.

Form E. *Prior Resolution:* For use by a entity when entering into any contract valued at $50,000 or more for any year of the contract **and** the entity has a complying nondiscrimination policy adopted by a prior resolution of the board of directors, shareholders, managers, members, or other governing body.

EXEMPTIONS

Pursuant to Public Act No. 09-158, Section 1(a)(5)(d), the entities listed below are exempt and, therefore, not required to submit a nondiscrimination certification form when entering into a contract with the State:

1. political subdivisions of the State of Connecticut, including, but not limited to municipalities;
2. quasi-public agencies, as defined in C.G.S. § 1-120;
3. other states of the United States, including, but not limited to, the District of Columbia, Puerto Rico, U.S. territories and possessions, and federally recognized Indian tribal governments, as defined in C.G.S. § 1-267;
4. the federal government;
5. foreign governments; and
6. an agency of a subdivision, agency, state or government listed in items 1-5.

For Further Information, Contact:

Please direct any questions about the nondiscrimination certification forms to the Commission on Human Rights and Opportunities:

Tel. 860/ 541-3400
Connecticut Toll Free Tel. 1-800/ 477-5737

Content Last Modified on 9/30/2011 9:38:35 AM

STATE OF CONNECTICUT

NONDISCRIMINATION CERTIFICATION – Affidavit By Entity

For Contracts Valued at $50,000 or More

Documentation in the form of an affidavit signed under penalty of false statement by a chief executive 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 entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at $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 Entity

duly formed and existing under the laws of _____.
Name of State or Commonwealth

I certify that I am authorized to execute and deliver this affidavit on behalf of

_____ and that _____
Name of Entity — Name of Entity

has a policy in place that complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1)and 4a-60a(a)(1), as amended.

_____
Authorized Signatory

_____
Printed Name

Sworn and subscribed to before me on this _____ day of _____, 20____.

_____ _____
Commissioner of the Superior Court/ Notary Public **Commission Expiration Date**

STATE OF CONNECTICUT

NONDISCRIMINATION CERTIFICATION – New Resolution By Entity

For Contracts Valued at $50,000 or More

Documentation in the form of a corporate, company, or partnership policy adopted by resolution of the board of directors, shareholders, managers, members or other governing body 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

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INSTRUCTIONS:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at $50,000 or more 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:

I, _____ , _____ , of _____ ,
Authorized Signatory Title Name of Entity

an entity duly formed and existing under the laws of _____ ,
Name of State or Commonwealth

certify that the following is a true and correct copy of a resolution adopted on the _____ day of

_____ , 20_____ by the governing body of _____ ,
Name of Entity

in accordance with all of its documents of governance and management and the laws of

_____ , and further certify that such resolution has not been modified
Name of State or Commonwealth

or revoked, and is in full force and effect.

RESOLVED: That the policies of _____ comply with the
Name of Entity

nondiscrimination agreements and warranties of Connecticut General Statutes

§§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

The undersigned has executed this certificate this _____ day of _____ , 20_____ .

_____ _____
Authorized Signatory Date

_____
Printed Name

STATE OF CONNECTICUT

NONDISCRIMINATION CERTIFICATION – Prior Resolution By Entity

For Contracts Valued at $50,000 or More

Documentation in the form of a corporate, company, or partnership policy adopted by a prior resolution of the board of directors, shareholders, managers, members or other governing body 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

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INSTRUCTIONS:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at $50,000 or more 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 Title

_____ _____
Printed Name Date

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 §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

_____ _____
Signature of Agency Head (or designee) Date

_____
Awarding State Agency

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 BIDDER CONTRACT COMPLIANCE MONITORING REPORT 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.

2) Description of Job Categories (as used in Part IV Bidder Employment Information) (Page 2)

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)

White (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black(not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- 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. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and 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? Yes__ No__	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes__ No__
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes__ No__	9. Does your company have a mandatory retirement age for all employees? Yes__ No__
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? Yes__ No__ NA__
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__ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? Yes__ No__	12. Does your company have a written affirmative action Plan? Yes__ No__ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes__ No__ If yes, give name and phone number. _____

Part III - Bidder Subcontracting Practices

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

Date:

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		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											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*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

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)

SOURCE	YES	NO	% of applicants provided by source
State Employment Service			
Private Employment Agencies			
Schools and Colleges			
Newspaper Advertisement			
Walk Ins			
Present Employees			
Labor Organizations			
Minority/Community Organizations			
Others (please identify)			

2. Check (X) any of the below listed requirements that you use as a hiring qualification

(X)	
	Work Experience
	Ability to Speak or Write English
	Written Tests
	High School Diploma
	College Degree
	Union Membership
	Personal Recommendation
	Height or Weight
	Car Ownership
	Arrest Record
	Wage Garnishments

3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination

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)

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 action-equal 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:

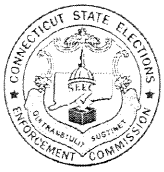
1. The contractor will not discriminate or permit discrimination against anyone, and employees will be treated without regard to their sexual orientation, gender identity or expression once employed; and

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



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:

Civil penalties—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.

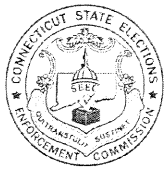
Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than $5,000 in fines, or both.

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.



DEFINITIONS

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

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

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

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

ACKNOWLEDGEMENT OF RECEIPT

SIGNATURE

DATE (mm/dd/yyyy)

NAME OF SIGNER

First Name	MI	Last Name	Suffix

TITLE

COMPANY NAME

Additional information may be found on the website of the State Elections Enforcement Commission,
www.ct.gov/seec
Click on the link to "Lobbyist/Contractor Limitations"

GENERAL CONTRACTOR
BIDDERS QUALIFICATION STATEMENT

PROJECT NAME/NO.: **Western Connecticut State University**
Ives Concert Park Bandshell and Support Building Roof Replacement
Bid No. 2016-ERB-0300

All bidders are required to file this form, properly completed, WITH THEIR PROPOSAL. 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 ½" 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 _____

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

10. All Construction Projects your organization has in process (attach separate sheets using the following format as necessary):

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

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
(Position or Title)

_____ , and that the answers to the foregoing
(Firm Name)

questions and all statements therein contained are true and correct.

Subscribed and sworn before me this _____ day of _____ 19 _____

Notary Public _____

My Commission Expires _____ 19 _____

END OF SECTION

Project: Rooftop Solar Photovoltaic System Installation At Midtown Student Center At Western Connecticut State University

Minimum Rates and Classifications for Building Construction

ID# : B 20574

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Danbury

State#:

FAP#:

Project: Rooftop Solar Photovoltaic System Installation At Midtown Student Center At Western Connecticut State University

CLASSIFICATION	Hourly Rate	Benefits
1a) Asbestos Worker/Insulator (Includes application of insulating materials, protective coverings, coatings, & finishes to all types of mechanical systems; application of firestopping material for wall openings & penetrations in walls, floors, ceilings	35.75	28.82
1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**		
1c) Asbestos Worker/Heat and Frost Insulator	35.75	27.46

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2) Boilermaker	35.24	25.01
3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	32.50	28.74 + a
3b) Tile Setter	33.75	24.21
3c) Terrazzo Mechanics and Marble Setters	31.69	22.35
3d) Tile, Marble & Terrazzo Finishers	26.26	20.69
3e) Plasterer	32.50	29.45

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------LABORERS------

4) Group 1: Laborers (common or general), acetylene burners, carpenter tenders, concrete specialists, wrecking laborers, fire watchers.	27.85	18.30
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofer/mixer/nozzleman (Person running mixer and spraying fireproof only).	28.10	18.30
4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	28.35	18.30
4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is $26.80.	28.85	18.30
4d) Group 5: Air track operator, sand blaster and hydraulic drills.	28.60	18.30

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4e) Group 6: Blasters, nuclear and toxic waste removal.	30.85	18.30
4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped).	28.85	18.30
4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	28.38	18.30
4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	27.86	18.30
4i) Group 10: Traffic Control Signalman	16.00	18.30
5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	31.00	22.50

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5a) Millwrights	31.60	22.75
6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	37.27	22.25 + 3% of gross wage
7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	47.96	28.385+a+b
-----LINE CONSTRUCTION----		
Groundman	24.37	6.5%+10.04
Linemen/Cable Splicer	44.30	6.5%+17.70

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8) Glazier (Trade License required: FG-1,2)	34.58	18.55
9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	34.47	29.74 + a
----OPERATORS----		
Group 1: Crane handling or erecting structural steel or stone, hoisting engineer 2 drums or over, front end loader (7 cubic yards or over); work boat 26 ft. and over. (Trade License Required)	37.55	23.05 + a
Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver ($3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	37.23	23.05 + a
Group 3: Excavator; Backhoe/Excavator under 2 cubic yards; Cranes (under 100 ton rated capacity), Grader/Blade; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	36.49	23.05 + a

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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper).	36.10	23.05 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	35.51	23.05 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller; Pile Testing Machine.	35.51	23.05 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	35.20	23.05 + a
Group 7: Asphalt roller, concrete saws and cutters (ride on types), vermeer concrete cutter, Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrell).	34.86	23.05 + a
Group 8: Mechanic, grease truck operator, hydroblaster; barrier mover; power stone spreader; welding; work boat under 26 ft.; transfer machine.	34.46	23.05 + a

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Group 9: Front end loader (under 3 cubic yards), skid steer loader regardless of attachments, (Bobcat or Similar): forklift, power chipper; landscape equipment (including Hydroseeder).	34.03	23.05 + a
Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	31.99	23.05 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	31.99	23.05 + a
Group 12: Wellpoint operator.	31.93	23.05 + a
Group 13: Compressor battery operator.	31.35	23.05 + a
Group 14: Elevator operator; tow motor operator (solid tire no rough terrain).	30.21	23.05 + a

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Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	29.80	23.05 + a
Group 16: Maintenance Engineer/Oiler.	29.15	23.05 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	33.46	23.05 + a
Group 18: Power safety boat; vacuum truck; zim mixer; sweeper; (Minimum for any job requiring a CDL license).	31.04	23.05 + a

------PAINTERS (Including Drywall Finishing)------

10a) Brush and Roller	31.02	18.55

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10b) Taping Only/Drywall Finishing	31.77	18.55
10c) Paperhanger and Red Label	31.52	18.55
10e) Blast and Spray	34.02	18.55
11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	40.31	26.82
12) Well Digger, Pile Testing Machine	33.01	19.40 + a
Roofer: Cole Tar Pitch	38.50	14.25

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Roofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	37.00	14.25
15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	43.41	33.85
16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	40.31	26.82
------TRUCK DRIVERS------		
17a) 2 Axle	28.58	20.24 + a
17b) 3 Axle, 2 Axle Ready Mix	28.68	20.24 + a

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17c) 3 Axle Ready Mix	28.73	20.24 + a
17d) 4 Axle, Heavy Duty Trailer up to 40 tons	28.78	20.24 + a
17e) 4 Axle Ready Mix	28.83	20.24 + a
17f) Heavy Duty Trailer (40 Tons and Over)	29.03	20.24 + a
17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	28.83	20.24 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	39.76	19.87 + a

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19) Theatrical Stage Journeyman	25.76	7.34

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Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra $2.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

3) Cranes (under 100 ton rated capacity)

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

***As of:* Wednesday, April 29, 2015**

Project: Rooftop Solar Photovoltaic System Installation At Midtown Student Center At Western Connecticut State University

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

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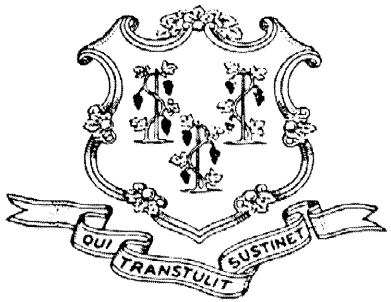
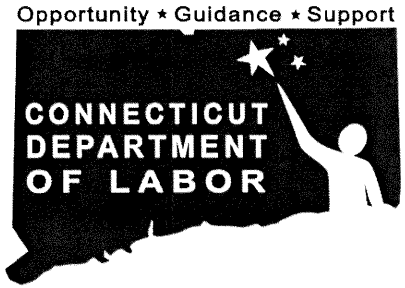




THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has 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, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine
Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

STATUTE 31-55a

- SPECIAL NOTICE -

To: All State and Political Subdivisions,Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the ***contractor's*** responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860)263-6790.

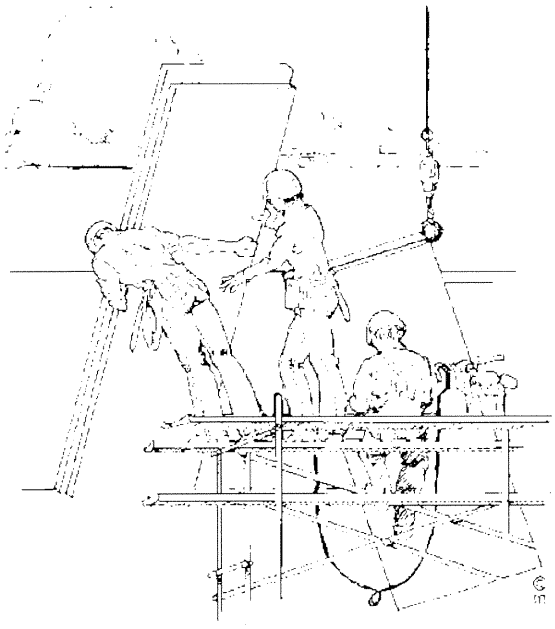
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

✎ Inquiries can be directed to (860)263-6543.



CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative — title

for _____, located at _____,
contracting agency — address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
project name and number — address

shall be $_____, which includes all work, regardless of whether such project

consists of one or more contracts.

CONTRACTOR INFORMATION

Name:_____

Address:_____
Authorized Representative:_____
Approximate Starting Date: _____

Approximate Completion Date:_____

_____ _____
Signature Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: _____

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

I,_____of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

Subscribed and sworn to before me this _____ day of _____,_____.

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

CERTIFIED PAYROLL FORM WWS - CPI

Employee Complaint Forms
Employer Forms
Laws/Legislation
Manuals and Publications
Compliance Assistance
Prevailing Wages
Standard Wage Rates
Workplace Standards
Employment of Minors
FMLA
Joint Enforcement Commission For Worker Misclassification (JEC)
Stop Work Orders
Reports of Activities
FAQs
Newsroom
Contact Us

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

Note: Once you have downloaded these forms and are ready to print them out, set the print function on your PC to the horizontal print orientation.

Note2: Please download both the Payroll Certification for Public Works Projects **and** the Certified Statement of Compliance for a complete package. The Certified Statement of Compliance appears on the same page as the Fringe Benefits Explanation page.

Announcement: The Certified Payroll Form WWS-CPI can now be completed on-line!

- Certified Payroll Form WWS-CPI (PDF, 727KB)
- Sample Completed Form (PDF, 101KB)

200 Folly Brook Boulevard, Wethersfield, CT 06109 / Phone: 860-263-6000
Home | CT gov Home | Send Feedback
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[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY							S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							

7/13/2009
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

*FRINGE BENEFITS EXPLANATION (P):

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

_____ _____ _____

(Signature) (Title) Submitted on (Date)

Section B: Applies to CONNDOT Projects ONLY

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

_____ _____ _____

(Signature) (Title) Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

THIS IS A PUBLIC DOCUMENT

DO NOT INCLUDE SOCIAL SECURITY NUMBERS

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											S-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											S-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							

*IF REQUIRED

7/13/2009
WWS-CP2

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

PAGE NUMBER _____OF

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS
Landon Corporation, 15 Connecticut Avenue, Northford, CT 06472

SUBCONTRACTOR NAME & ADDRESS
XYZ Corporation
2 Main Street
Yantic, CT 06389

WORKER'S COMPENSATION INSURANCE CARRIER
Travelers Insurance Company
POLICY # #BAC8888928
EFFECTIVE DATE 1/1/09
EXPIRATION DATE 12/31/09

PAYROLL NUMBER: 1
Week-Ending Date: 9/26/09
PROJECT NAME & ADDRESS: DOT 105-296, Route 82

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	S 20	M 21	T 22	W 23	TH 24	F 25	S 26	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS: FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
Robert Craft 81 Maple Street Willimantic, CT 06226		M/C	Electrical Lineman E-1 1234567 Owner OSHA 123456		8	8	8	8	8		S-TIME 40 O-TIME	$ 30.75 Base Rate $ 8.82 Cash Fringe	1. $ 5.80 2. $ 3. $ 2.01 4. $ 5. $ 6. $	$1,582.80				P-xxxx	$1,582.80	#123 $ xxx.xx
Ronald Jones 212 Elm Street Norwich, CT 06360	65%	M/B	Electrical Apprentice OSHA 234567		8	8	8	8	8		S-TIME 40 O-TIME	$ 19.99 Base Rate $ 16.63 Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $	$1,464.80	xx.xx	xxx.xx	xx.xx	G-xxx	$1,464.80	#124 $xxx.xx
Franklin T. Smith 234 Washington Rd. New London, CT 06320 SECTION B		M/H	Project Manager			8					S-TIME 8 O-TIME	$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $	$1,500.00	xx.xx	xx.xx	xx.xx	M-xx.x		#125 xxx.xx
											S-TIME O-TIME	$ Base Rate $ Cash Fringe	1. $ 2. $ 3. $ 4. $ 5. $ 6. $							

7/13/2009
WWS-CP1

*IF REQUIRED

*SEE REVERSE SIDE

PAGE NUMBER 1 OF 2

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

*FRINGE BENEFITS EXPLANATION (P):

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care Blue Cross 4) Disability _____

2) Pension or retirement _____ 5) Vacation, holiday _____

3) Life Insurance Utopia 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of 9/26/09.

I, Robert Craft of XYZ Corporation, (hereafter known as Employer) in my capacity as Owner (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

Robert Craft (Signature) owner (Title) 10/2/09 Submitted on (Date)

Section B: Applies to CONNDOT Projects ONLY

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

Robert Craft (Signature) owner (Title) 10/2/09 Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

THIS IS A PUBLIC DOCUMENT

DO NOT INCLUDE SOCIAL SECURITY NUMBERS

Employee Complaint Forms
Employer Forms
Laws/Legislation
Manuals and Publications
Compliance Assistance
Prevailing Wages
Standard Wage Rates
Workplace Standards
Employment of Minors
FMLA
Joint Enforcement Commission For Worker Misclassification (JEC)
Stop Work Orders
Reports of Activities
FAQs
Newsroom
Contact Us

OCCUPATIONAL CLASSIFICATION BULLETIN

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53.

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification.

Below are additional clarifications of specific job duties performed for certain classifications:

- **ASBESTOS WORKERS**
  - Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.
- **ASBESTOS INSULATOR**
  - Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.
- **BOILERMAKERS**
  - Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.
- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**
  - Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.
- **CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**
  - Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.
- **CLEANING LABORER**
  - The clean up of any construction debris and the general cleaning, including sweeping, wash down, mopping, wiping of the construction facility, washing, polishing, dusting, etc., prior to the issuance of a certificate of occupancy falls under the *Labor classification.*
- **DELIVERY PERSONNEL**
  - If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.
  - An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer/tradesman and not a delivery personnel.

- **ELECTRICIANS**
  - Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ***License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.**
- **ELEVATOR CONSTRUCTORS**
  - Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ***License required by Connecticut General Statutes: R-1,2,5,6.**
- **FORK LIFT OPERATOR**
  - Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.
  - Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.
- **GLAZIERS**
  - Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which requires either a blended rate or equal composite workforce.
- **IRONWORKERS**
  - Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which requires either a blended rate or equal composite workforce. Insulated metal and insulated composite panels are still installed by the Ironworker.
- **INSULATOR**
  - Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings. Past practice using the applicable licensed trades, Plumber, Sheet Metal, Sprinkler Fitter, and Electrician, is not inconsistent with the Insulator classification and would be permitted.
- **LABORERS**
  - Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.
- **PAINTERS**
  - Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hanging+ for any and all types of building and residential work.
- **LEAD PAINT REMOVAL**
  - Painter's Rate
    1. Removal of lead paint from bridges.
    2. Removal of lead paint as preparation of any surface to be repainted.
    3. Where removal is on a Demolition project prior to reconstruction.
  - Laborer's Rate
    1. Removal of lead paint from any surface NOT to be repainted.
    2. Where removal is on a *TOTAL* Demolition project only.
- **PLUMBERS AND PIPEFITTERS**
  - Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***
- **POWER EQUIPMENT OPERATORS**
  - ates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ***License required, crane operators only, per Connecticut General Statutes.**
- **ROOFERS**
  - Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs,

including preparation of surface. (tear-off and/or removal of any type of roofing and/or clean-up of any and all areas where a roof is to be relaid)

- **SHEETMETAL WORKERS**
  - Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, wall panel siding, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Insulated metal and insulated composite panels are still installed by the Iron Worker. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers.
- **SPRINKLER FITTERS**
  - Installation, alteration, maintenance and repair of fire protection sprinkler systems. ***License required per Connecticut General Statutes: F-1,2,3,4.**
- **TILE MARBLE AND TERRAZZO FINISHERS**
  - Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.
- **TRUCK DRIVERS**
  - **Definitions:**
    - 1) "Site of the work" (29 Code of Federal Regulations (CFR) 5.2(l)(b) is the physical place or places where the building or work called for in the contract will remain and any other site where a significant portion of the building or work is constructed, provided that such site is established specifically for the performance of the contact or project;
      - (a) Except as provided in paragraph (l) (3) of this section, job headquarters, tool yards, batch plants, borrow pits, etc. are part of the "site of the work"; provided they are dedicated exclusively, or nearly so, to the performance of the contract or project, and provided they are adjacent to "the site of work" as defined in paragraph (e)(1) of this section;
      - (b) Not included in the "site of the work" are permanent home offices, branch plant establishments, fabrication plants, tool yards etc, of a contractor or subcontractor whose location and continuance in operation are determined wholly without regard to a particular State or political subdivision contract or uncertain and indefinite periods of time involved of a few seconds or minutes duration and where the failure to count such time is due to consideration justified by industrial realities (29 CFR 785.47)
    - 2) "Engaged to wait" is waiting time that belongs to and is controlled by the employer which is an integral part of the job and is therefore compensable as hours worked. (29 CFR 785.15)
    - 3) "Waiting to be engaged" is waiting time that an employee can use effectively for their own purpose and is not compensable as hours worked. (29 CFR 785.16)
    - 4) "De Minimus" is a rule that recognizes that unsubstantial or insignificant periods of time which cannot as a practical administrative matter be precisely recorded for payroll purposes, may be disregarded. This rule applies only where there are uncertain and indefinite periods of time involved of a short duration and where the failure to count such time is due to consideration justified by worksite realities. For example, with respect to truck drivers on prevailing wage sites, this is typically less than 15 minutes at a time.
  - **Coverage of Truck Drivers on State or Political subdivision Prevailing Wage Projects**
    - Truck drivers **are covered** for payroll purposes under the following conditions:
      - Truck Drivers for time spent working on the site of the work.
      - Truck Drivers for time spent loading and/or unloading materials and supplies on the site of the work, if such time is not de minimus
      - Truck drivers transporting materials or supplies between a facility that is deemed part of the site of the work and the actual construction site.
      - Truck drivers transporting portions of the building or work between a site established specifically for the performance of the contract or project where a significant portion of such building or work is constructed and the physical places where the building or work outlined in the contract will remain.

      For example: Truck drivers delivering asphalt are covered under prevailing wage while" engaged to wait" on the site and when directly involved in the paving operation, provided the total time is not "de minimus"
    - Truck Drivers **are not** covered in the following instances:
      - Material delivery truck drivers while off "the site of the work"
      - Truck Drivers traveling between a prevailing wage job and a commercial supply facility while they are off the

"site of the work"

- Truck drivers whose time spent on the "site of the work" is de minimus, such as under 15 minutes at a time, merely to drop off materials or supplies, including asphalt.

These guidelines are similar to U.S. Labor Department policies. The application of these guidelines may be subject to review based on factual considerations on a case by case basis.

For example:

- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

Any questions regarding the proper classification should be directed to:

Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6543

200 Folly Brook Boulevard, Wethersfield, CT 06109 / Phone: 860-263-6000
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Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

NOTICE TO BIDDERS
STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC WORKS

1. BIDS AND REJECTION OF BIDS:

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 Section 4b-93 of the General Statutes of Connecticut 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 Section 4b-92 of the General Statutes of Connecticut, as revised.

Every bid which is conditional or obscure, 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 Section 4b-95 of the General Statutes of Connecticut, as revised, to be furnished in the bid form provided by the awarding authority.

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 Section 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 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 Section 4b-96 of the General Statutes of Connecticut, as revised.

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.

Any contractor who violates any provision of said Section 4b-95 may be disqualified from bidding on other contracts that are subject to the provisions of Chapter 60 of the General Statutes of

Connecticut, as revised, for a period not be 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.

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 or telegraph 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.

Any bid received after the scheduled closing time for the receipt of bids will be returned to the bidder unopened.

Any bid once deposited with the Department of Public Works may only be withdrawn by letter of request, signed by the depositing bidder and presented to the Chief, Bidding Section, prior to the time of opening of any bid for the project designated or identified project.

2. BID SECURITY:

Each bid must be accompanied by a certified check payable to the order of the Treasurer of the 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 company or companies acceptable to the Commissioner of the Department of Public Works and as are authorized to do business in this State, for an amount not less than 10 per cent of the bid. All checks submitted by unsuccessful bidders shall be returned to them after the contract has been awarded.

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.

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 mailed to all prospective bidders (at the respective addresses furnished for such purposes) not later than five (5) days prior to the date fixed for the opening of bids; failure of any bidder to receive any such addendum or interpretation shall not release any bidder from any obligations under its bid as submitted, provided notice has been sent to the address furnished by such prospective bidder for the transmittal of notices, addenda and interpretations. It shall be the bidder's responsibility to make inquiry as to, and to obtain, the addenda issued, if any.

5. EXECUTIVE ORDER NO. THREE:

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971 and, as such, this contract may be canceled, terminated or suspended by the state labor commissioner for violation of or noncompliance with said Executive Order No. Three,

or any state or federal law concerning nondiscrimination, notwithstanding that the labor commissioner is not a party to this contract. The parties to this contract, as part of the consideration hereof, agree that said Executive Order No. Three 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 or terminated prior to completion.

The contractor agrees, as part consideration hereof, that this contract is subject to the Guidelines and Rules issued by the state labor commissioner to implement Executive Order No. Three, 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.

6. EXECUTIVE ORDER NO. SEVENTEEN:

This contract is subject to the provisions of Executive Order No. Seventeen of Governor Thomas J. Meskill promulgated February 15, 1973, and, as such, this contract 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. Seventeen, notwithstanding that the Labor Commissioner may not be a party to this contract. The parties to this contract, as part of the consideration hereof, agree that Executive Order No. Seventeen is incorporated herein by reference and made a part hereof. The parties agree 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.

7. FOREIGN CORPORATIONS:

A corporation not organized under the laws of this State 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.

8. SECURITY FOR FAITHFUL PERFORMANCE:

8.1.1 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 per cent 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.

8.1.2 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 per cent 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 Section 49-41 of the General Statutes of Connecticut, as revised.

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

Sec. 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.

(b) If payment is not made by the general contractor or any of its subcontractors in accordance with such 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 per cent 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.

Sec. 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 his 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 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 expiration of one year 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.

9. 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.

10. CONTRACTOR'S QUALIFICATIONS:

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

11. SUBCONTRACTORS:

As required by the ***Bid Proposal Form***, 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.

12. WORKING DAY:

A working day is hereby defined as each consecutive day, including and following the date set for commencement of work, except Saturdays, Sundays and State legal holidays and except those days on which, in the opinion of the awarding authority, the contractor is prevented by inclement weather from proceeding with work on the major items under construction at the then current stage of the work for at least six (6) hours with the usual force employed on these major items, provided, however, that in the event the State directs or permits work to be performed on a Saturday, Sunday or a State legal holiday, then such day shall be considered a working day.

13. NONDISCRIMINATION AND AFFIRMATIVE ACTION PROVISIONS:

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

a. For the purposes or this section, "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of 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) For the purposes of this section, "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 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. Statutes. 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.

For the purposes of this section, "commission" means the commission on human rights and opportunities.

For the 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 municipality 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 guarantees.

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 race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation 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, 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 Conn. Gen. Statutes. Sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to Conn. Gen. Statutes. 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 Conn. Gen. Statutes. 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 project.

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; 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 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 provisions 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 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 Conn. Gen. Statutes. 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.

f. 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 contract and any amendments thereto.

14. 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.

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 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 of the general statutes; (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 of the general statutes.

b. The contractor shall include the provisions of Subsection a 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 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 of the general statutes; 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. 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 contract and any amendments thereto.

15. 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.

16. LABOR MARKET AREA:

All bidders shall have read Sections 31-52 and 31-52a of the General Statutes of Connecticut, 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:

16.1 The names and addresses of employees utilized by the contractor and by its subcontractors and how long each such employee has resided in Connecticut.

16.2 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.

16.3 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.

16.4 In the same manner as item (16.3) above, the statement shall indicate the steps taken to assure that the Contractor and its Subcontractors have sought out qualified residents of this State.

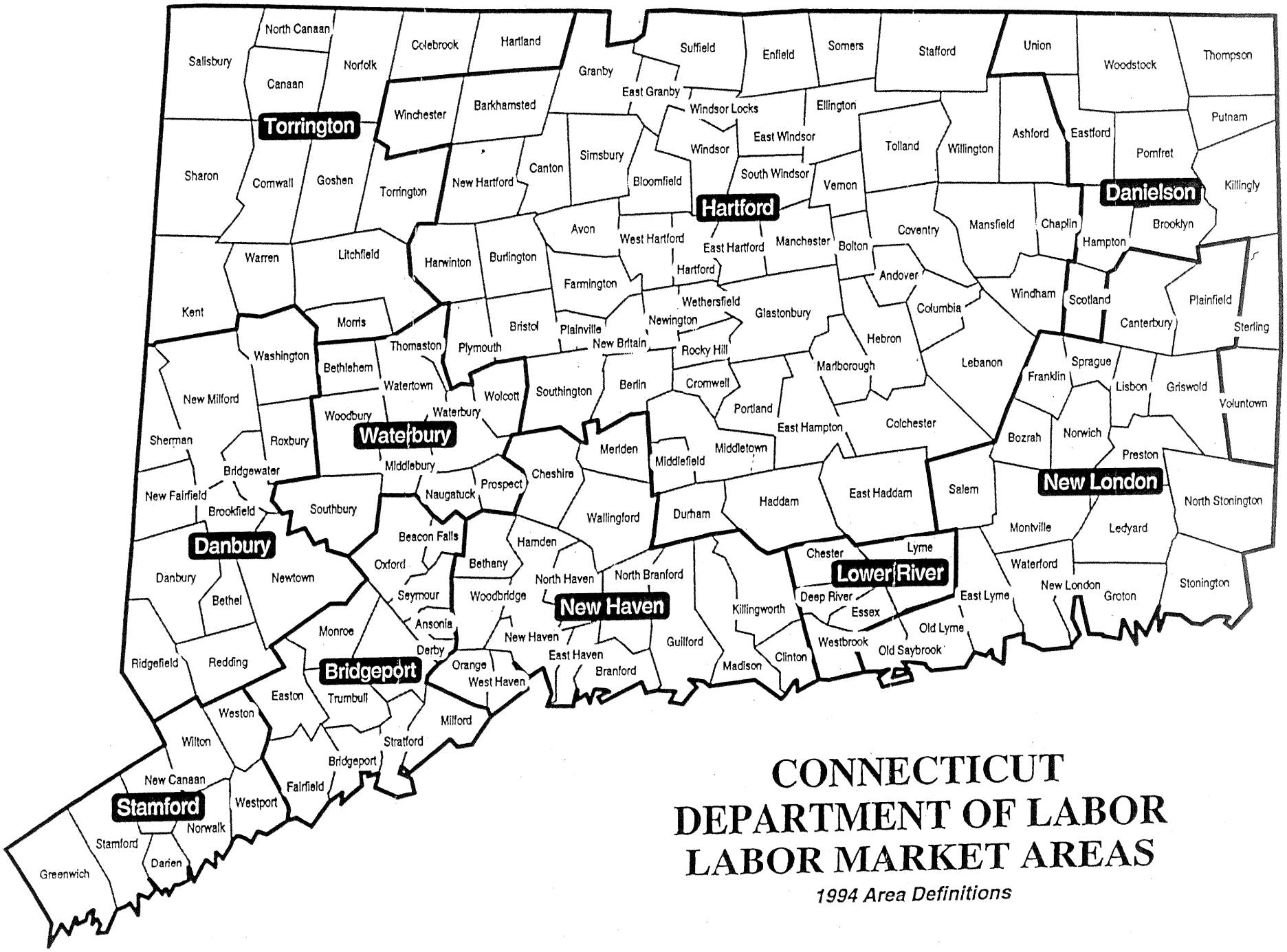
16.5 The contractor shall cooperate with and provide information to the construction supervisor or inspector of the State assigned to collect and verify the information required. The State may request that all such information be updated during the term of the contract at reasonable times.

16.6 All such information gathered and compiled by the State shall be forwarded to the Labor Commissioner.

Pursuant to Section 31-52b of the General Statutes of Connecticut, as revised:

"The provisions of sections 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 Public Works.



CONNECTICUT DEPARTMENT OF LABOR LABOR MARKET AREAS

1994 Area Definitions

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. Letters shall be sent direct and with the least 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

A. 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 – REQUISITIONS

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, including the architect's/engineer's recommendations 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. Credits 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

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:

1. "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.
3. "Person" shall mean an individual, partnership, corporation or other business entity, as the context requires.
4. "Proposal" shall mean a response to a request for proposal, request for bid, or request for quotation.
5. "Proposer" shall mean a contractor that submits a response to a request for proposal, request for bid, or request for quotation.
6. "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

1. 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.
2. Proposals received from proposers debarred by the State of Connecticut will not be considered for award.
3. 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.
4. 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.
6. CSU reserves the right to negotiate, as it may deem necessary, with any or all of the proposers that submit proposals.
7. Any alleged oral agreement or arrangement made by any proposer with CSU or any employee thereof shall not be binding.

B. Submission of Proposals

1. 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.
4. 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. Failure 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.

8. 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.
9. 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.
13. 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.
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

1. 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.
3. 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

1. 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.
2. 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

1. 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.
2. 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.
3. 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.

4. 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

1. 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.
2. 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.
4. 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.
5. The contract shall be interpreted and governed by the laws of the State of Connecticut, without regard to its principles of conflicts of laws.
6. The contractor agrees that it shall be subject to and abide by all applicable federal and state laws and regulations.
7. 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 acknowledgment by them.
11. 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.
14. 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

1. 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.
2. 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.
3. 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.
4. The contractor shall assume responsibility for payment of any and all deductibles applicable to the insurance policies described in Section IV.B.1 above.
5. The contractor's insurer shall have no right of recovery or subrogation against the State and the described insurance shall be primary coverage.
6. 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.
7. "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:

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

2. 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

1. 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.
3. 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.
4. All deliveries shall be in compliance with Sections 22a-194 to 22a-194g of the Connecticut General Statutes related to product packaging.
5. 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.
6. 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.
7. Monies owed to CSU or the Department of Revenue Services (DRS) by the contractor shall be deducted from current obligations.

E. Inspection and Tests

1. 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.
2. 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

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

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 or 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 be a party to this Agreement. The Parties to this Agreement, as part of the consideration hereof, agree that Executive Order No. 17 is incorporated herein by reference and made a part hereof. The Parties agree 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, terminated 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 hereofm 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 pen of pocket knife), including a switchblade or other knife having an automatic spring release device, a stiletto, any police baton 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 causing, 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 or 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 or (2.) wanton 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, "contract" shall not include real property transactions 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, loans, loan guarantees, 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 sale 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 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 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 municipality 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 guarantees.

(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 race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation 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, 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 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-68f and with each regulation or relevant order issued by said Commission pursuant to Conn. Gen. Stat. 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. 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; 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 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 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 Conn. Gen. Stat. 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.

(f) 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 contract and any amendments thereto.

(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 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; 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 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 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 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 of the general statutes; 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.

General Conditions of the Contract for Construction
Department of Public Works
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 COMPLETION: 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, specified 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 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 Contractor has been satisfied as to all requirements of 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.

ARTICLE 6
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 Public 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.

ARTICLE 12
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.

ARTICLE 15
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 manufactured 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

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 pre-functional 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.

ARTICLE 23
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 seven and one-half 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 requirements 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.

ARTICLE 32
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 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.

ARTICLE 36
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 weather

38.4.2.2 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:

38.5.1 A 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.

ARTICLE 39
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.htm 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 accordance with the General Conditions, Article 28, (type general contractor's name) hereby requests a reduction of retainage to an amount of XX %. The following list of items required under the general conditions is in compliance with the terms of the contract and has been verified by the Contractor.

- ❒ Performance 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 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 approved credit Change Orders have been invoiced.
- ❒ All Change Order requests for pricing are current.
- ❒ The Contractor has and is maintaining a clean worksite in accordance with the Contract Documents.
- ❒ All Subcontractor payments are current at the time of reduction request.
- ❒ Contractor is compliant with set-aside provisions of the contract.

Contractor Certification

name	signature	date

Project Manager Recommendation

name	signature	date

Approved

Deputy Commissioner David O'Hearn	signature	date

SUPPLEMENTARY GENERAL CONDITIONS

1. SCOPE AND LOCATION OF WORK

a. The work in connection with the subject project involves the supply and installation of a rooftop solar photovoltaic system on the Midtown Student Center, located on WCSU's Midtown Campus of Western Connecticut State University, Danbury, Connecticut.

b. This contract will include all new items unless otherwise approved.

c. Generally, the scope of work provides for an approximately 60kW DC STC Rated Rooftop Photovoltaic Array System on Western Connecticut State University's Midtown Student Center building. Please refer to Section 01 10 00 Summary of Work for additional description.

d. The referencing project name and no. are as follows:

Project Name: **Rooftop Solar Photovoltaic System Installation – Midtown Student Center**

DCS Project No.: BI-RD-278

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

2. UNIVERSITY REPRESENTATIVE

a. The University Representative/Construction Administrator is Eric J. Lessne, ConnSCU, c/o Facilities Planning & Engineering, Western Connecticut State University, 181 White Street, Danbury, CT 06810, cell no. 860-982-8364

3. EXAMINATION OF SITE

a. It is not the intent of the drawings to show all existing conditions. All bidders are 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. INTENT OF DOCUMENTS

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. USE OF PREMISES. SPECIAL WORKING CONDITIONS

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. SHOP DRAWINGS

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. SAMPLES

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.

11. RECORD DRAWINGS DURING CONSTRUCTION

a. The Contractor is to maintain at the project site two (2) sets of black (or blue) and 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. TEMPORARY TELEPHONES

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. TEMPORARY LIGHT AND POWER

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 **verify** 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 specifications.

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 x 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

Connecticut
Department Of Construction Services

Volume 1 of 1
Specifications

ROOF TOP SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION
WESTERN CONNECTICUT STATE UNIVERSITY
MIDTOWN STUDENT CENTER
DANBURY, CT
Project No.: BI-RD-278A

Prepared By:
ARMM ARCHITECTURE ASSOCIATES, INC.
725 KENILWORTH AVENUE
CHERRY HILL, NJ 08002

Donald J. DeFronzo, Acting Commissioner
CT Department of Construction Services
Division of Design & Construction
Office of Project Management
165 Capitol Avenue,
Hartford, CT 06106

Roof Top Solar Photovoltaic System Installation at Western Connecticut State University
Midtown Student Center
Danbury, CT

Project No.: BI-RD-278A

Prepared By:
ARMM Architecture Associates, Inc.
725 Kenilworth Avenue
Cherry Hill, NJ

Seals & Signatures		Seals & Signatures	
STATE OF CONNECTICUT FRANK J MOORE NO. 10269 LICENSED ARCHITECT	FRANK J. MOORE, R.A., AIA		FRANK J. MOORE *(Print Consultant Name)*
	ARMM ARCHITECTURE ASSOCIATES, INC., FRANK J. MOORE, PRESIDENT / CEO		*(Print Consultant Name)*
	(Print Consultant Name)		*(Print Consultant Name)*
	(Print Consultant Name)		*(Print Consultant Name)*
	(Print Consultant Name)		*(Print Consultant Name)*

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01 10 00 SUMMARY

A. **Summary:** Section 01 10 00 Summary contains the following subsections:

01 11 00	**Summary of Work**
01 11 13	**Work Covered by Contract Documents**
01 12 16	**Work Sequence Phase - NOT USED**
01 12 19	**Contract Interface**
01 14 00	**Work Restrictions**
01 14 16	**Coordination with Occupants**
01 14 23	**Subcontractor Evaluations**

01 11 00 SUMMARY OF WORK

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Project Number:** B1-RD-278

C. **Project Title:** *Roof Top Solar Photovoltaic System Installation*
It is to be completed and ready for use by the Owner and Agency within the Contract Time specified in Division 00, Bid Proposal Form.

D. **Project Location:** The *Western Connecticut State University, Midtown Student Center*, located in *Danbury*, Connecticut.

E. **The Project Description:**

1. The Contractor shall provide an approximately 60kW DC STC Rated Roof-Top Photovoltaic Array System on the Western Connecticut State University's Midtown Student Center building. Said Array shall be configured for (Solar Electric) Grid-Interactive Tie-In with Northeast Utilities, Connecticut Light and Power (CL&P) at 208 Volt, 3 Phase, 60 Hertz.

2. The Basis of Design is a 61.75kW DC STC Rated System comprised of (247) SolarWorld Sunmodule SW 250 Mono modules; GENMOUNTS GENESIS Non-Penetrating Ballasted PV Racking System for flat roofs; SolarBOS Combiner Boxes with integrated DC Disconnect Switches; and an Advanced Energy AE 50TX Central Inverter.

3. The Point of Connection (POC) or Point of Common Coupling (POCC) with CL&P shall be at the supply side of an existing 2500 Ampere Main Circuit Breaker (Service Main Disconnecting Means) in compliance with NEC 690.64 (A). The Contractor shall provide an externally located AC Main Fusible Disconnect Switch for the PV Array / Solar Electric System; 200 Ampere, 3 Pole, NEMA 3R Enclosure; for ready access by CL&P and/or emergency response personnel.

4. Alternate manufacturers shall be acceptable subject to compliance with the American Recovery and Reinvestment Act of 2009, Section 1605 – Buy American.

5. The installed System shall meet all regulations and requirements set forth by CL&P, especially with regard to the Fast Track Interconnection Application (greater than 10kW, less than 2000kW), and availing the small ZREC Project tariff.

6. The Midtown Student Center building is insured by Factory Mutual (FM) Global. Therefore the installed PV Array System shall meet all requirements set forth by FM Global, especially with regard to the Non-Penetrating Ballasted PV Racking component.

7. The Authority having jurisdiction for this Project is the CT Department of Construction Services, Division of Fire and Buildings Services (DF&BS):

a. Office of State Building Inspector (OSBI) for compliance with the State Building Code; and

b. Office of State Fire Marshal (OSFM) for compliance with the CT Fire Safety Code.

01 11 13 WORK COVERED BY CONTRACT DOCUMENTS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. The Work includes but is not limited to the following:

1. *Roof Top Solar Installation.*

C. The Contractor will include in his bid, all items required in order to carry out the intent of the work as described, shown and implied in the Contract Documents.

D. It shall be the Contractor's responsibility upon discovery to immediately notify the Construction Administrator, in writing, of errors, omissions, discrepancies, and instances of noncompliance with applicable codes and regulations within the documents, and of any work which will not fit or properly function if installed as indicated on the Contract Documents. Any additional costs arising from the Contractor's failure to provide such notification shall be borne by the Contractor.

D. The Work will be constructed under a single lump.

E. **Examination Of Site:**

1. It is not the intent of the Documents to show all existing conditions. All contractors are advised to visit and examine the site with the Construction Administrator prior to submitting bids.

2. Contractors should investigate and satisfy themselves as to the conditions affecting the work, including but no restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, uncertainties of weather, roads or similar physical conditions of the ground, the character of equipment, and facilities needed preliminary to and during the prosecution of the Work. The Contractor should further satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Contract Documents. Any failure by the Contractor to acquaint himself with the available information shall not relieve him from the responsibility for estimating properly the difficulty and cost of successfully performing the Work.

3. Review Of Geo-Technical Reports and Boring Logs are contained in the Project Manual, the Boring Location Plans are in the Contract Documents.

4. **Pre-Bid Conference:**

4.1 A Pre-Bid Conference and tour of the site will be conducted as scheduled in the Invitation to Bid. This scheduled conference is the only official opportunity for the bidders to tour the site with the Owner, Architect, Engineer, Construction Administrator, and Agency.

F. **Project Documents:**

1. The Specifications and Drawings are intended to describe and illustrate the materials and labor necessary for the work of this Project.

2. Throughout the Technical Specifications, the Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction Form 814A, current addition including any interim and supplemental specifications are referenced. Where so referenced the requirements set forth therein are applicable and made a part hereof Copies of Form 814A are available from the Connecticut Department of Transportation at a nominal charge.

G. The General Contractor will be given *three (3)* sets of the Contract Documents on or about the time of execution of Contract, free of charge. If additional copies are wanted, they will be available at the direct additional cost of their reproduction, to the contractor.

H. The Contractor shall receive *one (1)* set of AutoCAD compatible (latest version) Floor Plans on disks at no cost on or about the time of execution of the Contract from the Architect. Additional sets of AutoCAD compatible (latest version) Floor Plans on disks from the Architect at the cost of their reproduction, to the contractor.

01 12 19 CONTRACT INTERFACE

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Owner:** The Owner is the Department of Construction Services, State of Connecticut.

1. The authorized representative for the Owner is **Eric Lessne, Project Manager**. The Project Manager is located at 181 White Street, Danbury, CT 06810. **Phone: 860-982-8364 (cell)**; E-mail: lessne@ct.edu.

2. The Project Manager is the authorized representative for the Department of Construction Services Commissioner to act in matters involving revoking, altering, enlarging or relaxing any requirement of the contract documents.

C. **Agency:** The Agency is **Western Connecticut State University**.

1. The Agency Representative is **Peter J. Visentin, AIA**. The Agency Representative's title is **Director, Facilities Planning and Engineering**. The Agency Representative is located at **Western Connecticut State University, Alumni Hall, 181 White Street, Danbury**. Connecticut, **06810**. Phone: **203-837-8680**; Fax: **203-837-8723**; E-mail: **visentinp@wcsu.edu**.

2. The Agency Representative has the administrative authority for the facility and or site where the work is being performed but does not have the authority to change the contract documents or direct the contractor.

D. **Architect And Engineer:** The Architectural Firm is **ARMM Architecture Associates, Inc.**, and is located at **725 Kenilworth Avenue**, **Cherry Hill, NJ**. The Architect representing the firm for this project is **Frank J. Moore, R.A.**. Phone: **856-665-8484**; Fax: **856-665-5255**; E-mail: **frankjmoore@armmassociates.com**.

1. The Architect and Engineer or their accredited representative is referred to in the Contract Documents as "Architect" or "Architects" or "Engineer" or "Engineers" or by pronouns which imply them. As information for the Contractor, the Architect's or Engineer's status is defined as follows:

1.1 The Architect and Engineer will not make interpretations or decisions directly to the Contractor. All interpretations or decisions will be conveyed through the Construction Administrator.

1.2 As the authorized representative of the Department of Construction Services Commissioner, the Architect and Engineer is responsible for review of shop drawings, materials, and equipment intended for the work, in accordance with the "General Conditions", and the "Supplementary Conditions".

1.3 Wherever the Architect or Engineer is mentioned in the documents in connection with an administrative function, it shall include the Construction Administrator in that function except for shop drawings.

E. **Construction Administrator:** The Construction Administrator is **Eric Lessne**, and is located at **61 Woodland Street, Hartford**, Connecticut, **06105**. Phone: **860-982-8364**; Fax: **860-493-0059**; E-mail: **lessnee@ct.edu**.

1. The Construction Administrator is referred to in the Contract Documents as "Construction Administrator" or "Construction Manager" or by pronouns which imply it. All communications concerning the project will be directed through the Construction Administrator or a designated representative(s).

2. As information to the Contractor, the Construction Administrator's status is defined as follows:

2.1 The Construction Administrator is the Owner's Agent who will, among other thing's, monitor the General Contractor's performance, scheduling and construction, process shop drawings, material, and equipment submittals, review and process periodic billings, review and recommend cost changes.

2.2 The Construction Administrator will process all requests for information, interpretations and decisions regarding the meaning and intent of the Contract Documents, consulting with appropriate parties prior to rendering the interpretations or decisions to the Contractor. All such requests and replies shall be in writing.

01 14 00 WORK RESTRICTIONS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

A. The Contractor shall confine his operations, including storage of apparatus, equipment and materials to the contract limit lines as directed by the Construction Administrator.

B. The areas and/or spaces, including their access, shall be maintained free and clear throughout the contract term.

C. Parking for Contractor's employees will be limited to an area (or areas) designated by the Construction Administrator. The Contractor may be required to provide identification stickers for employees' cars.

01 14 16 COORDINATION WITH OCCUPANTS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Full Agency Occupancy During Construction:** The Agency will occupy the site and existing building during the entire construction period. Cooperate with the Agency during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Agency's operations.

1. Provide adequate building and fire code egress from the buildings during the renovation process. The Contractor will be responsible to maintain and protect egress ways during the construction sequence per the design as supplied by the Architect. Contractor shall be responsible for preparing egress plans for Owner approval and for Office of State Building Official and Office of State Fire Marshal for approval if required.

C. **Partial Agency Occupancy:** The Agency reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Should it become necessary or advisable, as the work nears final completion, for the Agency to occupy a portion of the building prior to final acceptance, the Contractor shall cooperate in completing such areas and making same accessible.

2. The Construction Administrator will determine whether such occupancy or use is possible and, if so, will make arrangements for holding a job inspection with the Project Manager, Agency Representative, Architect and General Contractor.

3. A comprehensive list of items to be completed or corrected as issued by the General Contractor, together with the status of completion and terms of occupancy, will be forwarded to the Project Manager and the Architect by the Construction Administrator. A letter will be issued by the Project Manager and Architect to Construction Administrator granting such occupancy and will state the terms and conditions of occupancy.

4. Prior to partial Agency occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed.

Upon occupancy, the Agency will operate and maintain mechanical and electrical systems serving occupied portions of the building.

5. The Architect will prepare a "Certificate of Substantial Completion" for each specific portion of the Work to be occupied prior to Agency occupancy. Use the "Certificate of Substantial Completion" form as required by the Owner.

6. The Project Manager will request a signed "Certificate of Compliance" from Commissioner of the Department of Construction Services, Architect, and Contractor, if required.

6. The Project Manager will request a signed "Certificate of Compliance" from the , Architect, and Contractor, and forward the Certificate to the Office of State Building Inspector for a Certificate of Occupancy and obtain the same after his review and approval.

7. A letter from the Project Manager to the Agency Representative with copy to the General Contractor granting 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 fire insurance coverage for that portion of the project.

8. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.

9. **Work after Partial Agency Occupancy:**

   9.1 For all work to complete the area occupied, warranty work, the balancing and commissioning of systems, repair of latent defects and adjustments after partial occupancy, the contractor is responsible for all costs associated with working in occupied buildings.

C. **Agency Occupancy:**

1. The Construction Administrator will determine whether such occupancy is possible and, if so, will make arrangements for holding a job inspection with the Project Manager, Agency Representative, Architect and General Contractor.

2. A comprehensive list of items to be completed or corrected as issued by the General Contractor, together with the status of completion and terms of occupancy, will be forwarded to the Project Manager and the Architect by the Construction Administrator. A letter will be issued by the Project Manager and Architect to Construction Administrator granting such occupancy and will state the terms and conditions of occupancy.

3. Prior to Agency occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Agency will operate and maintain mechanical and electrical systems serving occupied portions of the building.

4. The Architect will prepare a "Certificate of Substantial Completion" for the Work to be occupied prior to Agency occupancy. Use the "Certificate of Substantial Completion" form as required by the Owner.

5. The Project Manager will request a signed "Certificate of Compliance" from Commissioner of the Department of Construction Services, Architect, and Contractor, if required.

5. The Project Manager will request a signed "Certificate of Compliance" from the Architect, and Contractor, and forward the Certificate to the State Building Inspector a Certificate of Occupancy and obtain the same after his review and approval.

6. A letter from the Project Manager to the Agency Representative with copy to the General Contractor granting 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 fire insurance coverage for the project.

7. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.

8. **Work after Agency Occupancy:**

   8.1 For all work to complete the occupied building, warranty work, the balancing and commissioning of systems, repair of latent defects and adjustments after occupancy, the contractor is responsible for all costs associated with working in occupied buildings.

01 14 23 SUBCONTRACTOR EVALUATIONS:

A. Pursuant to C.G.S. Sec. 4a-101, the General Contractor shall compile evaluation information during the performance of the contract on each of its subcontractors who are performing work with a value in excess of five hundred thousand dollars ($500,000.00). The General Contractor shall complete and submit to the State of Connecticut Department of Construction Services (CT DCS) evaluations of each such subcontractor upon fifty percent (50%) completion of the project and upon Substantial Completion of the project. The General Contractor acknowledges that its failure to complete and submit these evaluations in a timely manner may, by statute, result in a delay in project funding and, consequently, payment to the General Contractor. The General Contractor agrees to indemnify and hold the State harmless from any loss, damage, or expense that results from or is caused by the General Contractor's failure to complete and submit the evaluations to CT CDS in accordance with this provision.

End
Section 01 10 00
Summary of Work

01 20 00 CONTRACT CONSIDERATIONS

A. **Summary:** Section 01 20 00 Contract Considerations contains the following subsections:

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01 22 00	**Unit Prices - General**
01 22 13	**Unit Price Schedules - Earth and Rock Excavation - NOT USED**
01 22 16	**Unit Price Schedule - Miscellaneous - NOT USED**
01 22 19	**Unit Price Schedule - Alternations - NOT USED**
01 23 00	**Supplemental Bids - NOT USED**
01 25 00	**Substitution Procedures**
01 26 00	**Contract Modification Procedures**
01 29 76	**Progress Payment Procedures**

01 22 00 UNIT PRICES - GENERAL

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Definition - Unit Price:** Amount the General Contractor acknowledges in the Bid Proposal Form as a price per unit of measurement for materials or services as described in the Bidding Documents or in the Contract Documents.

C. **Procedures:**

1. Unit Prices included in the Contract Documents are to be used for determining compensation to the Contractor or Owner for changes to the scope of the work indicated in the Contract Documents, and included in the Lump Sum Contract Price. Special Unit Prices are for items complete, in place, and shall be inclusive of furnishing and installing of all material, labor, trucking, overhead, profit, equipment, hoisting, engineering, scaffolding, power hookups, protection, shop drawings, taxes, permits, appliances, delivery, insurance, supervision, cost of bond, etc. and shall remain in effect until completion of the Contract.

2. **Unit Price:** Is identified by the Owner as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if the estimated quantities of Work required by the Contract Documents are increased or decreased.

3. **Increases or Decreases:** Should the amount of the Work required be increased or decreased because of changes in the work ordered in writing by the Project Manager, the Undersigned agrees that the following supplemental UNIT PRICES will be decreased 10% for a reduction of work. Each Unit Price shall include all equipment, tools, labor, permits, fees, etc., incidental to the completion of the work involved. All items marked with an asterisk (*) in the unit price schedules shall include the completion of the excavation, formation and compaction of sub-grade and the disposal of surplus or unsuitable materials in accordance with the Plans and Specifications or as directed by the Construction Administrator.

D. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.

E. **Defect Assessment:** Replace the Work, or portions of the Work, not conforming to the specified requirements. If, in the opinion of the Architect/Engineer it is not practical to remove and replace the work the Architect/Engineer will direct an appropriate remedy or adjust the payment.

F. **Unit Price Schedule:** A "Unit Price Schedule" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials described under each unit price.

01 25 00 SUBSTITUTION PROCEDURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary**

1. This Section includes administrative and procedural requirements for handling requests for equals and substitutions made after award of the Contract.

2. Related Sections: The following Sections contain requirements that relate to this Section:

   2.1 Division 01 Section 01 33 00 "Submittal Procedures" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.

   2.2 Division 01 Section 01 42 19 "Reference Standards" specifies the applicability of industry standards to products specified.

   2.3 Division 01 Section 01 60 00 "Product Requirements" specifies requirements governing the Contractor's selection of products and product options.

C. **Definitions**

1. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.

2. **Equals or Substitutions General:** Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract.

D. **Submittals**

1. **Equals and Substitution Request Submittals:** The Owner will consider requests for equals or substitutions if made prior to the Receipt of the Competitive Bid. The information on all materials shall be consistent with the information herein. After the contract award, substitutions will be considered for materials or systems specified that are no longer available. It will not be considered if the product was not purchased in a reasonable time after award. The Contractor shall submit all equal and substitutions requests on the ***"Equal or Substitute Product Request"*** Form, an example is shown at the end of this Section and the Form is available from the Construction Representative (CA). See Article 15 in the General Conditions for further refinement and information.

   1.1 The Contractor is required to prepare and submit three (3) copies of the required data for the first manufacturer listed or procedure listed in the specifications section with reference to all of the following areas: the substance and function considering quality, workmanship, economy of operation, durability and suitability for purposes intended including the size, rating and cost. All submissions must include all the required data for the first listed manufacturer or procedure as specified, as well as the required data for the proposed Equal or Substitution. This will enable the Owner and Architect to determine that the proposed Equal or Substitution is or is not substantially equal to the first listed manufacturer or procedure.

2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.

3. Provide complete documentation showing compliance with the requirements for equals or substitutions, and the following information, as appropriate:

   3.1 Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate the proposed Equal or Substitution.

3.2 A detailed comparison chart of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.

3.3 Product Data, including Shop Drawings and descriptions of products and fabrication and installation procedures.

3.4 Samples, where applicable or requested.

3.5 A statement indicating the effect on the Contractor's Construction Schedule compared to the schedule without approval of the Equal or Substitution. Indicate the effect on overall Contract Time.

3.6 Cost information, broken down, including a proposal of the net change, if any in the Contract Sum.

3.7 The Contractor's certification that the proposed Equal or Substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.

2.8 The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the Equal or Substitution to perform adequately.

4. **Architect's Action:** If necessary, the Architect will request additional information or documentation for evaluation within **seven (7)** Calendar Days of receipt of the original request for equal or substitution request. The Architect will notify the Construction Administrator who will notify the Owner of recommended acceptance or rejection of the proposed equal or substitution, within **fourteen (14)** Calendar Days of receipt of the request, or **seven (7)** Calendar Days of receipt of additional information or documentation, whichever is later. The Construction Administrator will give final acceptance or rejection by the Owner not less than **seven (7)** Calendar Days after notification.

1.1 Any request deemed an "Equal" and accepted by the Construction Administrator, Architect, Owner, and Agency will result in written notification to the Contractor and will not be in the form of a change order for an "Equal".

1.2 Any request deemed a "Substitution" and rejected or approved by Construction Administrator, Architect, and Owner may result in written notification to the Contractor and may be in the form of a Change Order if the "Substitution" is approved.

D. **Equal Or Substitutions**

1. **Conditions:** The Architect will consider the Contractor's request for Equal or Substitution of a product or method of construction when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests to the Construction Administrator without action except to record noncompliance with these requirements.

1.1 The proposed request does not require extensive revisions to the Contract Documents.

1.2 The proposed request is in accordance with the general intent of the Contract Documents.

1.3 The proposed request is timely, fully documented, and/or properly submitted.

1.4 The proposed request can be provided within the Contract Time. However, the Architect will not consider the proposed request if it is a result of the Contractor's failure to pursue the Work promptly or coordinate activities properly.

1.5 The proposed request will offer the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. However, if the proposed request requires the Owner to incur additional responsibilities, including but not limited to, additional compensation to the Architect for redesign and

evaluation services, increased cost of other construction by the Owner or similar considerations, then the Owner will have just cause to reject the request for Equal or Substitution.

1.6 The proposed request can receive the necessary approvals, in a timely manner, required by governing authorities having jurisdiction.

1.7 The proposed request can be provided in a manner that is compatible with the Work as certified by the Contractor.

1.8 The proposed request can be coordinated with the Work as certified by the Contractor.

1.9 The proposed request can uphold the warranties required by the Contract Documents as certified by the Contractor.

2. The Contractor's submission and the Architect's review of Submittals, including but not limited to, Samples, Manufacturer's Data, Shop Drawings, or other such items, which are not clearly identified as a request for an Equal or Substitution, will not be considered or accepted as a valid request for an Equal or Substitution, nor does it constitute an approval.

3. **Equal or Substitution Produce Request Form** (Example):

Connecticut
Department of Construction Services

7001
Equal or Substitute Product Request

Page 1 of 1

Request Phase Pre-Bid ☐ Post Bid ☐ *(See Article 15 Materials: Standards, General Conditions)*

(If Pre-bid only) Current Bid Due Date: _____ **Request No.:** _____ **Dated:** _____

To: State of Connecticut **CTDCS Project No.:** _____
Department of Construction Services **Project Name / Location:**

References: Specification(s): Section(s): _____ Paragraph(s): _____
Drawing(s): Drawing(s) No(s): _____ Detail(s) No(s): _____

Contractually Specified Product: _____
Contractor Proposed Product: _____

Proposed Product is : Equal: ☐ Substitute: ☐ Model No.: _____

*See attached data for **both** specified and proposed products as required by Article 15 General Conditions.*

Data attached: Drawings: ☐ Product Data: ☐ Reports: ☐ Samples ☐
Tests: ☐ Other: _____

Reason(s) for not providing the Specified Product:

Similar Installation:
Project: Architect:
Address: Owner:
Date Installed:

Will proposed substitution impact other parts of the Work? No ☐ Yes ☐ *If yes attach explanation.*
Will proposed substitution increase Contract Time? No ☐ Yes ☐ *by number of Days* _____

Actual Dollar Savings to the State of Connecticut if substitution is accepted: $ _____

The Undersigned Certifies that the proposed Request for an Equal or Substitute Product conforms to all of the requirements of Division 01 General Requirements, Section 01 25 00 Substitution Procedures .

Request Submitted By General Contractor / CMR: _____
(Firm's Typed Name)

By: _____ _____ _____ _____
(Typed Name) *(Title)* *(Signature)* *(Date)*

CONTRACTOR / CMR Send copies to DCS PM: ☐ CA /OR: ☐

Consultant's Review – This Substitution Request is: Request Received on (Date): _____

☐ **Approved:** *(Submittals in accordance with Div. 01 General Requirements, Section 01 33 00 Submittal Procedures.)*
☐ **Approved as Noted:** *(Submittals in accordance with Div. 01 General Requirements, Section 01 33 00 Submittal Procedures.)*
☐ **Rejected:** **Use Specified Materials.**
☐ **Rejected:** **Request Not Received Within Specified Time Period - Use Specified Materials.**

Reviewed Issued By: _____ _____ _____
(Typed Name) *(Signature)* *(Date)*

CONSULTANT Send copies to: DCS PM: ☐ CA /OR: ☐ Chief Architect ☐ Chief Engineer ☐

If Approved: As noted by Consultant,
DCS Director of Project Management: _____ _____
(Signature) *(Date)*

Copies: Project File Red R2

CT DCS – 7001 (Rev: 02.12.12) **7000 – Construction Phase Forms**

01 26 00 CONTRACT MODIFICATION PROCEDURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary**

1. This Section specifies administrative and procedural requirements for handling and processing contract modifications.

C. **Related Sections:** The following Sections contain requirements that relate to this Section:

1. Division 01 Section 01 25 00 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after award of the Contract.
2. Division 01 Section 01 29 76 "Progress Payment Procedures" for administrative procedures governing Applications for Payment.
3. Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.
4. Division 01 Section 01 33 00 "Submittal Procedures" for requirements for submittal of the Construction Progress Schedule.
5. Division 00 General Requirements "Article 13" "Change Orders".

D. **Requests For Information**

1. In the event that the Contractor or subcontractor, at any tier, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation by the Architect, the Contractor shall submit a "Request for Information" in writing to the Architect via the Construction Administrator. "Requests for Information" may only be submitted by the Contractor and shall only be submitted on the "Request for Information" forms as required by the Owner.

1.1 In the "Request for Information", the Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Architect.

1.1 In the "Request for Information", the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

1.2 The Owner acknowledges that this is a complex project. Based upon the owner's past experience with projects of similar complexity, the Owner anticipates that there will probably be some "Requests for Information" on this project.

1.3 The Architect will review all "Requests for Information" to determine whether they are valid "Requests for Information". If it is determined that the document is not a valid "Request for Information", it will be returned to the Contractor, unreviewed as to content, for resubmittal on the proper form and in the proper manner.

1.4 A "Requests for Information Response" shall be issued within **seven (7)** Calendar Days of receipt of the request from the Contractor unless the Owner determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner, the Owner will, within **seven (7)** Calendar Days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a "Request for Information" on an activity with **seven (7)** Calendar Days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request provided that the Architect responds within the **seven (7)** Calendar Days set forth above.

1.5 A "Request for Information Response" from Architect will not change any requirement of the Contract Documents. In the event the Contractor

believes that the "Request for Information Response" will cause a change to the requirements of the Contract Documents, the Contractor shall within **seven (7)** Calendar Days give written notice to the Construction Administrator stating that the Contractor believes the "Request for Information Response" will result in a "Change Order" and the Contractor intends to submit a "Change Order Proposal" request. Failure to give such written notice **seven (7)** Calendar Days shall waive the Contractor's right to seek additional time or cost under the requirement these Requirements.

E. **Minor Changes In The Work**

1. The Architect, through the Construction Administrator, will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on the "Supplemental Instructions" form as required by the Owner.

F. **Proposal Request**

1. **Architect/Owner-Initiated Requests For Proposals:** The Architect or Owner will issue a detailed description of proposed changes in the Work via the Construction Administrator that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications. Such requests shall be on a "Proposal Request" form as required by the Owner.

   1.1 "Proposal Request" is issued for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.

      1.1.1 Within **fourteen (14)** Calendar Days of receipt of a "Proposal Request", submit a "Change Order Proposal" with the required information necessary to execute the change to the Construction Administrator for the Architect's/Owner's review.

      1.1.2 Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.

      1.1.3 Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.

      1.1.4 Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

      1.1.5 The Agency is tax exempt. All Contractor and Subcontractor services provided under your Contract with the State of Connecticut may not be exempt from taxes. The Department of Revenue Services can guide you as to which services are exempt and which are not. Please contact the State of Connecticut, Department of Revenue Services at 1-800-382-9463 or 860-541-3280.

      1.1.6 Dollar values shown on the Schedule of Values shall not be the governing (or deciding) final amounts for change orders involving either additional charges or deletions.

F. **Change Order Proposal:**

1. When either a "Request for Information" from the Contractor or a "Proposal Request" from the Architect or Owner results in conditions that may require modifications to the Contract, the Contractor may propose changes by submitting a request for a "Change Order Proposal" to the Architect via the Construction Administrator on forms as required by the Owner. These forms shall also include "Change Order Proposal Worksheets" as required by the Owner.

   1.1 Include statements outlining the reasons for the change and the effect of the change on the Work. Provide a complete description

of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.

1.2 Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities as directed by Article 13 of the General Conditions of the Contract for Construction.

1.3 Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.

1.4 Comply with requirements in Division 01 Section 01 25 00 "Substitution Procedures" if the proposed change requires an equal or substitution of one product or system for a product or system specified.

1.5 The State of Connecticut construction contract has the following tax exemptions:

1.5.1 Purchasing of materials which will be physically incorporated and become a permanent part of the project.

1.5.2 Tools, supplies and equipment used in fulfilling the construction contract are not exempt.

1.5.3 Services that are resold by the contractor are exempt, i.e. if a General Contractor hires a plumber, carpenter or electrician, a resale certificate may be issued to the subcontractor because these services are considered to be integral and inseparable component parts of the building contract.

2. **"Change Order Request" Forms:** Use "Change Order Proposal" and "Change Order Proposal Worksheets" forms as required by Owner.

3. A "Change Order Proposal" cannot be submitted without either prior submission of a "Request for Information" from the Contractor or as a response to a "Proposal Request" submitted by the Architect or Owner.

4. Any "Change Order Request" submitted without a prior submittal of a "Request for Information" or as a response to a "Proposal Request" will be immediately rejected and returned to the Contractor.

G. **Construction Change Directive:**

1. **"Construction Change Directive":** When the Owner and the Contractor disagree on the terms of a "Change Order Proposal" resulting from either a "Request for Information" or "Proposal Request", then the Architect through the Construction Administrator may issue a "Construction Change Directive" on a "Construction Change Directive" form as authorized by the Owner. The "Construction Change Directive" instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a "Change Order".

1.1 The "Construction Change Directive" contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.

1.2 Contractor must proceed with the Work once a "Construction Change Directive" is issued.

1.3 The change in the Contract Sum and Contract Time resulting from the issuance of a "Construction Change Directive" will be based on "Time & Material" or "Unit Prices".

1.4 Issuance of "Construction Change Directive" does not guarantee payment for the Work described in the "Construction Change Directive".

2. **Documentation:** The Contractor shall maintain detailed records on a time and material basis of work required by the "Construction Change Directive".
   - 2.1 After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
   - 2.2 The final value shall be negotiated based on the supporting data to determine the value of the work.

3. **Change Order Procedures:**
   - 3.1 Upon the Owner's approval of a Contractor's "Change Order Proposal", the Construction Administrator will issue a "Change Order" for signatures of the Architect, Owner and the Contractor on a "Change Order" form as required by the Owner.

01 29 76 PROGRESS PAYMENT PROCEDURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary:**

1. This Section specifies procedures for preparation and submittal of the Contractor's Applications for Payment.

2. **Related Sections:** The following Sections contain requirements that relate to this Section.
   - 2.1 **Division 00 Notice to Bidders:** Article 10.
   - 2.2 **General Conditions:** Articles: 27 "Schedule of Values, Application for Payment"; 28 "Partial Payments"; 31 "Final Payment"; and 32 "Owner's Right to Withhold Payments".
   - 2.3 Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.
   - 2.4 Division 01 Section 01 33 00 "Submittal Procedures".
   - 2.5 Division 01 Section 01 77 00 "Closeout Procedures" for requirements for Final Payment.

C. **Schedule Of Values:**

1. **Coordination:** Coordinate preparation of the "Schedule of Values" with preparation of the Construction Schedule. Use "Schedule of Values" form as required by the Owner.
   - 1.1 Submit the "Schedule of Values" to the Construction Administrator at the earliest possible date but no later than **twenty-one (21)** Calendar Days after Contract Start Date.
   - 1.2 **Sub-schedules:** Where Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

2. **Format and Content:** Use the Project Manual Table of Contents as a guide to establish the format for the "Schedule of Values". Provide at least one line item for each Specification Section on electronic media printout.
   - 2.1 Identification: Project identification on the Schedule of Values shall include, but not be limited to, the following:
     - *2.1.1 Owner;*
     - *2.1.2 Project Number;*
     - *2.1.3 Project Name;*
     - *2.1.4 Project Location;*
     - *2.1.5. Contractor's name and address.*

2.2 Arrange the "Schedule of Values" in tabular format as required by the Owner, containing separate columns including, but not limited to, the following Items:

2.2.1 Item Number;

2.2.2. Description of Work with Related Specification Section or Division Number;

2.2.3. Scheduled Values broken down by description number, type material, units of each material.

.1 Include break down of General Condition requirements, i.e. bonds, insurance premiums, taxes, job mobilization, temporary facilities, field supervision and layout, operation and maintenance manuals, punch list activities, project record documents, demonstration and training, overhead, and profit as separate line items.

2.2.4. Name of subcontractor;

2.2.5 Name of manufacturer or fabricator;

2.2.6 Name of supplier;

2.2.7 Retainage;

2.2.8 Contract sum in sufficient detail.

3. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual Table of Contents. Break principal subcontract amounts down into several line items. In addition, the following items listed below must be included.

4.1 Project Coordination (01 31 13) a lump sum of this cost for payment at the submittal of this product a minimum cost of 1/10th of one percent of the base bid total project cost or $5,000 whichever is greater.

4.3 Photographic Documentation (01 32 33) a monthly cost of $1,000 per month to be paid each month upon receipt of the photographs or forfeit of that month's payment.

4.4 Submittal Schedule (01 33 00) a lump sum payment calculated at 1/20th of 1% of the base bid total project cost upon receipt of the schedule.

4.5 As-Built Updates (01 31 00) a monthly cost, a minimum payment of $1,000 with forfeit of that monthly payment if not done.

4.7 Progress Cleaning (01 74 13) a monthly cost. A minimum payment of $1,000 to $3,000 (based on size & complexity of the project) with forfeit of that monthly payment if not done.

4.8 Start-up and Adjusting (01 75 00) a lump sum cost upon completion. (to be determined by PM with A/E & CA/CM advice).

4.9 Schedule (01 32 16) For the Base Schedule a lump sum payment or 40% of the total schedule budget, with the remainder paid on an even payment over the duration of the project.

5. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.

6. **Unit-Cost Allowances:** Show the line-item value of unit-cost allowances, as a product of the unit cost, multiplied by the measured quantity. Estimate quantities from the best indication in the Contract Documents.

7. **General Conditions:** Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

7.1 Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.

D. **Applications For Payment:**

1. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and Construction Administrator and paid for by the Owner.

   1.1 The initial "Application for Payment", the "Application for Payment" at time of "Substantial Completion", and the final "Application for Payment", involve additional requirements.

2. **Payment-Application Terms:** The Owner will process monthly progress payments. The Contractor may submit applications for payment on a monthly basis.

3. **Payment-Application Forms:** Use the "Application for Payment" form as required by the Owner. Present the required information on electronic media printout or Owner approved form; multiple pages should be used if required.

   3.1 For each item, provide a column including but not limited to the following items:

   3.2 Item Number.

   3.4 Description of Work and Related Specification Section or Division.

   3.5 Scheduled Value, break down by units of material and units of labor.

   3.6 Work Completed from previous application.

   3.7 Work Completed this period.

      3.7.1 Materials presently stored.

      3.7.2 Total Completed and stored to date of application.

      3.7.3 Percentage of Completion.

      3.7.4 Balance to Finish.

      3.7.5 Retainage.

E. **Application Preparation:** Complete every entry on the Application form. At the time of Final Payment only, include an executed Application form by a person authorized to sign legal documents on behalf of the Contractor. The Construction Administrator will return incomplete Applications without action.

1. Entries shall match data on the "Schedule of Values".

2. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.

F. Transmittal: Except for final payment, submit to the Construction Administrator by a method ensuring receipt within *forty-eight (48)* hours. *One (1)* complete, signed and notarized original of each Application for Payment, including lien waivers and similar attachments when required, along with *six (6)* copies. For Final Payment, *nine (9)* complete, signed and notarized copies shall be submitted.

   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.

G. **Applications for Payment:** Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment and all subsequent Application for Payments including, but not limited to, the following items:

1. **Subcontractor Evaluations:**
   Pursuant to C.G.S. Sec. 4a-101, the General Contractor shall compile evaluation information during the performance of the contract on each of its subcontractors who are performing work with a value in excess of five hundred thousand dollars ($500,000.00). The General Contractor shall complete and submit to the State of

Connecticut Department of Construction Services (CT DCS) evaluations of each such subcontractor **upon fifty percent (50%) completion of the project and upon Substantial Completion of the project**. The General Contractor acknowledges that its failure to complete and submit these evaluations in a timely manner may, by statute; result in a delay in project funding and, consequently, payment to the General Contractor. The General Contractor agrees to indemnify and hold the State harmless from any loss, damage, or expense that results from or is caused by the General Contractor's failure to complete and submit the evaluations to CT DCS in accordance with this provision.

2. List of subcontractors and suppliers' name, FEIN/Social Security numbers, and Connecticut Tax Registration Numbers;
3. List of principal suppliers and fabricators;
4. Schedule of Values;
5. Contractor's Construction Schedule (preliminary if not final);
6. Schedule of principal products;
7. Submittal Schedule (preliminary if not final);
8. List of Contractor's staff assignments;
9. List of Contractor's principal consultants;
10. Copies of all applicable permits;
11. Copies of authorizations and licenses from governing authorities for performance of the Work;
12. Proof that subcontractors have been paid amounts included on the Contractor's Application for Payment within thirty (30) days after the Owner has paid the Contractor for the particular Application for Payment in accordance with Connecticut General Statute § 49-41a (a)(1).
13. Releases of Lien from subcontractors with amounts included on the Contractor's Application for Payment when Contractor has been paid by the Owner for the particular Application for Payment but the subcontractors have not been paid.
14. Proof that as-built documents are updated as required by Section 01 77 00 "Closeout Procedures."
15. Initial as-built survey and damage report, if required.
15. Update the "Contractor's Master Subcontract Agreement List" and submit copies all recently executed Subcontract Agreements in accordance with CGS § 4b-96.
    15.1 The "Contractor's Master Subcontract Agreement List" shall list all Subcontract Agreements in order of Contract Sum magnitude (from high to low) in the following format:

Contractor's Master Subcontract Agreement List				
Subcontractor Name	Minority Or Small Business Designation	Trade	Address	Contract Sum

16. In accordance with 42-158j (b):
Each payment requisition submitted shall include a statement showing the status of all pending construction change orders, other pending change directives and approved changes to the original contract or subcontract. Such statement shall identify the pending construction change orders and other pending change directives, and shall include the date such change orders and directives were initiated, the costs associated with their performance and a description of any work completed. As used in this section, "pending construction change order" or "other pending change directive" **means an authorized directive for extra work that has been issued to a contractor or a subcontractor and identified by an official Change Order Number or Construction Change Directive Number assigned by the State of Connecticut**.

H. **Application for Payment at Substantial Completion:** Following issuance of the Certificate of Substantial Completion submit an Application for Payment form; use the form as required by the Owner. Present the required information on electronic media printout as applicable that include, but are not limited, to the following:

1. **Subcontractor Evaluations:**
Pursuant to C.G.S. Sec. 4a-101, the General Contractor shall compile evaluation information during the performance of the contract on each of its subcontractors who are performing work with a value in excess of five hundred thousand dollars ($500,000.00). **The General Contractor shall complete and submit to the State of Connecticut Department of Construction Services (CT DCS) evaluations of each such subcontractor upon fifty percent (50%) completion of the project and upon Substantial Completion of the project.** The General Contractor acknowledges that its failure to complete and submit these evaluations in a timely manner may, by statute; result in a delay in project funding and, consequently, payment to the General Contractor. The General Contractor agrees to indemnify and hold the State harmless from any loss, damage, or expense that results from or is caused by the General Contractor's failure to complete and submit the evaluations to CT DCS in accordance with this provision.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

3. Administrative actions and submittals that shall precede or coincide with this application include, but are not limited to, the following:

   3.1 Occupancy permits and similar approvals;

   3.2 Warranties (guarantees) and maintenance agreements;

   3.3 Maintenance instructions;

   3.4 Final cleaning;

   3.5 Application for reduction of retainage and consent of surety;

   3.6 Final progress photographs;

   3.7 List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

I. **Final Payment Application:** Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include, but are not limited, to the following:

1. Completion of Project Closeout requirements.

2. *Completion of list of items remaining to be completed as indicated on the attachment to the Certificate of Substantial Completion.*

3. *Ensure that unsettled claims will be settled.*

4. *Ensure that incomplete Work is not accepted and will be completed in accordance with a schedule prepared by the Contractor which is acceptable to the Owner.*

5. *Transmittal of required Project construction records to the Owner (including as-built documents specified in Section 01 77 00 "Closeout Procedures").*

6. *Proof that taxes, fees, and similar obligations were paid.*

7. *Removal of temporary facilities and services.*

8. *Removal of surplus materials, rubbish, and similar elements (Reference Section 01 74 19 "Construction Waste Management & Disposal").*

9. *The requirements of the General Conditions and Supplementary Conditions for Final Acceptance, Final Completion, Final Inspection, and Final Payment.*

10. *Completion of "Building Contractor Reporting Form" as supplied by Department of Construction Services, for all Contractors, Subcontractors, Vendors, Suppliers, etc. who work on the Contract. The form includes the following information:*

11.1 *Contractor/Subcontractor name.*

11.2 *FEIN/Social Security Numbers*

11.3 *Connecticut Tax Registration Numbers*

11.4 *Type of work*

11.5 *Name of business and address*

11.6 *Remittance address.*

End
Section 01 20 00
Contract Considerations

01 30 00 ADMINISTRATIVE REQUIREMENTS

A. **Summary:** Section 01 30 00 Administrative Requirements contains the following subsections:

01 31 13	**Project Coordination**
01 31 19	**Project Meetings**
01 32 16	**Construction Progress Schedules**
01 32 33	**Photographic Documentation**
01 33 00	**Submittal Procedures**
01 35 16	**Alteration Project Procedures**
01 35 19	**Confined Space Entry - NOT USED**
01 35 53	**Security Procedures**

01 31 13 PROJECT COORDINATION

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Related Sections:** The following Sections contain requirements that relate to this section.

1. **Section 01 29 76 "Progress Payment Procedures"** submission of Schedule of Values and Applications for payment.

C. **Construction Administrator:**

1. The Construction Administrator is identified in Division 01 **Section 01 12 19 "Contract Interface".**

2. **Construction Mobilization:**

2.1 Cooperate with the Construction Administrator in the allocation of mobilization areas of the site, for field offices and sheds, for agency facility access, traffic, and parking facilities.

2.2 During Construction, coordinate use of site and facilities through the Construction Administrator.

2.3 Comply with Construction Administrators procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

2.4 Comply with instructions of the Construction Administrator for use of temporary utilities and construction facilities.

2.5 Coordinate field engineering layout as specified in Division 01 **Section 01 71 23 "Field Engineering"** for work under the instructions of the Construction Administrator.

C. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

3. Make provisions to accommodate items scheduled for later installation.

D. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Construction Administrator, Owner and separate contractors where coordination of their work is required.

F. **Administrative Procedures:** Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. *Preparation of schedules.*
2. *Installation and removal of temporary facilities.*
3. *Delivery and processing of submittals.*
4. *Progress meetings.*
5. *Project closeout activities.*

G. **General Coordination Provisions:**

1. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed and coordinate such inspections with the Construction Administrator and authorities having jurisdictions. If unsatisfactory conditions exist notify the Construction Administrator immediately. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

2. The Contractor shall coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

2.1 Coordination Drawings:

2.1.1 The HVAC Subcontractor will initiate mylar at 1/4" scale drawings done on AutoCAD showing ducts and piping in plan and section. Sheet metal shop drawings must be approved prior to starting coordination drawings.

2.1.2 The Sprinkler Subcontractor will then superimpose his piping layout on the tracing.

2.1.3 The Electrical subcontractor will superimpose all the electrical information on the tracing. Said information to include but not necessary limited to cable trays, equipment, lighting, conduits, bus duct, etc.

2.1.4 The sprinkler subcontractor will complete the coordination drawing by drawing his piping (include pitch) on the tracing.

1.5 The Construction Administrator will review the completed coordination drawing for general compliance and then submit it to the Architect for his review. All subcontractors shall rework the mylar drawings until all systems are properly coordinated.

1. The Construction Administrator will meet with the Contractor on all major items of coordination.

2. See also **Division 00 General Conditions, Article 7 "Cooperation of Trades".**

01 31 19 PROJECT MEETINGS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Pre-construction Conference:**

1. The Contractor will attend a Pre-construction Conference before starting construction, as scheduled by the Construction Administrator convenient to the Owner, the Construction Administrator, Architect, and Contractor. This meeting will take place within **fourteen (14)** Calendar Days after the written Notice to Proceed and before the Contract Start Date. Hold the conference at the Project Site or another convenient location as directed by the Construction Administrator. The Construction

Administrator shall conduct the Pre-construction Conference to review the Contractor and Subcontractor responsibilities and personnel assignments.

2. **Attendees:** Authorized representatives of the Construction Administrator, Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; agency; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

3. **Agenda:** Discuss items of significance that could affect progress, including the following:

   3.1 Tentative construction schedule;

   3.2 Critical work sequencing;

   3.3 Progress meeting schedule;

   3.4 Designation of responsible personnel;

   3.5 Procedures for processing field decisions and Change Orders;

   3.6 Procedures for processing Applications for Payment;

   3.7 Distribution of Contract Documents;

   3.8 Submittal of Shop Drawings, Product Data, and Samples;

   3.9 Preparation of record documents;

   3.10 Use of the premises;

   3.11 Parking availability;

   3.12 Office, work, and storage areas;

   3.13 Equipment deliveries and priorities;

   3.14 Safety procedures;

   3.15 First aid;

   3.16 Security;

   3.17 Housekeeping;

   3.18 Working hours;

C. **Progress Meetings:**

1. The Construction Administrator will conduct progress meetings, bi-weekly, at the Project Site or at regular intervals as agreed upon at the Pre-construction Conference. The Construction Administrator will notify the Owner, the Architect, and the Contractor of the scheduled Progress Meeting dates. Coordinate dates of Progress Meetings with preparation of Application for Payment requests.

2. **Attendees:** In addition to representatives of the Contractor, Construction Administrator, Owner and the Architect, subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities may be requested to attend these meetings on an as needed basis. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. The Contractor shall include the site superintendent as a minimum.

3. **Agenda:** Progress Meetings shall review and correct or approve minutes of the previous Progress Meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

   3.1 **Construction Schedule:** Review progress since the last Progress Meeting. Determine where each activity is in relation to the required Contractor's "Construction Schedule" and whether each activity is on time or ahead or behind Schedule. Determine how Work that is behind Schedule will be expedited; secure commitments from parties involved to do so. Discuss whether Schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

3.2 Review the present and future needs of each entity present

4. **Reporting:** The Construction Administrator will distribute minutes of the meeting to each party present, promptly and before the next scheduled meeting, and to parties who should have been present.

5. A schedule of regular Project Meetings will be established at the Pre-construction Conference.

01 32 16 CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 Related Documents

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

1.2 Summary

A. This Section includes administrative and procedural requirements for the preparation, submittal, and updating of the Contractor's construction schedules and reporting progress of the Work.

1. Refer to the General Conditions and the Agreement for definitions and specific dates of Contract Time.

B. This Section includes the following:

1. Format.
2. Content.
3. Revisions to schedules.
4. Submittals.
5. Distribution.

C. **Related Sections**: The following Sections contain requirements that relate to this Section:

1. Division 01 Section 01 29 76 "Progress Payment Procedures" specifies requirements for submitting Schedule of Values and Application for Payments.
2. Division 01 Section 01 31 19 "Project Meetings" specifies requirements for submitting and distributing meeting and conference minutes.
3. Division 01 Section 01 33 00 "Submittal Procedures" specifies requirements for submitting the Submittal Schedule.
4. Division 01 Section 01 45 00 "Quality Control" specifies requirements for submitting inspection and test reports.
5. Division 01 Section 01 60 00 "Product Requirements" specifies requirements for submitting the list of products.

1.3 Definitions

A. **Construction Schedule:** A method of planning and scheduling a construction project utilizing 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.

1.4 Quality Assurance

A. **The Contractor's Consultant:** Retain a consultant to provide planning, evaluating, and reporting by CPM scheduling.

1. **In-House Option:** The Owner may waive the requirement to retain a consultant if the Contractor can demonstrate that:

   a. The Contractor has the computer equipment required to produce construction schedules.

   b. The Contractor employs skilled personnel with experience in construction scheduling and reporting techniques.

2. **Program:** Use Microsoft Project latest version.

3. **Standards:** Comply with procedures contained in AGC's "Construction Planning & Scheduling."

1.5 **Preliminary Schedule**

A. Preliminary Gantt schedule is to be prepared by the General Contractor and submitted to the Construction Administrator within **seven (7)** days of award of contract. This schedule is to cover all items of Work from the start of the project up to the completion of the project. This schedule must be revised when the actual schedule of significant items varies more than one week from the proposed schedule.

1.6 **Construction Schedule Format**

1. **Format:** Utilize a horizontal bar chart (Gantt) with a separate bar for each major portion of the Work or operation, identifying first work day of each week.

2. **Program:** Use Microsoft Project, latest version.

3. **Sequence of Listings:** Utilize the Table of Contents of this Project Manual and the chronological order **of the start of each item of work.**

4. **Scale and Spacing:** Provide space for notations and revisions.

5. **Sheet Size:** To be coordinated with Construction Administrator.

6. **Weather Days Allowance:** The Contractor shall include as a separate identifiable activity on the Critical Path of the Construction Schedule, and activity labeled "Weather Days Allowance." Insert this activity immediately prior to the substantial completion milestone.

   6.1 The Contractor shall be fully responsible for determining the number of weather delay days to be included in the Construction Schedule. This determination shall be based on the normal anticipated weather for the project location and the nature of the project work. The Construction Schedule shall be based on the contractor's determined weather delay allowance. The weather delay activity shall be included in the construction schedule immediately prior to the Substantial Completion milestone.

   6.2 The minimal allowed duration of the Weather Days Allowance shall be calculated as follows (decimals rounded to nearest whole number):

$$\frac{\text{Contract Time } \textit{(Calendar Days)}}{365} \text{ multiplied by } 7 \text{ equals } \text{Weather Days Allowance } \textit{(Calendar Days)}$$

   6.3 The Contractor shall insert an activity in the Critical Path of the Construction Schedule to reflect weather day occurrences when weather days are experienced and accepted by the Owner. Identify this activity as a weather delay.

   6.4 The Contractor shall reduce duration of Weather Days Allowance activity as weather delays are experienced and inserted into the schedule. Remaining weather days in Weather Day Allowance at completion of project is considered float. Weather delay, when justified, are considered allowable, non compensable.

1.7 **Content**

1. Show complete sequence of construction by activity, with dates beginning and completion of each element of construction.
2. Identify each item by specification section numbers.
3. Identify work of separate phases and other logically grouped activities.
4. Show accumulated percentages of completion of each item, and total percentage of Work completed, as of the first day of each month.
5. Provide separate schedule of submittal dates for shop drawings, product data, and samples, Owner/Agency furnished products and any products identified as under Allowances, and dates reviewed submittals will be required from Architect/Engineer. Indicate decision dates for selection of finishes.
6. Indicate delivery dates for Owner/Agency furnished products and any products identified as under Allowances.
7. Indicate critical path with original baseline indicated.
8. Coordinate content with Schedule of Values specified in Section 01 29 76 "Progress Payment Procedures."

1.8 **Submittals and Revisions To Schedules**

A. An initial bar graph schedule is to be prepared by the General Contractor and submitted to the Construction Administrator. Refer to Article 1.5.

B. Indicate progress of each activity to date of submittal, and projected completion date of each activity.

C. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

D. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

E. Schedules must be revised monthly and when the actual schedule of significant items varies more than seven (7) days from the proposed schedule.

F. Submit revised Construction Schedules for each Application for Payment.

G. Submit four (4) copies of the Construction Schedule to the Construction Administrator.

1.9 **Distribution**

A. Distribute copies of the Construction Schedules to Construction Administrator, Architect, Owner, Subcontractors, suppliers, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problem anticipated by projections indicated in schedules.

Part 2 - Products (Not Applicable)

Part 3 - Execution (Not Applicable)

01 32 33 PHOTOGRAPHIC DOCUMENTATION

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Related Sections:** The following Sections contain requirements that relate to this section

1. **Section 01 29 76 "Progress Payment Procedures"** submission of Schedule of Values and Applications for payment.

C. On the date the work is begun and every **thirty (30)** days thereafter (typically at the end of the month- until the work is at least 95 percent complete), the Contractor shall have photographs of the construction taken by a professional photographer or an individual approved by the Owner.

D. Photographs: Provide a digital camera to take *twenty-four (24)* or more photos each time. Deliver 1 sets of photo files on CD-ROM and one set of prints to the Construction Administrator for the department. Label each CD-ROM with project name and the date the photographs were taken. With each submittal provide an index sheet of digital photos and where the photos were taken.

E. As photographs are a record of the work progress, they shall be taken each month, whether or not they show work done during the preceding month. Deliver digital photos to the Construction Administrator within *ten (10)* Calendar Days of their taking.

01 33 00 SUBMITTAL PROCEDURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary**

1. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:

   1.1 Submittal schedule.

   1.2 Shop Drawings.

   1.3 Product Data.

   1.4 Samples.

   1.5 Quality assurance submittals.

   1.6 Proposed "Substitutions/Equals".

   1.7 Warrantee samples.

   1.8 Coordination Drawings.

   1.9 O & M Manuals

C. **Administrative Submittals:** Refer to other Division 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. *Permits.*
2. *Applications for Payment.*
3. *Performance and payment bonds.*
4. *Contractor's construction schedule.*
5. *Daily construction reports.*
6. *Construction Photographs.*
7. *Insurance certificates.*
8. *List of subcontractors.*
9. *Subcontractors/Suppliers FEIN #'s and Connecticut tax registration #.*

D. **Related Sections:** The following Sections contain requirements that relate to this Section:

1. Division 01 Section 01 25 00 "Substitution Procedures" specifies requirements for submittal of requests for equals and substitutions.
2. Division 01 Section 01 29 76 "Progress Payment Procedures" specifies requirements for submittal of the Schedule of Values.
3. Division 01 Section "Project Coordination" 01 31 13 for Project Coordination documents.

4. Division 01 Section 01 31 19 "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.

5. Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.

6. Division 01 Section 01 32 33 "Photographic Documentation" specifies requirements for submittal of periodic construction photographs.

7. Division 01 Section 01 45 00 "Quality Control" specifies requirements for submittal of inspection and test reports and mockups.

8. Division 01 Section 01 77 00 "Closeout Procedures" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

9. Division 01 Section 01 78 30 "Warranties and Bonds".

E. **Definitions**

1. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended and as identified in the Specification Divisions 02 through 49.

   1.1 Preparation of Coordination Drawings is specified in Division 01 Section 01 31 13 "Project Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.

2. Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work will be judged.

3. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

F. **Submittal Procedures**

1. **Coordination:** Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

   1.1 Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

   1.2 Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

      1.2.1 The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

      1.2.2 The Architect reserves the right to reject incomplete submitted packages.

   1.3 **Processing:** To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for re-submittals.

      1.3.1 Allow **fourteen (14)** calendar days for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.

      1.3.2 If an intermediate submittal is necessary, process the same as the initial submittal.

   1.4 Allow **fourteen (14)** calendar days for reprocessing each submittal.

   1.5 No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

2. **Submittal Preparation:** Place a permanent label, title block or *8-1/2 inches x 11 inches* cover page approved by the Architect, on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

   2.1 The minimum number of copies required for each submittal shall be *seven (7)* or as determined otherwise at the pre-construction conference or by the Construction Administrator.

   2.2 Provide a space approximately *4 inches by 5 inches* on the label, beside the title block or on the cover page on Shop Drawings to record the Contractor's review and approval markings and the action taken.

   2.3 Include the following information on the label for processing and recording action taken.

   2.3.1 Project Name and State of Connecticut Project Number.

   2.3.2 Date.

   2.3.3 Name and address of the Architect, Construction Administrator, and Owner Representative.

   2.3.4 Name and address of the Contractor.

   2.3.5 Name and address of the subcontractor.

   2.3.6 Name and address of the supplier.

   2.3.7 Name of the manufacturer.

   2.3.8 Number and title of appropriate Specification Section.

   2.3.9 Drawing number and detail references, as appropriate.

   3.10 Indicate either initial or resubmittal.

   3.11 Indicate deviations from Contract Documents.

   3.12 Indicate if "equal" or "substitution".

3. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. Copy the Construction Administrator on the transmittal. The Architect will return all submittals to the Contractor after action is taken with a complete copy of the submittal package and one complete copy of the submittal package. The Architect will not accept submittals received from sources other than the Contractor.

   3.1 On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

G. **Submittal Schedule:**

1. After development and review by the Owner and Architect acceptance of the Contractor's Construction or CPM schedule prepare a complete schedule of submittals. Submit the schedule to the Construction Administrator within **thirty (30)** Calendar Days of Contract Award.

   1.1 Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction or CPM Schedule.

   1.2 Prepare the schedule in chronological order. Provide the following information:

   1.2.1 Schedule date for the initial submittal.

   1.2.2 Related section number.

   1.2.3 Submittal category (Shop Drawings, Product Data, or Samples).

   1.2.4 Name of Subcontractor.

1.2.5 Description of the part of Work covered.

1.2.6 Scheduled date for resubmittal.

1.2.7 Scheduled date for the Architect's final release of approval.

2. **Submittal Schedule:** Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.

2.1 Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

2.2 Initial Submittal: Submit concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

2.3 Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

2.3.1 Submit revised submittal schedule to reflect changes in current status and timing for submittals.

3. **Coordination:** Coordinate preparation and processing of submittals with performance of construction activities.

3.1 Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

3.2 Submit all submittal items required for each specification section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

3.3 Submit action submittals and informational submittals required by the same specification section as separate packages under separate transmittals.

3.4 Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

3.4.1 Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

3.5 **Processing Time:** Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

3.5.1 **Initial Review:** Allow **fourteen (14)** Calendar Cays for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination with related submittals not yet received. Additional time will be required if processing must be delayed to permit review of related subsequent submittals.

3.5.2 **Intermediate Review:** If intermediate submittal is necessary, process it in same manner as initial submittal.

3.5.3 **Resubmittal Review:** Allow **fourteen (14)** Calendar Days for review of each resubmittal.

3.5.4 **Mass Submittals:** *Six (6)* or more submittals in *one (1)* Calendar Day or *twenty (20)* or more submittals in *seven (7)* Calendar Days. If "Mass Submittals" are received, Architect's review time stated above may be extended as necessary to perform proper

review. Architect will review "Mass Submittals based upon priority determined by Architect after consultation with Owner and Contractor.

3.6 **Distribution:** Following response to the initial submittal, print and distribute copies to the Construction Administrator, Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

3.6.1 When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

3.7 **Schedule Updating:** Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

H. **Daily Construction Reports**

1. Prepare a daily construction report recording the following information concerning events at the site, and submit duplicate copies to the Construction Administrator at weekly intervals:

1.1 List of subcontractors at the site.

1.2 Approximate count of personnel at the site.

1.3 High and low temperatures, general weather conditions.

1.4 Accidents and unusual events.

1.5 Meetings and significant decisions.

1.6 Stoppages, delays, shortages, and losses.

1.7 Meter readings and similar recordings.

1.8 List of equipment on site and identify if idle or in use.

1.9 Orders and requests of governing authorities.

1.10 Change Orders received, start and end dates.

1.11 Services connected, disconnected.

1.12 Equipment or system tests and startups.

1.13 Partial Completion's, occupancies.

1.14 Substantial Completion's authorized.

1.15 Equals or Substitutions approved or rejected.

I. **Shop Drawings**

1. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

2. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:

2.1 Dimensions.

2.2 Identification of products and materials included by sheet and detail number.

2.3 Compliance with specified standards.

2.4 Notation of coordination requirements.

2.5 Notation of dimensions established by field measurement.

2.6 Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least *8-1/2 by 11 inches* but no larger than *36 by 48 inches*.

2.6.1 Submit *one (1)* reproducible media and *seven (7)* prints as directed by the Construction Administrator. The Contractor's submittal shall identify the specification section and/or drawing number applicable to the submittal.

2.6.2 Details shall be large scale and/or full size.

3. The Contractor shall review the Shop Drawings, stamp with this 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 subcontractor. Shop Drawings shall be properly identified as specified for item, material, workmanship, and project number. At the submission, the Contractor shall inform the Architect, in writing of any deviation in the shop drawings from the requirements of the Contract Documents.

4. The Architect will review and comment on shop drawings with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the project and with the information given in the Contract Documents. Refer to Article 5 of the General Conditions. Shop Drawings received by the Architect that indicate insufficient study of drawings and specifications, illegible portions or gross errors, will be rejected outright. Such rejections shall not constitute an acceptable reason for granting the Contractor additional time to perform the work.

5. The Contractor shall make any corrections required by the Architect and shall resubmit the required number of corrected copies of Shop Drawings until fully reviewed.

6. Upon final review submit *four (4)* additional prints, same as submitted, for use by the Construction Administrator.

7. The Architect's review and comments on Shop Drawings shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents.

8. Only final reviewed Shop Drawings are to be used on the Project site.

9. The Work installed shall be reviewed in accordance with the Shop Drawings and the drawings and specifications. Final Review of the Shop Drawings by the Architect shall constitute acceptance by the State and the Architect of a variation or departure that is **clearly identified**. If the contractor believes notations made by the A/E increases the value or scope of the CD's, the contractor must provide written notice to the CA within 7 days of this issue. Final reviewed Shop Drawings shall not replace or be used as a vehicle to issue or incorporate change orders or substitutions. Substitutions shall be submitted in accordance with Division 01 Section 01 25 00 "Substitution Procedures".

J. **Shop Drawing For Fire Protection Systems**

1. Shop drawings for fire protection systems shall comply with all of the requirements in the section above "Shop Drawings" In addition Sprinkler system shop drawings and hydraulic calculations must be stamped by a professional engineer licensed in the State of Connecticut and must include the CT DCS project number. **Two (2)** sets of information [as noted in this Section 01 33 00 "Submittal Procedures"] shall be submitted to the State's Insurance Carrier (SIC), and **one (1)** set shall be submitted to the Office of the State Fire Marshal (OSFM):

1.1 **CT Department of Construction Services:**
Office of State Fire Marshal
1111 Country Club Road
Middletown, CT 06457
For More information Contact: Terry Brouwer (860) 685-8350

1.2 **State Insurance Carrier (SIC):**

FM Global Boston Operations
Plan Review
500 River Ridge Drive
Norwood, MA 02062
Tel: (781) 440-8241 or FAX (781) 440-8742
bostonleadengineer@fmglobal.com

2. Before the shop drawings are submitted to SIC or CT DCS OSFM, the A/E's fire protection consultant must review the sprinkler design for compliance with the code, CT DCS OSFM, and FM Global requirements.

2.1 The State Insurance Carrier (SIC) requires two (2) weeks prior notice of a sprinkler system acceptance test.

K. **Product Data**

1. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, schedules, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1.1 Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:

1.1.1 Manufacturer's printed recommendations.

1.1.2 Compliance with trade association standards.

1.1.3 Compliance with recognized testing agency standards.

1.1.4 Application of testing agency labels and seals.

1.1.5 Notation of dimensions verified by field measurement.

1.1.6 Notation of coordination requirements.

1.2 Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

1.3 **Preliminary Submittal:** Submit a preliminary single copy of Product Data where selection of options is required.

1.4 **Submittals:** Submit *seven (7)* copies of each required submittal; submit *five (5)* copies where required for maintenance manuals. The Architect will retain *one (1)* and will return the other marked with action taken and corrections or modifications required.

1.4.1 Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

1.5 **Distribution:** Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

1.5.1 Do not proceed with installation until a copy of Product Data is in the Installer's possession.

1.5.2 Do not permit use of unmarked copies of Product Data in connection with construction.

L. **Samples**

1. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1.1 Store, mount or display Samples on site in the manner to facilitate review of qualities indicated. Prepare Samples to match the Architect's sample. Include the following:

1.1.1 Specification Section number and reference.

1.1.2 Generic description of the Sample.

1.1.3 Sample source.

1.1.4 Product name or name of the manufacturer.

1.1.5 Compliance with recognized standards.

1.1.6 Availability and delivery time.

1.2 Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

1.2.1 Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least *three (3)* multiple units that show approximate limits of the variations.

1.2.2 Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

1.2.3 Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

1.2.4 Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

1.3 **Preliminary Submittals**: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices, unless otherwise noted in specification section.

1.3.1 The Architect will review and return preliminary submittals with the Architects notation, indicating selection and other action.

1.4 **Submittals:** Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit *three (3)* sets. The Architect will return *one (1)* set marked with the action taken.

1.5 Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.

1.5.1 Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

1.5.2 Sample sets may be used to obtain final acceptance of the construction associated with each set.

2. **Distribution of Samples:** Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

2.1 Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.

2.1.1 Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

M. **Quality Assurance Submittals**

1. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

2. **Certifications:** Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

   2.1 Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

3. **Inspection and Test Reports:** Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 01 Section 01 45 00 "Quality Control."

N. **Architect's Action:**

1. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.

   1.1 Compliance with specified characteristics is the Contractor's responsibility.

2. **Action Stamp:** The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:

   2.1 **Final Unrestricted Release:** When the Architect marks a submittal "Approved for fabrication," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.

   2.2 **Final-But-Restricted Release:** When the Architect marks a submittal "Incorporate Notations," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Submit corrected copies for record. Final payment depends on that compliance.

   2.3 **Returned for Resubmittal:** When the Architect marks a submittal "Rejected, or Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.

      2.3.1 Do not use, or allow others to use, submittals marked "Rejected, or Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.

   2.4 **Other Action:** Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."

3. **Unsolicited Submittals:** The Architect will discard unsolicited submittals without action.

01 35 16 ALTERATION PROJECT PROCEDURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary**

1. This Section includes administrative and procedural requirements for performing alteration and renovation Work.

2. **Related Sections:** The following Sections contain requirements that relate to this Section:

   2.1 Division 01 Section 01 31 13 "Project Coordination" for procedures for coordinating cutting and patching with other construction activities.

   2.2 Division 01 Section 01 73 29 "Cutting and Patching" for procedures for cutting and patching.

   2.3 Division 02 Section 02 41 19 "Selective Structure Demolition" for demolition of selected portions of the building for alterations.

   2.4 Refer to other Sections for specific requirements and limitations applicable to performing alteration Work with individual parts of the Work.

   2.5 Requirements of this Section apply to mechanical and electrical installations. Refer to Division 21, 22, 23 and 26 Sections for other requirements and limitations applicable to renovation Work by mechanical and electrical installations.

C. **Products For Patching And Extending Work:**

1. **New Materials:** As specified in product sections; match existing Products and Work .for patching and extending Work.

2. **Type and Quality of Existing Products:** Determine by inspecting and testing Products where necessary, referring to existing Work as a standard.

D. **Inspection**

1. **General:**

   1.1 Verify that demolition is complete and areas are ready for installation of new Work.

   1.2 Beginning of restoration Work means acceptance of existing conditions.

2. **Project Procedures for Work Involving <u>Asbestos Containing Material (ACM):</u>**

   2.1 The Owner is responsible for abating all ACM that is visible and accessible. This is to be accomplished through a separate project prior to the start of the renovation project. In demolition projects, every attempt should by the owner to remove all ACM.

   2.2 If the Contractor should encounter any material suspect or known to contain ACM, he should immediately notify the Construction Administrator of same. It is the State's responsibility to have the material tested and abated (if necessary). The Owner will respond within *twenty-four (24)* hours after receiving the Contractor's written request to the Construction Administrator for testing the suspect material. The Owner will abate ACM (if necessary) within a reasonable time period, i.e. within seven (7) Calendar Days.

   2.3 Testing for asbestos has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the asbestos testing are for information purposes only. The results are in **[Section 00 30 00 Available Information]**. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of asbestos. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

   2.4 See also Division 00 General Conditions, Article 23 "Cutting, Fitting, Patching and Digging".

E. **Preparation:**

1. Cut, move, or remove items as are necessary for access to alterations and renovation Work. Replace and restore at completion.

2. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

3. Remove debris and abandoned items from area and from concealed spaces.

4. Prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.

5. Close openings in exterior surfaces to protect existing Work and salvage items from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

F. **Installation:**

1. Coordinate Work of alterations and renovations to expedite completion and if required sequence Work to accommodate Owner occupancy.

2. Remove, cut and patch Work in a manner to minimize damage and to provide restoring Products and finishes to original and or specified condition in accordance with **Section 01 73 29 "Cutting and Patching".**

3. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes in accordance with **Section 01 73 29 "Cutting and Patching".**

4. In addition to specified replacement of *equipment* and *fixtures*, restore existing *plumbing*, *heating*, *ventilation*, *air conditioning*, *electrical* systems to full operational condition.

5. Recover and refinish Work that exposes mechanical and electrical Work exposed accidentally during the Work.

6. Install Products as specified in individual sections.

G. **Transitions:**

1. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent Work in texture and appearance.

2. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect/Engineer.

H. **Adjustments:**

1. Where removal of partitions or walls result in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

2. Where a change of plane of *¼* inch in *12 inches* or more occurs, request recommendation from Architect/Engineer for providing a smooth transition.

3. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.

4. Fit Work at penetrations of surfaces as specified in Section 01045 "Cutting and Patching".

I. **Repair of Damaged Surfaces:**

1. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing imperfections.

2. Repair substrate prior to patching finish.

J. **Finishes:**

1. Finish surfaces as specified in individual Product sections.

2. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

K. **Cleaning:**

1. In addition cleaning specified in **Section 01 77 00 "Closeout Procedures"**, clean Agency occupied areas of Work.

01 35 53 SECURITY PROCEDURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Provide a security program and facilities to protect work, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft. Coordinate with Owner's security program.

C. The General Contractor shall be solely responsible for damage, loss, or liability due to theft or vandalism.

D. **Identification Badges for General Contractor's Personnel and Visitors:**

1. The General Contractor will provide each person working or visiting at the site with an identification badge, bearing the name of the General Contractor, subcontractors, design professionals, and a number. As badges are assigns, a record shall be kept by the General Contractor and given to the Construction Administrator and User Agency Administrator. Update and correct the records of all badges issued on a semi-monthly basis.

2. Badges are to be worn on outer garment where visible at all times while at the construction site, return them to the General Contractor's field office at the end of each day and pick them up there each morning.

E. **Parking Stickers:** All vehicles parking in the General Contractor's parking lot and those used around the site require an ID sticker. They will be issued by the User Agency. Each General Contractor shall apply for parking stickers through the Construction Administrator no more than semi-monthly and shall keep record of all stickers issued.

End
Section 01 30 00
Administrative Requirements

01 40 00 QUALITY REQUIREMENTS

A. **Summary:** Section 01 40 00 Quality Requirements contains the following Subsections:

01 42 16	**Definitions**
01 42 19	**Referenced Standards**
01 45 00	**Quality Control**
01 45 23	**Testing For Indoor Air Quality, Baseline IAQ, & Materials – NOT USED**

01 42 16 DEFINITIONS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Definitions**

1. **General:** Basic contract definitions are included in the General Conditions of the Contract for Construction.

2. **"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. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited to this term.

3. **"Directed":** Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.

4. **"Approved":** The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

5. **"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.

6. **"Furnish":** The term "furnish" means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.

7. **"Install":** The term "install" describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

8. **"Provide":** The term "provide" means to furnish and install, complete and ready for the intended use.

9. **"Installer":** An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

   9.1 The term "experienced," when used with the term "installer," means having a minimum of *five (5)* previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of authorities having jurisdiction.

   9.2 **Trades:** Using terms such as "carpentry" does not 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 tradespersons of the corresponding generic name.

   9.3 **Assigning Specialists:** Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are

recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.

9.3.1 This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.

1. **"Project Site"**: Is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other Work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

2. **"Testing Agencies":** A testing agency 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.

01 42 19 REFERENCE STANDARDS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Industry Standards:**

1. **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 to the extent referenced. Such standards are made a part of the Contract Documents by reference.

2. **Publication Dates:** Comply with the standards in effect as of the date of the Contract Documents unless a specific date is indicated in the Contract Documents or the governing regulations cited herein.

3. **Conflicting Requirements:** Where compliance with *two (2)* or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent and highest quality requirement. Request a decision from the Architect before proceeding on requirements that are different but apparently equal, and where it is uncertain which requirement is the most stringent.

4. **Minimum Quantity or Quality Levels:** The quantity or quality level shown or specified shall be the minimum acceptable. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Request a clarification from the Architect regarding uncertainties before proceeding.

5. **Copies of Standards:** Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

A. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

1. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Thompson Gale's "Encyclopedia of Associations," available in most libraries.

D. **Governing Regulations And Authorities:**

1. **Copies of Regulations:** Obtain copies of the following regulations and retain at the Project Site to be available for reference by parties who have a reasonable need during submittals, planning, and progress of the Work, until Substantial Completion.

1.1 State Building Code/2005 Connecticut Supplement.

1.2 International Building Code/2003.

1.3 International Existing Building Code/2003.

1.4 International Mechanical Code/2003.

1.5 International Plumbing Code/2003.

1.6 International Energy Conservation Code/2009.

1.7 National Electric Code NFPA 70-2011.

1.8 Connecticut Fire Safety Code/2005; adopted 2009 supplement to State Building Code.

1.9 National Fire Alarm Code NFPA 72/2002.

1.10 ICC/ANSI A117.1-Accessible and Usable Buildings and Facilities/2003.

1.11 NFPA 101-2003.

1.12 OSHA 29 CFR Part 1910 Occupational Safety and Health Regulations/1999.

1.13 OSHA 29 CFR Part 1926 Occupational Safety and Health Regulations for Construction/1999.

E. **Submittals:**

1. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents.

01 45 00 QUALITY CONTROL

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary**

1. This Section includes administrative and procedural requirements for quality-control services.

2. Quality-Control services include fire alarm acceptance testing, inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by the Owner.

3. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

4. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

4.1 Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

4.2 Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.

4.3 Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. **Related Sections:** The following Sections contain requirements that relate to this Section:

1. Division 01 **Section 01 33 00 "Submittal Procedures"** specifies requirements for development of a schedule of required tests and inspections.
2. Division 01 **Section 01 73 29 "Cutting and Patching"** specifies requirements for repair and restoration of construction disturbed by inspection and testing activities.
3. Division 01 **Section 01 77 00 "Closeout Procedures"**, specific requirements for contract closeout procedures.

B. **Responsibilities**

1. **Contractor Responsibilities:** Unless otherwise indicated as the responsibility of another identified entity, the Owner, through the Construction Administrator, shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. All tests required by the individual specification sections are required to be scheduled and notification given to the Construction Administrator *24 / 48* hours in advance of the test/inspection as applicable. Costs for these services are not included in the Contract Sum.

   1.1 Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.

   1.2 Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.

      1.2.1 Such services include Special Inspections as required by the latest edition of the "Connecticut State Building Code".

      1.2.2 Where the Owner has engaged a testing agency for testing and inspecting part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner. The Owner will engage the services of a qualified Special Inspector for this project. The Special Inspector, as a representative of the Owner, shall document and confirm compliance with the provisions of the Connecticut State Building Code for Special Inspections.

      1.2.3 Materials and assemblies for this project will be tested and construction operations inspected as the work progresses. Failure to detect any defective work or material shall not in any way prevent later rejection when such defect is discovered nor shall it obligate the State for final acceptance.

      1.2.4 The Owner's use of testing and inspection services shall in no way relieve the Contractor of the responsibility to furnish materials and finished construction in full compliance with the Contract Documents and the Connecticut State Building Code.

2. **Retesting:** The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.

   2.1 The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original

construction indicated non-compliance with Contract Document requirements.

2.2 The Owner will issue a credit change order to cover all costs incurred related to all re-tests/re-inspections due to non-compliance to the Contract Documents, including but not limited to the Owner's costs and the Consultant's costs.

3. **Associated Services:** Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the Agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

3.1 *Provide access to the Work.*

3.2 *Furnish incidental labor and facilities necessary to facilitate inspections and tests.*

3.3 *Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.*

3.4 *Provide facilities for storage and curing of test samples.*

3.5 *Deliver samples to testing laboratories.*

3.6 *Provide an approved design mix proposed for use for material mixes that require control by the testing agency.*

3.7 *Provide security and protection of samples and test equipment at the Project Site.*

4. **Duties of the Testing Agency:** The independent testing agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Construction Administrator, Architect and the Contractor in performance of the testing agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

4.1 The testing agency shall notify the Construction Administrator and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

4.2 The testing agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

1.1 The testing agency shall not perform any duties of the Contractor.

5. Owner will pay for the services of an independent testing agency laboratory to perform inspections, tests and other services required by the Specifications except as noted below, listed for which the Owner will issue a deduct change order to cover the cost associated with these tests:

5.1 When the Contractor notifies the Construction Administrator and/or Testing Agency less than *24 hours* before the expected time of testing.

5.2 When the Contractor requires testing for his own convenience.

5.3 When the Contractor schedules a test and is not ready for the required test.

6. Submit reports of tests that are part of the submittal requirements which indicate compliance or non-compliance with the specified standard.

7. See also General Conditions Article 16 "Inspections & Tests".

8. **Fire Alarm/Acceptance Testing Procedures:**

8.1 For buildings exceeding the threshold limit, the fire alarm testing shall be as the authority having jurisdiction shall dictate. This will be as determined by the State Fire Marshals Office.

8.2 For buildings that do not exceed the threshold limit, the fire alarm testing shall be as the authority having jurisdiction shall dictate. This will be

determined by the Department of Construction Services requirements as set below:

8.2.1 Protective Signaling Systems: All protective signaling systems shall meet with acceptance testing requirements of the applicable standards listed in Section 7-6.1.4, NFPA 101/2003 and NFPA 13/2002.

8.2.2 Prior Test Notification: At least five (5) working days prior to testing, the Fire Alarm Contractor shall notify (in writing) the following people of the proposed date the acceptance tests are to be performed (Also, see Part 2 of Certificate of Compliance).

.1 Department of Construction Services Team Representative;

.2 General Contractor;

.3 Engineer of Record;

.4 Equipment Supplier Representative;

.5 Sprinkler Contractor.

8.3.3 Certificates of Compliance:

.1 A Fire Alarm System Inspection and Testing Certification and Description form shall be prepared for each system (See NFPA 72/2002 Chapter 7 and Figure 7-5.2.2).

.2 Parts 1 and 3 through 9, shall be completed after the system is installed and the installation of the wiring has been checked. Every alarm device must also be pre-tested to ensure proper operation and correct annunciation at each remote annunciator and control panel. Part 1 of the form (Certification of System Installation) shall be signed by the fire alarm contractor. The signed and completed preliminary copies of the Certification form shall be forwarded to all parties along with the Prior Test Notification.

.3 Part 2, of each applicable form, shall be completed after the operational tests have been completed.

.4 After the completion of the operational acceptance tests and sign-off of test witness (with stipulations noted), final copies of the Certificates shall be forwarded to the Department of Construction Services Representatives.

8.3.4 Tests:

.1 All tests shall be conducted in accordance with the Manufacturer's Testing Recommendations.

.2 All testing equipment, apparatus (i.e. sound level decibel meter, 2-way radio communication, test devices, ladders, tools, lighting, etc.) and personnel shall be supplied by the Fire Alarm Contractor and Sprinkler Contractor.

8.3.5 System Documentation: Every system shall include the following documentation, which shall be delivered to the Department of Construction Services Representatives upon final acceptance of the system. An owner's manual or manufacturer's installation instructions covering all system equipment, including the following:

.1 A detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, intended sequence of operations, expansion capability, application considerations, and limitations.

.2 Operator's instructions for basic systems operations including alarm acknowledgment, system reset, interpreting system output (LED's CRT display, and printout), operation of manual evacuation signaling and ancillary function controls, changing printer paper, etc.

.3 A detailed description of routine maintenance and testing as required and recommended and as would be provided under a maintenance contract, including testing and maintenance instructions for each type of device installed. This information should include:

.1 A listing of individual system components that require periodic testing and maintenance.

.2 Step by step instructions detailing the requisite testing and maintenance procedures and the intervals at which those procedures should be performed.

.3 A schedule that correlates the testing and maintenance procedures required by paragraph (2) above and with the listing required by paragraph (1) above.

.4 Detailed troubleshooting instructions for each type of trouble condition recognized by the system, including opens, grounds, parity errors, "loop failures," etc. These instructions should include a list of all trouble signals, and step by step instructions describing how to isolate those problems and correct them (or call for service as appropriate).

.5 A service directory, including a list of names and telephone numbers for those who should be called to service the system.

8.3.6 **As-Built Drawings:**

.1 The Contractor will produce *two (2)* sets of as-built drawings and specifications for the fire alarm system, indicating the location (and programmed address, if applicable) of all devices and appliances, the wiring sequences, wiring methods, connection of the components, and sequence of operation of the protective signaling system as installed, shall be given to CT DCS representatives. This shall be in Accordance with NFPA 72/2002. Refer also to **Section 01 77 00 "Closeout Procedures".**

E. **Submittals**

1. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Construction Administrator. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.

1.1 Submit additional copies of each written report directly to the governing authority, when the authority so directs.

1.2 Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:

1.2.1 Date of issue.

1.2.2 Project title and number.

1.2.3 Name, address, and telephone number of testing agency.

1.2.4 Dates and locations of samples and tests or inspections.

1.2.5 Names of individuals making the inspection or test.

1.2.6 Designation of the Work and test method.

.1 Identification of product and Specification Section.

.2 Complete inspection or test data.

.3 Test results and an interpretation of test results.

.4 Ambient conditions at the time of sample taking and testing.

.5 Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.

.6 Name and signature of laboratory inspector.

.7 Recommendations on re-testing.

F. **Quality Assurance**

1. **Qualifications for Service Agencies:** Engage inspection and testing service agencies, including independent testing laboratories, that are pre-qualified as complying with the National Voluntary Laboratory Accreditation Program and that specialize in the types of inspections and tests to be performed.

   1.1 Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

2. **Mockups:** Provide full-size, physical assemblies that are constructed on-site. Mockups will be used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not samples.

G. **Repair And Protection**

General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 01 **Section 01 73 29 "Cutting and Patching."**

1. Protect constructions exposed by or for quality-control service activities, and protect repaired construction.

2. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

End
Section 01 40 00
Quality Requirements

01 50 00 TEMPORARY FACILITIES AND CONTROLS

A. **Summary:** Section 01 50 00 Temporary Facilities And Controls contains the following subsections:

01 51 13	**Temporary Electricity And Lighting – NOT USED**
01 51 16	**Temporary Fire Protection – NOT USED**
01 51 23	**Temporary Heating, Cooling And Ventilating – NOT USED**
01 51 33	**Temporary Telecommunications – NOT USED**
01 51 36	**Temporary Water – NOT USED**
01 52 13	**Field Offices And Sheds – NOT USED**
01 52 19	**Temporary Sanitary Facilities**
01 54 00	**Construction Aids**
01 55 13	**Temporary Access Roads – NOT USED**
01 55 16	**Haul Routes – NOT USED**
01 56 00	**Temporary Barriers And Enclosures**
01 56 43	**Temporary Protection**
01 57 19	**Temporary Environmental Controls**
01 57 21	**Environmental Management – NOT USED**
01 57 23	**Temporary Storm Water Control – NOT USED**
01 57 30	**Indoor Environmental Control – NOT USED**
01 57 40	**Construction Indoor Air Quality Management Plan – NOT USED**
01 58 13	**Temporary Project Signage - NOT USED**

01 52 19 TEMPORARY SANITARY FACILITIES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **General Contractor's Construction Work:** Provide toilet facilities for General Contractor's and subcontractor's employees engaged on the Project, including employees of other contractors in accordance with the OSHA Table D-1 (29CFR CH.XVII, OSHA Standard 1926.51) below. Locate toilets where directed and maintain them in a sanitary condition.

Number Of Employees	Minimum Number Of Facilities*
20 or less	1 toilet
20 or more	1 toilet and 1 urinal per 40 employees
200 or more	1 toilet and 1 urinal per 50 employees
*Toilet/Urinal Combinations shall count as only one facility.	

1. Job sites, not provided with a sanitary sewer, shall be provided with one of the following toilet facilities unless prohibited by State Codes:
   - **1.1** Chemical toilets;
   - **1.3** Recirculating toilets;
   - **1.4** Combustion toilets.
2. Inside buildings, locate toilet facilities no more than 4 stories or 60 feet above or below, nor more than 500 feet travel on the same level from the work location of any person.
3. Locate toilet facilities no more than 1000 feet from any work location.

C. The General Contractor shall provide, where directed, chemical toilets with toilet tissue, plus wash basins with water, soap and paper towels. The General Contractor shall maintain the facilities in a sanitary condition.

D. If women are employed in the work, provide separate, designated facilities for them of the same kind. Provide an adequate number of each kind of facility for each gender.

01 54 00 CONSTRUCTION AIDS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. The General Contractor shall furnish tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and similar work or material necessary to insure convenience and safety in the execution of the Contract Documents except where this is otherwise specified in any Technical Specification Section. All such items shall meet the approval of the Department of Construction Services but responsibility for design, strength, and safety shall remain with the General Contractor. All such items shall comply with Federal OSHA regulations and applicable codes, statutes, rules and regulations, including compliance with the requirements of the current edition of the "Manual of Accident Prevention in Construction" published by the A.G.C. (Associated General Contractors of America) and the standards of the Connecticut Department of Labor (DOL).

C. Staging/laydown areas, exterior, and interior, required for the execution of the Contract Documents, shall be furnished, erected, relocated if necessary, and removed by the general Contractor. Staging/laydown shall be maintained in a safe condition without charge to the Owner and for the use of all trades as needed.

01 56 00 TEMPORARY BARRIERS AND ENCLOSURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Provide barriers to prevent public entry into construction areas and to protect existing facilities from damage by construction operations.

C. Before excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated on the Construction Documents, or enclose the entire construction site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.

1. **Chain Link Fence:** Provide chain link construction fencing with posts set in a compacted mixture of gravel and earth. Use a *six (6)* foot-high (minimum) chain link fence with top rail and filter fabric screening. At completion of the project, the Contractor must remove the construction fence completely, including all portions of below-ground footings. Fence posts must be removed, not sawn off flush with the soil line.
2. **Security Enclosure and Lockup:** Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Provide keys to the Construction Administrator.
3. **Storage/laydown areas:** Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

D. Provide covered walkways as required by governing authorities for public rights-of-way and for public access to existing buildings.

E. Provide barriers around **all** trees and plants designated to remain. Protect against vehicular traffic, materials' dumping, chemically injurious materials, puddles, or running water.

F. Provide temporary, insulated, weathertight closures at openings to the exterior to provide acceptable working conditions and protection for materials, to allow for temporary heating and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.

G. Barriers and enclosures shall be in conformance with code requirements. Do not block egress from occupied buildings unless necessary to further the work of the Contract. In this case, secure the Department's approval of an alternate egress plan.

H. See also **Division 00 General Condition, Article 19 "Protection of the Work, Persons, and Property.**

01 56 43 TEMPORARY PROTECTION

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Protect buildings, equipment, furnishings, grounds, and plantings from damage. Any damage shall be repaired or otherwise made good at no expense to the State.

C. Provide protective coverings and barricades to prevent damage. The General Contractor shall be held responsible for, and must make good at his own expense, any water, or other type of damage due to improper coverings. Protect the public and building personnel from injury.

D. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.

E. Provide protective coverings for walls, projections, jambs, sills and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects and storage. Prohibit traffic and storage on waterproofed and roofed surfaces and on lawn and landscaped areas.

F. See also **Division 00 General Condition, Article 19 "Protection of the Work, Persons, and Property.**

01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Temporary Environmental Controls:** General Contractor is to provide the following controls.

1. **Rodent and Pest Control:** Before deep foundation work has been completed, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be free of pests and their residues at materials.
2. Dust Control (construction and demolition);
3. Noise Control;
4. Erosion and Sediment Control;
5. Pollution Control;
6. Traffic Control.

End
Section 01 50 00
Temporary Facilities and Controls

01 60 00 PRODUCT REQUIREMENTS

A. **Summary:** Section 01 60 00 Product Requirements contains the following subsections:

01 60 00 Product Requirements

01 60 00 PRODUCT REQUIREMENTS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Materials and Equipment:** Shall be delivered, stored and handled to prevent intrusion of foreign matter and damage by weather or breakage. Packaged materials shall be delivered and stored in original, unbroken packages.

1. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.
2. Packages, materials and equipment showing evidence of damage will be rejected and replaced at no additional cost to the Owner.

C. **Storage and Protection:**

1. Store products in accordance with manufacturers' instructions with seals and labels intact and legible. Store sensitive products in weathertight enclosures; maintain within temperature and humidity range required by manufacturer.
2. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
3. Store loose granular material on solid surfaces in a well-drained area; prevent mixing with foreign matter.
4. Arrange storage to provide access for inspection. Periodically inspect to insure products are undamaged and are maintained under required conditions. Keep log showing date, time and problems, if any.
5. Stone, masonry units and similar materials shall be stored on platforms or dry skids and shall be adequately covered and protected against damage.
6. The Contractor shall prepare, as directed by the Owner, one area or space in the building for storage of State-owned equipment.

End
Section 01 60 00
Product Requirements

01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

A. **Summary:** Section 01 70 00 Execution and Closeout Procedures contains the following subsections:

01 71 23	**Field Engineering – NOT USED**
01 73 29	**Cutting and Patching**
01 74 13	**Progress Cleaning**
01 74 19	**Construction Waste Management & Disposal**
01 75 00	**Starting And Adjusting – NOT USED**
01 77 00	**Closeout Procedures**
01 78 23	**Operation And Maintenance Data**
01 78 30	**Warranties And Bonds**

01 73 29 CUTTING AND PATCHING

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. It is the responsibility of the Contractor to provide chases, channels or openings where needed.

C. The Contractor shall install sleeves, inserts, and hangers furnished by the trades needing same.

D. After installing work into openings, channels, and/or chases, the Contractor shall close same. If finishes are to be restored, the new work shall match the original and shall be done by the trade customarily responsible for the particular kind of work.

E. Written permission shall be obtained from the Contractor before cutting beams, arches, lintels or other structural members.

F. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.

1. Contractor shall obtain written approval from the Architect/Engineer of the cutting and patching proposal before cutting and shall submit all A/E approval letters to the Construction Administrator before patching the following structural elements:

   1.1 Structural steel.

   1.2 Structural decking.

   1.3 Miscellaneous structural metals.

   1.4 Equipment supports.

   1.5 Piping, ductwork, vessels, and equipment.

G. Do cutting and patching to integrate all elements of the work. Provide penetrations of existing surfaces. Provide samples for testing. Seal penetrations through floors, walls, ceilings, and roofs, as applicable; restore or preserve fire-rated and smoke-barrier construction. Construction and finishes shall match original work.

H. The Contra shall verify dimensions for built-in work and/or work adjoining that of other trades before ordering any material or doing any work. Discrepancies shall be submitted to the Construction Administrator before proceeding with the work.

I. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

J. Also see Division 00 General Conditions **Article 23 "Cutting, Fitting, Patching, and Digging",**

01 74 13 PROGRESS CLEANING

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **This Section includes:**
1. Cleaning requirements during construction operations.
2. Final cleaning prior to turning the project over to the Owner.

C. **Quality Assurance**
1. Coordinate with **Section 01 57 19 - Environmental Management.**
2. Coordinate with **Section 01 77 00– Close out Procedures.**
   - **2.1** Contractor shall provide progress cleaning that minimizes sources of food, water, and harborage available to pests.

D. Utilize non-toxic cleaning materials and methods.
1. Use natural cleaning materials where feasible. Natural cleaning materials include:
   - **1.1** abrasive cleaners: substitute 1/2 lemon dipped in borax.
   - **1.2** ammonia: substitute vinegar, salt and water mixture, or baking soda and water.
   - **1.3** disinfectants: substitute 1/2 cup borax in gallon water.
   - **1.4** drain cleaners: substitute 1/4 cup baking soda and 1/4 cup vinegar in boiling water.
   - **1.5** upholstery cleaners: substitute dry cornstarch.

E. Maintain areas under the General Contractor's control free of waste materials, debris, and rubbish. Maintain in a clean and orderly condition.

F. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces before closing the space.

G. Periodically clean interior areas before start of surface finishing and continue cleaning on an as-needed basis.

H. The General Contractor shall control cleaning operations so that dust and other particulates will not adhere to wet or newly-coated surfaces.

I. Remove waste materials, debris, and rubbish from site daily and dispose of legally off-site. No scrap/debris shall remain inside the building or anywhere on site upon final acceptance of the project.

J. **Final Cleaning:**
1. At completion of Work, remove all remaining waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all exposed surfaces; leave Project clean and ready for occupancy.
   - **1.1** After review of trees to remain by Architect and Owner, remove tree tags.
   - **1.2** Provide final cleaning in accordance with ASTM E1971 and the approved Integrated Pest management (IPM) plan.

K. See also **Division 00 General Conditions, Article 24 "Cleaning Up".**

01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary:** This Section includes requirements for waste management goals, waste management plan and waste management plan implementation.

C. **Related Sections:** The following Sections contain requirements that relate to this Section:
1. Division 01 **Section 01 11 00 "Summary of Work".**
2. Division 01 **Section 01 20 00 "Contract Considerations".**
3. Division 01 **Section 01 25 00 "Substitution Procedures".**
4. Division 01 **Section 01 31 19 "Project Meetings".**
5. Division 01 **Section 01 33 00 "Submittal Procedures".**
6. Division 01 **Section 01 45 00 "Quality Control".**

7. Division 01 **Section 01 50 00 "Temporary Facilities and Controls".**
8. Division 01 **Section 01 60 00 "Product Requirements".**
9. Division 01 **Section 01 77 00 "Closeout Procedures".**
10. Division 01 **Section 01 81 13 "Sustainable Design Requirements".**

D. **Definitions:**

1. **Construction Waste:** Solid wastes such as building materials, packaging and rubble resulting from construction, paving and infrastructure.

E. **Demolition Waste:** Solid wastes such as concrete, wood, brick, plaster, roofing materials, wallboard, metals, carpeting, insulation, and clean fill resulting from demolition or selective demolition of structures.

F. **Recyclable Materials:** Products and materials that can be recovered and remanufactured into a new product. Recyclable materials include, but are not limited to, the following:

1. Metals (ferrous and non-ferrous), including banding, metal studs, ductwork, and piping.
2. Asphaltic concrete paving.
3. Portland cement concrete.
4. Gypsum products.
5. Paper and cardboard.
6. Wood products, including structural, finish, crates, and pallets.
7. Brick and masonry.
8. Carpet and padding.
9. Plastics.
10. Copper wiring.

G. **Recycling Facility:** A business that specializes in collecting, handling, processing, distributing, or remanufacturing waste materials generated by new construction projects, into products or materials that can be used for this project or by others.

H. **Salvage and Reuse:** Existing usable product or material that can be saved and reused in some manner on the project site. Materials for reuse must be approved by the Architect. Materials that can be salvaged and reused must comply with applicable technical specifications and include, but are not limited to, the following:

1. Dimensional lumber and other wood products.
2. Structural steel.
3. Soil.
4. Masonry products.
5. Plants.

I. **Salvage for Resale:** Existing usable product that can be saved and removed intact (as is) from the project site to another site for resale to others without remanufacturing.

K. **Waste Management Goals:**

1. The Owner has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.
2. The General Contractor shall use all means available to divert the greatest extent practical and economically feasible, construction waste from landfills and incinerators.
3. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

4. Recycle and/or salvage a minimum of 50 percent of non-hazardous construction and demolition waste by weight of the total solid waste generated by the Project.

5. With regard to these goals the General Contractor shall develop, for the Architect's and Owner's CA review, a Waste Management Plan for this Project.

6. Take a pro-active, responsible role in management of construction waste and require all subcontractors, vendors, and suppliers to participate in the effort. Establish a construction waste management program that includes the following categories:

   6.1 Minimizing packaging waste.

   6.2 Salvage and reuse.

   6.3 Salvage for resale or donation.

   6.4 Recycling.

   6.5 Disposal.

L. **Submittals:**

1. **Draft Waste Management Plan:** Within *thirty (30)* Calendar days after receipt of Notice of Award of Bid, or prior to any waste removal, whichever occurs sooner, the general Contractor shall submit *three (3)* copies of a Draft Waste Management Plan to the Construction Administrator.

2. **Final Waste Management Plan:** Once the Owner has determined which of the recycling options addressed in the Draft Waste Management Plan are acceptable, the general Contractor shall submit within *ten (10)* Calendar days *three (3)* copies of a Final Waste Management Plan.

3. **Progress Reports:** Submit *three (3)* copies of monthly progress reports, at the same time as the Application for Payment, documenting the following:

   3.1 Material category.

   3.2 Point of waste generation.

   3.3 Total quantity of waste in tons.

   3.4 Quantity of waste salvaged, in tons.

   3.5 Quantity of waste recycled, in tons.

   3.6 Total quantity of waste recovered (salvaged plus recycled) in tons.

   3.7 Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

4. **Calculations:** Submit *three (3)* copies of calculations indicating the end-of-project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Project prior to Substantial Completion.

5. **Record Submittals:**

   5.1 **Donations:** Indicate which salvageable materials were donated, who they were donated to, and whether the recipient is tax exempt. Submit documentation indicating receipt of donations.

   5.2 **Sales:** Indicate which salvageable materials were sold, who they were sold to, and whether the recipient is tax exempt. Submit documentation indicating receipt of materials.

   5.3 **Recycling:** Indicate which materials were recycled and the name of the facility licensed to accept them. Submit documentation such as manifests, weight tickets, receipts, and invoices.

   5.4 **Waste Disposal:** Indicate which materials were accepted as waste by landfills and incinerator facilities licensed to accept them. Submit documentation indicating receipt of materials.

M. **Quality Assurance:**

1. **Regulatory Requirements:** Comply with regulations of State of Connecticut Department of Environment Protection, Waste Management Bureau Recycling Program.

2. **Waste Management Conference:** Review and discuss the waste management plan, requirements for documenting quantities of each type of waste and its disposition, procedures for materials separation, procedures for periodic collection and transportation to recycling and disposal facilities. Review waste management requirements for each trade. Verify availability of containers and bins needed to avoid delays.

N. **Waste Management Plan:**

1. **Draft Waste Management Plan:** Include the following in the Draft Plan:

1.1 Analysis of the proposed jobsite waste to be generated, including types and quantities.

1.2 **Landfill Options:** The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all Project waste in the landfill(s).

1.3 **Alternatives to Landfilling:** A list of each material proposed to be salvaged, reused, or recycled during the course of the Project, the proposed local market for each material, and the estimated net cost savings or additional costs resulting from separating and recycling (versus landfilling) each material. "Net" means that the following have been subtracted from the cost of separating and recycling:

1.3.1 Revenue from the sale of recycled or salvaged materials and

1.3.2 Landfill tipping fees saved due to diversion of materials from the landfill. The list of these materials is to include, at a minimum, the following materials:

.1 Cardboard.

.2 Clean dimensional wood.

.3 Beverage containers.

.4 Land clearing debris.

.5 Concrete.

.6 Bricks.

.7 Concrete Masonry Units (CMU).

.8 Asphalt.

.9 Metals from banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

J. **Resources for Development of Waste Management Plan:** The following sources may be useful in developing the Draft Waste Management Plan:

1. **Recycling Haulers and Markets:** Local haulers and markets for recyclable materials. For more information, contact the State of Connecticut Department of Environmental Protection, Waste Management Bureau Recycling Program, (860) 424-3365:

2. www.dep.state.ct.us/wst/recycle/ctrecycle.htm.

K. **Final Waste Management Plan:** The Final Waste Management Plan shall contain the following:

1. Analysis of the proposed jobsite waste to be generated, including types and quantities.

2. **Landfill Options:** The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all Project waste in the landfill(s).

3. **Alternatives to Landfilling:** A list of the waste materials from the Project that will be separated for reuse, salvage, or recycling.

4. **Meetings:** A description of the regular meetings to be held to address waste management. Refer to **Section 01 31 19 "Project Meetings".**

5. **Materials Handling Procedures:** A description of the means by which any waste materials identified in item (3) above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

6. **Transportation:** A description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site) and destination of materials.

O. **Waste Management Plan Implementation:**

1. **Manager:** The General Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.

2. **Distribution:** The General Contractor shall distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Architect.

3. **Instruction:** The General Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.

3. **Separation Facilities:** The General Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

4. **Hazardous Wastes:** Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

5. **Application for Progress Payments:** The General Contractor shall submit with each Application for Progress Payment a Summary of Waste Generated by the Project. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:

   5.1 The amount (in tons or cubic yards) of material landfilled from the Project, the identity of the landfill, the total amount of tipping fees paid at the landfill, and the total disposal cost. Include manifests, weight tickets, receipt, and invoices.

   5.2 For each material recycled, reused, or salvaged from the Project: the amount (in tons or cubic yards), the date removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling of each material shall be indicated. Attach manifests, weight tickets, receipts, and invoices.

P. **Plan Implementation:**

1. Implement the waste management plan as approved by Owner and Construction Administrator.

2. Provide training of workers, contractors, subcontractors, and suppliers on proper waste management procedures.

2.1 Distribute waste management plan to all parties involved in the Project within *three (3)* Calendar Days of submittal return.

2.2 Distribute plan to parties when they first begin working on the Project site. Review plan procedures and locations established for salvage, recycling, and disposal.

Q. **Separation Of Recyclable Waste Materials:**

1. Provide the necessary containers and bins, to facilitate the waste management program, that are clearly and appropriately marked. Prevent contamination of recyclable materials from incompatible products and materials. Separate construction waste at the project site by one of the following methods:

1.1 **Source Separated Method:** Waste products and materials, that are recyclable, are separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing. Trash is transported to a landfill or incinerator.

1.2 **Co-Mingled Method:** All construction waste is placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed and the remaining trash is transported to a landfill or incinerator.

1.3 Other methods proposed by the Contractor and approved by the Owner, Construction Administrator.

01 77 00 CLOSEOUT PROCEDURES

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Substantial Completion:**

1. Upon completion of the work, the General Contractor shall submit to the State a Certificate of Substantial Completion wherein the General Contractor certifies that all conditions of the Contract Documents have been met, and that the facility is ready for occupancy by the Agency. Issuance of a Certificate of Substantial Completion by the Owner shall be a pre-condition for payment by the Owner.

1.1 Preliminary Procedures: Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.

1.2 In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent (100%) completion for the portion of the Work claimed as substantially complete.

1.2.1 Include supporting documentation for completion as indicated in the Contract Documents and a statement showing all accounting of the Contract Documents.

1.2.3 If 100 percent (100%) completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete shall be provided as well as a schedule for completion of work.

1.3 Advise the Owner of pending insurance changeover requirements.

1.4 Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.

1.5 Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

1.6 Submit as-built record drawings, maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.

1.7 Deliver tools, spare parts, extra stock, and similar items.

1.8 Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.

1.9 Demonstration, through operation and testing, the functions of all systems and/or equipment to the satisfaction of the Owner for compliance to the contract. Complete testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.

1.10 Complete final cleanup requirements, including touchup painting.

1.11 Touch up and otherwise repair and restore marred, exposed finishes.

1.12 Compliance with other terms as outlined in the Contract Documents.

1.13 List of all the General Contractor's suppliers, sub-contractors, etc. Include name of firm, address, FEIN number and CT Tax I.D. number.

2. **Inspection Procedures:** The General Contractor shall be ready and prepared when they request a Substantial Completion inspection. If the inspection reveals that the work is not complete, there are extensive punchlist items and as the items listed above are not complete, the Construction Administrator, Owner, and Agency will determine the inspection has failed.

3. The General Contractor is responsible for all costs to re-inspect due to a failed inspection.

   3.1 The General Contractor will repeat inspection when requested and assured that the Work is substantially complete.

   3.2 Results of the completed inspection will form the basis of requirements for Acceptance of the Work.

C. **Acceptance of the Work**

1. **Preliminary Procedures:** Before requesting a Final Inspection and Certificate of Acceptance and Final Payment, complete the following. List exceptions in the request.

   1.1 Submit a request for the Final Inspection and Certificate of Acceptance, with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

   1.2 Submit a certified copy of the Architect's Final Inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.

   1.3 Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.

   1.4 Submit consent of surety to Final Payment.

   1.5 Submit evidence of final, continuing insurance coverage complying with insurance requirements.

D. **Reinspection Procedure:** The Inspection Group will re-inspect the Work upon receipt of notice from the Construction Administrator that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Owner.

1. Upon completion of re-inspection, the Construction Administrator will prepare a Certificate of Acceptance for issuance by the Owner. If the Work is incomplete, the Construction Administrator will advise the General Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for Acceptance.

F. Issuance of a Certificate of Acceptance, in accordance with CGS § 4-61(b)(2) as amended, by the Owner does not alter the responsibility of the General Contractor to complete all Work in accordance with the Contract Documents.

G. **General Contractor's As-Built Drawings Submittal:**

1. **General:** The General Contractor shall not use the As-Built Drawings for construction purposes. Protect General Contractor's As-Built Drawings from deterioration and loss in a secure, fire-resistant location. Provide access to the As-Built Drawings for Owner's and Construction Administrator's reference during normal working hours. Keep documents current; do not permanently conceal any work until required information has been recorded. Failure to keep documents current is sufficient cause to withhold progress payments.

   1.1 The General Contractor shall also engage the services of a Surveyor registered in the State of Connecticut to conduct a final survey to determine the location of exterior underground utility lines and to record the results, and update existing electronic media.

   1.2 The record of exterior underground utilities shall be made at the time of installation on Mylar film drawing and AutoCAD (latest version) compatible disks. The drawing shall bear the seal of the Land Surveyor and a statement of accuracy.

2. **General Contractor's As-Built Drawings:** The General Contractor shall maintain one clean, complete undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date. **Failure to keep As-built Documents current is sufficient cause to withhold progress payments.**

   2.1 Mark record sets with erasable pencil to distinguish between variations in separate categories of the Work.

   2.2 Mark all new information that is not shown on Contract Drawings.

   2.3 Note related Agreement Amendments where applicable.

   2.4 Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

   2.5 Upon completion of the work, the General Contractor shall submit Record Drawings to the Construction Administrator for the Owner's Records who will pass them on to the Architect or Engineer for transferring the changes to the Record Drawing Mylar Tracings.

   2.6 Submit electronic format data of all Coordination Drawing drawings as required by the owner.

   2.7 Refer to Section **01 45 00 "Quality Control"** Paragraph **8.3.6** for required as-built drawings and specifications for fire alarm systems.

   2.8 Upon completion of the work, the General Contractor shall submit Record Drawings to the Architect and/or Engineer for transferring the changes to the Record Drawings.

F. **General Contractor's Record Documents:** Within **thirty (30)** Calendar Days after receipt of the General Contractor's "As-Built Drawings" the Architect/Engineers shall convert the General Contractor "As-Built" information into an electronic CADD format

as required by the Owner, using the original A/E contract documents as base drawings. The Architect shall produce "Record Documents" that show all of the significant modifications made during the course of the project.. The Architect's shall produce *two (2)* sets of electronic CADD format "Record Documents" on electronic media as required by the Owner and (1) set of reproducible Mylar's "Record Documents". The original Mylar "Cover Sheet" that includes the original A/E Team Members dated signatures and professional seals shall be the Record Documents Cover Sheet. The Architect's final "Record Documents" (electronic media and reproducible Mylar's) shall be made at the Architect's expense and shall become the property of the State.

H. **General Contractor's Record Specifications:** The General Contractor shall maintain one complete copy of the Project Manual, Include with the Project Manual one copy of other written construction documents, such modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
2. Give particular attention to the Technical Specifications and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.
4. Upon completion of the Work, submit record Specifications to the Construction Administrator for the Owner's records.

I. **General Contractor's As-Built Product Data:** The General Contractor shall maintain one copy of each As-Built Product Data submittal and a markup of record drawings and As-Built Specifications.

1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
3. Upon completion of markup, submit complete set of As-Built Product Data to the Construction Administrator for the Owner's records.
4. The Architect and Engineers will be responsible for the accuracy of As-Built Drawings.

J. **General Contractor's Record Sample Submitted:** Immediately prior to Substantial Completion, the appropriate A/E Team Members shall meet with the Owner, Construction Administrator, and the Agency's personnel at the Project Site to determine which Samples are to be transmitted to the Owner for record purposes. Comply with the Owner/Agency instructions regarding delivery to the Owner/Agency Sample storage area.

K. **General Contractor's Miscellaneous Record Submittals:** Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Construction Administrator for the Owner's records.

L. **Maintenance Manuals:** Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, *2-inch, 3-*ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder according to Section **01 78 23 "Operation and Maintenance Data"**. The manual shall include, but not be limited to, the following types of information:

1. *Emergency instructions.*
2. *Spare parts list.*
3. *Copies of warranties.*
4. *Wiring diagrams.*
5. *Recommended "turn-around" cycles.*
6. *Inspection procedures.*
7. *Shop Drawings and Product Data.*
8. *Fixture lamping schedule.*
9. *List of vendors and addresses.*

M. Closeout Procedures:

1. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Agency's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

   1.1 Maintenance manuals.

   1.2 Record documents.

   1.3 Spare parts and materials.

   1.4 Tools.

   1.5 Lubricants.

   1.6 Fuels.

   1.7 Identification systems.

   1.8 Control sequences.

   1.9 Hazards.

   1.10 Cleaning.

   1.11 Warranties and bonds.

   1.12 Maintenance agreements and similar continuing commitments.

7. **2.** As part of instruction for operating equipment, demonstrate the following procedures:

   2.1 Startup.

   2.2 Shutdown.

   2.3 Emergency operations.

   2.4 Noise and vibration adjustments.

   2.5 Safety procedures.

   2.6 Economy and efficiency adjustments.

   2.7 Effective energy utilization.

N. Final Cleaning:

1. **General:** The Contract Documents require general cleaning during construction. Regular site cleaning is included in **Section 01 74 13 "Progress Cleaning".**

2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions. Complete the following cleaning operations before requesting

inspection for Certification of Substantial Completion and Certification of Occupancy.

3. **Interior:**

   3.1 Remove labels that are not permanent labels.

   3.2 Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Remove paint spots; wash and polish glass.

   3.3 Clean exposed interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

   3.4 Wash washable surfaces of mechanical, electrical equipment and fixtures and replace filters, clean strainers on mechanical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

   3.5 Clean and polish finish hardware.

   3.6 Clean and polish tile and other glazed surfaces.

   3.7 Clean floors; wax and buff resilient tile. Clean vinyl or rubber base.

   3.8 Vacuum and/or dust walls, ceilings, lighting fixtures, ceiling diffusers and other wall and ceiling items.

   3.9 Remove defacements, streaks, fingerprints, and erection marks.

4. **Exterior:**

   4.1 Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth, even-textured surface.

   4.2 Clean exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances

   4.3 Clean roofs, gutters and downspouts.

   4.4 Remove waste and surplus materials, rubbish and construction equipment and facilities from the site, and deposit it legally elsewhere.

   4.5 Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Remove paint spots; wash and polish glass.

5. **Pest Control:** Engage an experienced, licensed exterminator to make a final inspection and rid the work of rodents, insects, and other pests.

6. **Removal of Protection:** Remove temporary protection and facilities installed for protection of the Work during construction.

7. **Compliance:** Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Agency's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

7.1 Where extra materials of value remain after completion of associated Work, they become the Agency's property. Dispose of these materials as directed by the Construction Administrator.

7.2 Leave building clean and ready for occupancy. If the Design Builder fails to clean up, the Owner may do so, with the cost charged to the Developer.

O. **Prerequisites To Functional Completion**

1. All TAB work and the commissioning of systems must be complete prior to Functional Completion, unless approved in writing by the Owner's Project Manager. Exceptions to this are the planned control system training performed after occupancy and any required seasonal or approved deferred testing. This includes for all systems, but is not limited to:

   1.1 Completed and signed start-up and prefunctional checklist documentation;
   1.2 Requested trend log data;
   1.3 Submission of final approved TAB report;
   1.4. Completion of all functional testing;
   1.5 Required training of Owner personnel completed and approved;
   1.6 Submission of the approved O&M manuals;
   1.7 All identified deficiencies have been corrected or are approved by the Owner to be accepted from this milestone.

2. The Owner's Project Manager (PM) and Construction Administrator will determine the date of Functional Completion after reviewing the Commissioning Authority (CxA) Agent's recommendation for Functional Completion.

01 78 23 OPERATION AND MAINTENANCE DATA

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. **Summary:** This Section includes administrative and procedural requirements for operation and maintenance manuals, including the following:

1. Preparing and submitting operation and maintenance manuals for building operating systems and equipment.
2. Preparing and submitting instruction manuals covering the care, preservation, and maintenance of architectural products and finishes.

D. **Related Sections:** The following sections contain requirements that relate to this Section:

1. Division 01 Section **01 33 00 "Submittal Procedures"** specifies preparation of Shop Drawings and Product Data.
2. Division 01 Section **01 75 00 "Starting and Adjusting"** specifies instruction of the Owner and Agency operating personnel in the operation and maintenance of building systems and equipment and the general requirements for starting-up equipment and systems.
3. Division 01 Section **01 77 00 "Closeout Procedures"** specifies general closeout requirements.
4. Division 01 Section **01 78 30 "Warranties and Bonds"** specifies requirements for submittal of warranties and bonds.
5. Division 01 Section **01 81 13 "Sustainable Design Requirements"** specifies requirements for submittals related to green building certification.

6. Appropriate Sections of the Divisions 02 through 49 specify special operation and maintenance data requirements for specific pieces of equipment or building operating systems.

E. **Quality Assurance**

1. **Maintenance Manual Preparation:** In preparation of maintenance manuals, use personnel thoroughly trained and experienced in operation and maintenance of equipment or system involved.

   1.1 Where maintenance manuals require written instructions, use personnel skilled in technical writing where necessary for communication of essential data.

   1.2 Where maintenance manuals require drawings or diagrams, use draftsmen capable of preparing drawings clearly in an understandable format.

2. **Instructions for the Owner and Agency Personnel:** The Contractor must use experienced instructors thoroughly trained and experienced in operation and maintenance of equipment or system involved, to instruct the Owner's operation and maintenance personnel.

F. **Submittals:**

1. **Submittal Schedule:** Comply with the following schedule for submitting operation and maintenance manuals:

   1.1 Before Substantial Completion, when each installation that requires operation and maintenance manuals is nominally complete, submit *two (2)* draft copies of each manual to the Construction Administrator for review. Include a complete index or table of contents of each manual.

      1.1.1 The Construction Administrator will return *one (1)* copy of the draft with comments within **twenty-one (21)** Calendar Days of receipt.

      1.1.2 Submit *three (3)* copies of data in final form at least **twenty (21)** Calendar Days before final inspection. The Construction Administrator will return one (1) copy within **twenty (21)** Calendar Days after final inspection, with comments.

2. After final inspection, make corrections or modifications to comply with the Architect's comments. Submit final copies to the Construction Administrator within **twenty (21)** Calendar Days of receipt of the Architect's comments.

3. **Form of Submittal:** Prepare operation and maintenance manuals in the form of an instructional manual for use by the Owner's operating personnel. Organize into suitable sets of manageable size. Where possible, assemble instructions for similar equipment into a single binder.

4. **Binders:** For each manual, provide heavy-duty, commercial-quality, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to receive *8-1/2-by-11- inch* paper. Provide a clear plastic sleeve on the spine to hold labels describing contents. Provide pockets in the covers to receive folded sheets.

   4.1 Where *two (2)* or more binders are necessary to accommodate data, correlate data in each binder into related groupings according to the Project Manual table of contents. Cross-reference other binders where necessary to provide essential information for proper operation or maintenance of the piece of equipment or system.

   1.2 Identify each binder on front and spine, with the printed title **"OPERATION AND MAINTENANCE MANUAL"**, Project title or name, and subject matter covered. Indicate volume number for multiple volume sets of manuals.

5. **Dividers:** Provide heavy paper dividers with celluloid-covered tabs for each separate section. Mark each tab to indicate contents. Provide a typed description of the product and major parts of equipment included in the section on each divider.

6. **Protective Plastic Jackets:** Provide protective, transparent, plastic jackets designed to enclose diagnostic software for computerized electronic equipment.

7. **Text Material:** Where maintenance manuals require written material, use the manufacturer's standard printed material. If manufacturer's standard printed material is not available, provide specially prepared data, neatly typewritten, on *8-1/2-by-11-inch, 20-lb/sq ft* white bond paper.

8. **Drawings:** Where maintenance manuals require drawings or diagrams, provide reinforced, punched binder tabs on drawings and bind in with text.

   5.1 Where oversize drawings are necessary, fold drawings to the same size as text pages and use as a foldout.

   5.2 If drawings are too large to be used practically as a foldout, place the drawing, neatly folded, in front or rear pocket of binder. Insert a typewritten page indicating drawing title, description of contents, and drawing location at the appropriate location in the manual.

G. **Manual Content**

1. In each manual include information specified in the individual Specification Section and the following information for each major component of building equipment and its controls:

   1.1 General system or equipment description.

   1.2 Design factors and assumptions.

   1.3 Copies of applicable shop drawings and product data.

   1.4 System or equipment identification, including:

   1.4.1 Name of manufacturer.

   1.4.2 Model number.

   1.4.3 Serial number of each component.

   1.5 Operating instructions.

   1.6 Emergency instructions.

   1.7 Wiring diagrams.

   1.8 Inspection and test procedures.

   1.9 Maintenance procedures and schedules.

   1.10 Precautions against improper use and maintenance.

   1.11 Copies of warranties.

   1.12 Repair instructions including spare parts listing.

   1.13 Sources of required maintenance materials and related services.

   1.14 Manual index.

2. Organize each manual into separate sections for each piece of related equipment. As a minimum, each manual shall contain a title page; a table of contents; copies of product data, supplemented by drawings and written text; and copies of each warranty, bond, and service contract issued.

   2.1 **Title Page:** Provide a title page in a transparent, plastic envelope as the first sheet of each manual. Provide the following information:

   2.1.1 Subject matter covered by the manual.

   2.1.2 Name and address of the Project.

   2.1.3 Date of submittal.

   2.1.4 Name, address, and telephone number of the Contractor.

   2.1.5 Name and address of the Architect and Construction Administrator.

2.1.6 Cross-reference to related systems in other operation and maintenance manuals.

2.2 **Table of Contents**: After title page, include a typewritten table of contents for each volume, arranged systematically according to the Project Manual format. Include a list of each product included, identified by product name or other appropriate identifying symbol and indexed to the content of the volume.

2.2.1 Where a system requires more than one volume to accommodate data, provide a comprehensive table of contents for all volumes in each volume of the set.

2.3 Provide a general information section immediately following table of contents, listing each product included in the manual, identified by product name. Under each product, list the name, address, and telephone number of the subcontractor or Installer and the maintenance contractor. Clearly delineate the extent of responsibility of each of these entities. Include a local source for replacement parts and equipment.

2.4 **Product Data:** Where the manuals include manufacturer's standard printed data, include only sheets that are pertinent to the part or product installed. Mark each sheet to identify each part or product included in the installation. Where the Project includes more than *one (1)* item in a tabular format, identify each item, using appropriate references from the Contract Documents. Identify data that is applicable to the installation, and delete references to information that is not applicable.

2.5 **Written Text**: Prepare written text to provide necessary information where manufacturer's standard printed data is not available, and the information is necessary for proper operation and maintenance of equipment or systems. Prepare written text where it is necessary to provide additional information or to supplement data included in the manual. Organize text in a consistent format under separate headings for different procedures. Where necessary, provide a logical sequence of instruction for each operation or maintenance procedure.

2.6 **Drawings:** Provide specially prepared drawings where necessary to supplement manufacturer's printed data to illustrate the relationship of component parts of equipment or systems or to provide control or flow diagrams. Coordinate these drawings with information contained in project record drawings to assure correct illustration of the completed installation.

2.6.1 Do not use original Record Documents as part of operation and maintenance manuals.

2.7 **Warranties and/or Bonds:** Provide a copy of each warranty and/or bond in the appropriate manual for the information of the Owner's operating personnel. Provide written data outlining procedures to follow in the event of product failure. List circumstances and conditions that would affect validity of warranty or bond.

H. **Material And Finishes Maintenance Manual:**

1. Submit *four (4)* copies of each manual, in final form, on material and finishes to the Construction Administrator for distribution. Provide *one (1)* section for architectural products, including applied materials and finishes. Provide a second section for products designed for moisture protection and products exposed to the weather.

1.1 Refer to individual Specification Sections for additional requirements on care and maintenance of materials and finishes.

2. **Architectural Products:** Provide manufacturer's data and instructions on care and maintenance of architectural products, including applied materials and finishes.

2.1 **Manufacturer's Data:** Provide complete information on architectural products, including the following, as applicable:

2.1.1 Manufacturer's catalog number.

2.1.2 Size.

2.1.3 Material composition.

2.1.4 Color.

2.1.5 Texture.

2.1.6 Reordering information for specially manufactured products.

2.2 **Care and Maintenance Instructions:** Provide information on care and maintenance, including manufacturer's recommendations for types of cleaning agents to be used and methods of cleaning. Provide information on cleaning agents and methods that could prove detrimental to the product. Include manufacturer's recommended schedule for cleaning and maintenance.

3. **Moisture Protection and Products Exposed to the Weather:** Provide complete manufacturer's data with instructions on inspection, maintenance, and repair of products exposed to the weather or designed for moisture-protection purposes.

3.1 **Manufacturer's Data:** Provide manufacturer's data giving detailed information, including the following, as applicable:

3.1.1 Applicable standards.

3.1.2 Chemical composition.

3.1.3 Installation details.

3.1.4 Inspection procedures.

3.1.5 Maintenance information.

3.1.6 Repair procedures.

I. **Equipment And Systems Maintenance Manual:**

1. Submit *four (4)* copies of each manual, in final form, on equipment and systems to the Construction Administrator for distribution. Provide separate manuals for each unit of equipment, each operating system, and each electric and electronic system.

1.1 Refer to individual Specification Sections for additional requirements on operation and maintenance of the various pieces of equipment and operating systems.

2. **Equipment and Systems:** Provide the following information for each piece of equipment, each building operating system, and each electric or electronic system.

2.1 **Description:** Provide a complete description of each unit and related component parts, including the following:

2.1.1 Equipment or system function.

2.2.2 Operating characteristics.

2.1.3 Limiting conditions.

2.1.4 Performance curves.

2.1.5 Engineering data and tests.

2.1.6 Complete nomenclature and number of replacement parts.

2.2 **Manufacturer's Information:** For each manufacturer of a component part or piece of equipment, provide the following:

2.1.1 Printed operation and maintenance instructions.

2.1.2 Assembly drawings and diagrams required for maintenance.

2.1.3 List of items recommended to be stocked as spare parts.

2.3 **Maintenance Procedures:** Provide information detailing essential maintenance procedures, including the following:

2.4 **Operating Procedures:** Provide information on equipment and system operating procedures, including the following:

2.4.1 Startup procedures.

2.4.2 Equipment or system break-in.

2.4.3 Routine and normal operating instructions.

2.4.4 Regulation and control procedures.

2.4.5 Instructions on stopping.

2.4.6 Shutdown and emergency instructions.

2.4.7 Summer and winter operating instructions.

2.4.8 Required sequences for electric or electronic systems.

2.4.9 Special operating instructions.

2.5 **Servicing Schedule:** Provide a schedule of routine servicing and lubrication requirements, including a list of required lubricants for equipment with moving parts.

2.6 **Controls:** Provide a description of the sequence of operation and as-installed control diagrams by the control manufacturer for systems requiring controls.

2.7 **Identification Drawings:** Provide each Contractor's Identification Drawings.

2.7.1 Provide as-installed, color-coded, piping diagrams, where required for identification.

2.8 **Valve Tags**: Provide charts of valve-tag numbers, with the location and function of each valve.

2.9 **Circuit Directories:** For electric and electronic systems, provide complete circuit directories of panel boards, including the following:

2.9.1 Controls.

2.9.2 Communication.

3. **Electronic Media:**

3.1 For equipment which requires maintenance by operational personnel, provide a professionally developed *[video tape] [DVD]* for the use of maintenance training for the facility. Each *[video tape] [DVD]* will be accompanied by a written index which can be utilized to find any specific item of information by time or place on the *[video tape] [DVD]*.

3.2 The General Contractor is responsible for this production. This *[video tape] [DVD]* will be provided to the Construction Administrator at the same time as the delivery of the other maintenance material.

3.3 The *[video tape] [DVD]* must be able to be edited for future changes to the equipment and modifications as they occur.

01 78 30 WARRANTIES AND BONDS

A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section..

B. **Summary:** This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the General Contractor's period for correction of the Work.

Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 01 Section **01 33 00 "Submittal Procedures"** specifies procedures for submitting warranties.
2. Division 01 **Section 01 77 00 "Closeout Procedures"** specifies contract closeout procedures.
3. Division 01 **Section 01 78 23 "Operation and Maintenance Data"** specifies required operation and maintenance data.
4. The Divisions 02 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.
5. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

N.

D. **Disclaimers and Limitations**: Manufacturer's disclaimers and limitations on product warranties do not relieve the General Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve the suppliers, manufacturers, and subcontractors required to countersign special warranties with the General Contractor.

E. **Related Damages and Losses:** When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

F. **Reinstatement of Warranty:** When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

G. **Replacement Cost:** Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The General Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

H. **Owner's Recourse:** Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. **Rejection of Warranties:** The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

I. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the General Contractor presents evidence that entities required to countersign such commitments are willing to do so.

J. The General Contractor shall warranty all materials and workmanship for a period of eighteen months from the date of Acceptance of the Work. In addition, the Contractor shall furnish the warranties listed below. Submit four copies of each to the Architect in the supplier's standard form or in the form given below if there is no standard form available.

K. The General Contractor shall warranty all materials and workmanship for a period of **eighteen (18)** months from the date of Acceptance of the Work. In addition, the General Contractor shall furnish the warranties listed below. Submit four copies of each to the Architect in the supplier's standard form or in the form given below if there is no standard form available.

L. **Specification/Warranty Table:** The General Contractor shall provide for all warranties as shown in the Specification/Warranty table:

1. Specification Section 26 30 00 - DC to AC Power Inverter: 10 years
2. Specification Section 26 30 00 - Photovoltaic Modules: 15 years

M. Submit certification that finish materials are fire rated as specified.

Form of Warranty: Warranties shall be submitted in following format:

Warranty

Commissioner
Department of Construction Services
165 Capitol Avenue
Hartford, Connecticut 06106

Project Number: *(BI-RD-278A)*
Project Title: ROOF TOP SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION
WESTERN CONNECTICUT STATE UNIVERSITY
MIDTOWN STUDENT CENTER
DANBURY, CT
Project No.: BI-RD-278A

I (We) hereby warranty

the _____ ***work on the referenced project for a period of*** ___1.5___ ***years***

from _____ ***, 20*** _____ ***against failures of workmanship and materials in accordance***

with the requirements of Section _____ ***, Page*** _____ ***, Paragraph*** ___1.04___ ***, of the Specifications.***

Installer ☐ | ***Subcontractor*** ☐ | ***Vendor/Suppliers*** ☐ | ***Manufacturer*** ☐

Installer or Subcontractor or Vendor/Suppliers or Manufacturer Name: _____

Installer or Subcontractor or Vendor/Suppliers or Manufacturer Signature: _____

General Contractor's Name _____

General Contractor's Signature: _____

or

General Contractor's Authorized Agent Signature: _____

N. Bonds shall be by approved Surety Companies, made out to the Commissioner, Department of Construction Services on companies' standard form.

O. Warranties, Guarantees, or bonds supplied by the General Contractor's Subcontractors or Vendors/Suppliers or Manufacturers shall reference the project name, number, and location and be certified by the General Contractor to be for the product and installation on the project and must be countersigned by the General Contractor.

P. **Submittals**:

1. Submit written warranties prior to the date certified for Substantial Completion. If the General Contractor's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.

2. Forms for special warranties are included in this Section. Prepare a written document utilizing the appropriate form, ready for execution by the General Contractor's, and by the General Contractor's subcontractor or vendor/supplier, or manufacturer. Submit a draft to the Owner, through the Construction Administrator, for approval prior to final execution.

   2.1 Refer to the Divisions 02 through 48 Sections for specific content requirements and particular requirements for submitting special warranties.

3. **Form of Submittal:** At Acceptance of the Work compile *two (2)* copies of each required warranty properly executed by the General Contractor, and by the General Contractor's subcontractor or vendor/supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

4. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive *8-1/2-inch* by-*11-inch (115-by-280-mm)* paper.

   4.1 Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.

   4.2 Identify each binder on the front and spine with the typed or printed title "WARRANTIES," CT DCS Project Number, Project Title, name of the General Contractor, and name of General Contractor's subcontractor or vendor/supplier, or manufacturer.

   4.3 When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

End
Section 01 70 00
Execution and Closeout Procedures

07 51 60 ROOFING PREPARATION AND REPAIRS

PART 1 - GENERAL

1.01 CONTRACT DOCUMENTS:

A. The Drawings and General Provisions of the contract, including General and Supplementary Conditions.

B. Related work specified elsewhere:

1. Division 26

1.02 DESCRIPTION OF WORK:

A. Provide all labor, equipment, materials and services required to complete the work as described on the Drawings to include:

1. Coordinate all inspections of the existing roofing systems with the manufacturer of the existing in-place warranted systems to include:

a. An inspection prior to the start of solar panel installations.

b. An inspection at the completion of solar panel installations.

2. Provide walkway pads as protection between panel racks and the roof membrane.

3. Install all required anchor posts to include:

a. Removal of existing roof composite.

b. Wood blocking installations.

c. Post securement.

d. Target patch installation.

e. Sealer pocket installation.

4. Engage and pay for the services of the original roof installer to perform weekly site inspections to examine roof surfaces where solar panel installations have occurred and repair all damages found and/or reported by the solar panel installer.

5. Flash all conduits or new curbs that penetrate roof surfaces.

1.03 QUALITY ASSURANCE:

A. Referenced Standards:

1. ASTM: American Society of Testing and Materials.

2. UL: Underwriters Laboratories, Inc.

3. NRCA: National Roofing Contractors Association.

B. Applicator's Qualifications: The application of flashing repairs shall be performed by a Honeywell approved applicator actively performing roofing installations involving coal-tar based roofing materials.

C. Fire Department Regulations: Equipment and fuel shall meet the requirements of the local Fire Department.

1.04 SUBMITTALS:

A. Submittals Package: Submit the shop drawings, product data, samples, and quality control submittals specified below at the same time as a package.

B. Product Data: Catalogue sheets, specifications and installation instructions for each material specified.

1. Revise the membrane manufacturer's product data as necessary to suit the requirements of the Contract Documents. Manufacturer's details are not to be used for the Work of this Contract.

1.05 DELIVERY, STORAGE, AND HANDLING:

A. Delivery:

1. Roofing repair materials shall be delivered to the site in the manufacturer's unbroken containers and shall bear the manufacturer's printed labels.

B. Storage and Handling:

1. Store materials a minimum of 6" off the ground, in a dry, well ventilated place protected from the weather on all sides. Enclosed trailers are recommended. Manufacturer's shrink wrap plastic packaging will not be accepted as weather protection.
2. Mark for identification all materials which become wet. Remove such materials from the site.
3. Handle roll goods with care, store on end. Do not use roll goods which have been damaged.
4. No roofing materials shall be used for any other than their originally intended purpose (i.e. use as weights, counter balances, tie down aids for coverings for materials in storage is prohibited).

1.06 JOB CONDITIONS:

A. Do not execute the Work of this Section unless the Director's representative is present, or unless he directs that the Work be performed during his absence.

B. Temperature: Do not apply repair materials when the deck or air temperature is below 40°F.

C. Do not execute the Work of this Section unless the substrate is dry and free from debris and dust.

D. Moisture Protection:

1. Cover, seal and otherwise protect the roof and all flashings so that water cannot accumulate or flow under the completed portions. When and where required, provide temporary water cut-offs in accordance with the roofing manufacturer's written specifications and contract details.

PART 2 - PRODUCTS

2.01 EPDM SHEET MEMBRANE, REPAIR MATERIAL AND RELATED PRODUCTS:

A. The EPDM sheet membrane shall be visually free of streaks, particles of foreign matter, undispersed raw material, pinholes, cracks, tears, and shall be uniform in thickness. When unrolled in a relaxed position, the membrane shall be free of wrinkles, distortions and blisters.

B. EPDM (Ethylene Propylene Diene Monomer) Sheet Membrane: UL Classified, 90 mil, fire retardant white EPDM, as manufactured by the membrane manufacturer of the warranted roof system now in place.

C. Related Products: Membrane manufacturer's sealer pockets, bonding adhesive, splicing tape, splicing cement, lap sealant, water cut-off mastic, night seal, pourable sealer, splice joint cleaning agent, and all other products related to the sheet membrane system.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify that Work of other trades, which penetrates the roof deck or requires men and equipment to traverse the roof deck, has been completed.

B. Examine surfaces for inadequate anchorage, foreign material, moisture, and unevenness, which would prevent the execution, and quality of application, of the built-up roofing system as specified.

C. Do not proceed with repairs until defects are corrected.

3.02 VERIFICATIONS OF CONDITIONS:

A. Testing existing roof drains and conductor pipes: Before commencing with the Work, water test all existing drains and conductor pipes, submit a written report to the Director's representative, indicating which drains or conductors, if any, are not functioning properly. Repair of existing drains and conductors is not included in the Work. Repair work (if any) may, at the Owner's option, be accomplished by Change Order.

3.03 EPDM INSTALLATION:

A. Splicing and Bonding Sheet Membrane and Flashing:

1. Splicing: Splice all side and end laps of the sheet membrane and flashings with the manufacturer's splicing tape. All mating surfaces must be clean and dry before splicing.

a. Position and fold back membrane at the seam area by overlapping membrane 8" for 7" seam tape. (7" seam tape required for manufacturer's 20 year no dollar limit warranty). Once the membrane is in place, mark the bottom membrane 1/2" to 3/4" from top membrane edge.

b. Clean excess amounts of dusting agent on the membrane and at factory splices using a stiff push broom.

c. Apply seam primer to seam area with manufacturer's applicator pad using long back and forth strokes with pressure along the length of the splicing area until surfaces become dark gray in color. Apply primer to both seam surfaces at the same time paying particular attention to factory seams, contaminated areas or areas of excess amounts of dusting agent.

d. After primer has dried, apply the seam tape to the bottom membrane, aligning the edge of the release paper with the markings. Immediately roll the splice tape with a hand roller.

e. Check the splice tape alignment after entire length of seam has received tape by positioning the top membrane to rest on top of the tape's release paper backing. Trim top membrane as required to assure that 1/8" to 1/2" of the seam tape will be exposed on the finished seam.

f. Roll the EPDM membrane back at the seam area and peel the release paper backing off the splice tape by pulling against the weight of the bottom panel at approximately a 45-degree angle to the tape and parallel with the roof surface. Allow the top membrane to fall freely onto the exposed seam tape. Broom the entire length of the seam at a 45-degree angle as the release paper is being removed.

g. Roll the seam using a 1 1/2" to 2" wide silicone hand roller, first across the seam and then along the entire length of the seam.

h. When the seam is greater in length than the tape, the adjoining splice tape must be overlapped a minimum of 1".

i. At "T" Joints trim tape so that the edge of tape and the edge of the membrane are flush beneath the "T" Joint area. Apply self-adhered flashing material over the completed "T" Joint area.

B. Installing the EPDM Sheet Membrane:

1. Install the membrane with the minimum number of field formed joints. Use the largest size factory formed sheets as is practicable.

2. If possible, start at high point of the roof and work towards the low point. Lap sheets so the flow of water is not against the edges of the sheet.

3. Position the membrane so it is free of buckles or wrinkles. Do not stretch the membrane. Lay the sheets with a minimum 7" lap.

4. Allow the membrane to relax for a minimum of one-half hour before securing or splicing.

5. Fold the sheet back so that one-half of the underside of the sheet is exposed. Apply bonding adhesive to membrane and to the plywood wall surface. Roll the membrane into position. Fold back the unbonded half of the sheet and repeat the bonding procedure.

6. Work the membrane tightly into all intersections of vertical and horizontal surfaces. Cut out and patch all bridging or gaps in excess of 1/4".

7. At vertical walls, turn the membrane up the vertical surface. Secure the membrane at the vertical and horizontal intersection with the membrane manufacturer's perimeter fastening strips secured to vertical wall or horizontal roof surface with fasteners spared not less than 8".

3.07 FIELD QUALITY CONTROL:

A. Existing Roof Protection: The Contractor shall in all cases protect existing roofing from damage. Men and materials shall not be allowed to traverse any roof areas unless minimum 1/2" plywood protection board placed on 1" thick extruded polystyrene insulation cushion of sufficient width. The Contractor shall plan the execution of the work so that a minimum amount of protection is required.

3.08 LICENSED APPLICATOR:

A. The solar contractor shall hire the services of a roofing subcontractor licensed by the manufacturer of the roof membrane system currently in place so that the new solar photovoltaic system installation does not void the current roof system warranty.

3.09 INSPECTIONS:

B. The solar contractor shall pay for all inspection services required by the existing roof membrane manufacturer to include an inspection of roof surfaces prior to the start of all work, as well as a roof inspection to be performed at the completion of all solar photovoltaic system installations.

3.10 WORK PLATFORMS:

A. Work platforms shall be provided adjacent to racks during rack assembly consisting of minimum 3/16" thick rubber walkways set over the existing membrane surface on top of which racks will be assembled. Temporary 3/16" thick rubber walkway pads will then be moved to the next location where the assembly of racks shall occur.

3.11 PROTECTION PAD INSTALLATIONS:

A. Tilt brackets for the racking system shall be set over minimum 3/16" thick rubber walkway pads, which shall extend a minimum of 2" beyond all four (4) sides of tilt bracket base plates. Rubber walkway pads shall be as provided by the membrane manufacturer warranting the existing roof system now in place.

3.12 WEEKLY SITE INSPECTIONS:

A. The solar contractor shall hire the services of a roofing subcontractor licensed by the existing membrane manufacturer to perform one (1) site visit each week during construction. The purpose of this site visit will be to inspect existing membrane surfaces within solar panel work areas and affect repairs to all punctures or tears discovered during this inspection.

3.13 NOTIFICATION AND/OR DOCUMENTATION OF DAMAGES:

A. The roof top solar panel installer shall instruct all workmen on the importance of identifying and/or marking any damage caused to the existing roof membrane system during rack assembly, panel installations, equipment installations and conduit installations. Workmen will be instructed to mark the membrane surface and perform temporary membrane repairs utilizing self adhered EPDM membrane materials. these damages will be reported to the roofing contractor during his weekly inspection so that the roofing contractor can perform permanent repairs to the damages.

3.14 ANCHOR POST INSTALLATIONS:

A. The solar photovoltaic system summary identifies specific quantities of system anchors required to be installed at each individual roof area. These anchors will necessitate sectionalized removal of the existing roof composite down to the deck substrate. New solid blockings secured to the roof deck matching the existing roof composite will then be installed with new EPDM repair material and new EPDM sealer pitch pockets provided. The contractor's licensed roofing subcontractor shall perform these installations in accordance with manufacturer's requirements for inclusion within the current roof system warranties. All roofing materials shall be as provided by the warrantor of the existing roofing system now in place. the contractor shall provide add and deduct unit pricing on the form of proposal for more than or less than the specified quantity of anchors identified on the solar photovoltaic system summary schedule.

3.15 PRECONSTRUCTION CONFERENCE:

A. The solar contractor's licensed roofing subcontractor will be required to attend the preconstruction conference with the awarded solar photovoltaic contractor to discuss specific procedures for roof protection and coordinate inspection to be provided by the roof membrane manufacturer. The solar photovoltaic contractor shall pay for the roofing subcontractor's time to attend the preconstruction conference, as well as pay for all inspection fees required of the roof membrane manufacturer.

3.16 FLASHING INSTALLATIONS:

A. The contractor's roofing subcontractor shall perform all flashing installations at all conduits that penetrate roof surfaces. These flashing installations shall utilize products provided by the warrantor of the roof membrane system currently in place for inclusion under the current roof system guaranty.

End
Section 07 51 60
Roofing Preparation and Repairs

26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. Section Includes:

1. Electrical equipment coordination and installation.
2. Sleeves for raceways and cables.
3. Sleeve seals.
4. Grout.
5. Common electrical installation requirements.

1.03 DEFINITIONS:

A. EPDM: Ethylene-propylene-diene-monomer rubber.

1.04 SUBMITTALS:

A. Product Data: For sleeve seals.

1.05 COORDINATION:

A. Coordinate arrangement, mounting, and support of electrical equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.

2. To provide for ease of disconnecting the equipment with minimum interference to other installations.

3. To allow right of way for piping and conduit installed at required slope.

4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08 Section "Access Doors and Frames."

D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping".

PART 2 - PRODUCTS

2.01 SLEEVES FOR RACEWAYS AND CABLES:

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

   a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.

   b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.02 SLEEVE SEALS:

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

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

   a. Advance Products & Systems, Inc.
   b. Calpico, Inc.
   c. Metraflex Co.
   d. Pipeline Seal and Insulator, Inc.

2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.

3. Pressure Plates: Plastic. Include two for each sealing element.

4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.03 GROUT:

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.01 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION:

A. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

B. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

D. Right of Way: Give to piping systems installed at a required slope.

3.02 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS:

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with fire-stop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry:

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with fire-stop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.03 SLEEVE-SEAL INSTALLATION:

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.04 FIRESTOPPING:

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

End
Section 26 05 00
Common Work Results For Electrical

26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.

1.03 SUBMITTALS:

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

1.04 QUALITY ASSURANCE:

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NEC NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NEC NFPA 70 2005 Amendment to 2009 Amendment CT State Building Code.

PART 2 - PRODUCTS

2.01 CONDUCTORS AND CABLES:

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. American Insulated Wire Corp.; a Leviton Company.
2. General Cable Corporation.
3. Senator Wire & Cable Company.
4. Southwire Company.

B. Copper Conductors: Comply with NEMA WC 70.

C. Conductor Insulation: Comply with NEMA WC 70 for Types THHN/THWN-2 (Building Wire in Raceways), and RHW-2/USE-2 (Exterior Roof-Top Solar Panel Source Circuit Wiring)

2.02 CONNECTORS AND SPLICES:

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

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

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

PART 3 - **EXECUTION**

3.01 CONDUCTOR MATERIAL APPLICATIONS:

A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.02 CONDUCTOR INSULATION AND MULTI-CONDUCTOR CABLE APPLICATIONS AND WIRING METHODS:

A. Feeders (DC Output Circuits from PV Array Combiner Boxes to input at Inverter, and AC Output Wiring from Inverter to Utility-Interactive Point-Of-Connection): Type THHN/THWN-2, 600V rated, single conductors in raceway.

B. Solar Panel Source Circuits (String Wiring): Type RHW-2/USE-2, 600V rated black insulation, sunlight resistant, single conductor stranded copper, No. 10 AWG.

3.03 INSTALLATION OF CONDUCTORS AND CABLES:

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

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

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

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."

D. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

3.04 CONNECTIONS:

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

3.05 FIELD QUALITY CONTROL:

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test feeder conductors and terminations for compliance with requirements.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.

a. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

b. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

C. Test Reports: Prepare a written report to record the following:

1. Test procedures used.

2. Test results that comply with requirements.

3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

4. Remove and replace malfunctioning units and retest as specified above.

End
Section 260519
Low Voltage Electrical Power Conductors And Cables

26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This Section includes methods and materials for grounding systems and equipment as follows:

1. Grounding and Bonding of Solar Electric Panels (Photovoltaic Array System) DC Wiring, Utility-Interactive DC to AC Conversion Inverter Systems, Inverter Output AC Wiring to Point-Of-Connection at line-side (supply-side) of existing CL&P Grounded Secondary Service Main Disconnect Device.

1.03 SUBMITTALS:

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

C. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals:

1. Instructions for periodic testing and inspection of grounding features at test wells, ground rings, and grounding connections for separately derived systems based on NETA MTS and/or NFPA 70B.

a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.

b. Include recommended testing intervals.

1.04 QUALITY ASSURANCE:

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

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

PART 2 - PRODUCTS

2.01 CONDUCTORS:

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

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.

2. Stranded Conductors: ASTM B 8.

3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.

4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

5. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches in cross section, unless otherwise indicated; with insulators.

2.02 CONNECTORS:

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

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

2.03 GROUNDING ELECTRODES:

A. Ground Rods: Copper-clad steel, 3/4 inch in diameter by 10-feet long..

PART 3 - EXECUTION

3.01 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. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.

2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.

3. Connections to Ground Rods at Test Wells: Bolted connectors.

4. Connections to Structural Steel: Welded connectors.

3.02 EQUIPMENT GROUNDING:

A. Roof-Mounted DC to AC Conversion Inverter (with integral Output Isolation Transformer: Refer to grounding and bonding diagram on Drawing PV-2.

B. Install insulated equipment grounding conductors with all feeders – DC and AC Wiring.

3.03 INSTALLATION:

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.

2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches deep, with cover.

1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.

2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.

3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

3.04 FIELD QUALITY CONTROL:

A. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.

a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.

b. Perform tests by fall-of-potential method according to IEEE 81.

B. Report measured ground resistances that exceed the following values:

1. Power Distribution Equipment or System with Capacity 500 kVA and Less: 10 ohms.

C. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

End
Section 26 05 26
Grounding and Bonding For Electrical Systems

26 05 29 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.

2. Construction requirements for concrete bases.

1.03 DEFINITIONS:

A. EMT: Electrical metallic tubing.
B. IMC: Intermediate metal conduit.
C. RMC: Rigid metal conduit (Galvanized Rigid Steel).
D. RNC: Rigid nonmetallic conduit (PVC Schedule 40 or 80).

1.04 PERFORMANCE REQUIREMENTS:

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.05 SUBMITTALS:

A. Welding certificates.

B. Product Data: For the following:

1. Steel slotted channel support systems.
2. Nonmetallic slotted channel support systems.
3. Trapeze hangers.
4. Equipment supports.

1.06 QUALITY ASSURANCE:

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

B. Comply with NFPA 70.

1.07 COORDINATION:

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

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories".

PART 2 - PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS:

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

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

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. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.

5. 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- diameter holes at a maximum of 8 inches o.c., in at least 1 surface.

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

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. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.

4. 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. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

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

1. Hilti Inc.

2. ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.

3. MKT Fastening, LLC.

4. Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.

2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

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

1. Cooper B-Line, Inc.; a division of Cooper Industries.

2. Empire Tool and Manufacturing Co., Inc.

3. Hilti Inc.

4. ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.

5. MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.

4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.

5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.

6. Toggle Bolts: All-steel springhead type.

7. Hanger Rods: Threaded steel.

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES:

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.01 APPLICATION:

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity 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 two-bolt conduit clamps.

3.02 SUPPORT INSTALLATION:

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lbs.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.

2. To New Concrete: Bolt to concrete inserts.

3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

4. To Existing Concrete: Expansion anchor fasteners.

5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.

6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.

7. To Light Steel: Sheet metal screws.

8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS:

A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.04 CONCRETE BASES:

A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete or Cast-in-Place Concrete (Limited Applications)."

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

2. Install anchor bolts to elevations required for proper attachment to supported equipment.

3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.05 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.

B. Touchup: Comply with requirements in Division 09 painting sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

End
Section 26 05 29
Hangers and Supports for Electrical Systems

26 05 33 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.02 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.03 DEFINITIONS:

A. EMT: Electrical metallic tubing.
B. EPDM: Ethylene-propylene-diene-monomer rubber.
C. FMC: Flexible metal conduit.
D. LFMC: Liquidtight flexible metal conduit.
E. RMC: Rigid metal conduit (Galvanized Rigid Steel)
F. RNC: Rigid nonmetallic conduit (PVC Schedule 40 or 80)

1.04 SUBMITTALS:

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Structural members in the paths of conduit groups with common supports.

2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.

C. Source quality-control test reports.

1.05 QUALITY ASSURANCE:

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.01 METAL CONDUIT AND TUBING:

A. 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. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.

7. Maverick Tube Corporation.
8. O-Z Gedney; a unit of General Signal.
9. Wheatland Tube Company.

B. Rigid Steel Conduit: ANSI C80.1.

C. EMT: ANSI C80.3.

D. FMC (Greenfield): Zinc-coated steel.

E. LFMC (Sealtite): Flexible steel conduit with PVC jacket.

F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Fittings for EMT: Steel, compression type.

G. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.02 NONMETALLIC CONDUIT AND TUBING:

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. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc. Anaconda Metal Hose
3. Arnco Corporation
4. CANTEX Inc.
5. CertainTeed Corp.: Pipe and Plastics Group
6. Condux International, Inc.
7. ElecSYS, Inc.
8. Electri-Flex Co.
9. Lamson & Sessions: Carlon Electrical Products
10. Manhattan / CDT / Cole-Flex
11. RACO: a Hubbell Company
12. Thomas & Betts Corporation

B. ENT: NEMA TC 13

C. RNC: NEMA TC2 (Type EPC-40 PVC), unless otherwise indicated

D. LFNC: UL1660

E. Fittings for ENT and RNC: NEMA TC3, match to conduit or tubing type and material.

G. Fittings for LFNC: UL 514B.

2.03 METAL WIREWAYS:

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

1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.

B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 3R, unless otherwise indicated.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Flanged-and-gasketed type, unless otherwise indicated.

E. Finish: Manufacturer's standard enamel finish.

2.04 BOXES, ENCLOSURES, AND CABINETS:

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. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. EGS/Appleton Electric.
3. Erickson Electrical Equipment Company.
4. Hoffman.
5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
6. O-Z/Gedney; a unit of General Signal.
7. RACO; a Hubbell Company.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet Division.
10. Spring City Electrical Manufacturing Company.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.

D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

E. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum or galvanized, cast iron with gasketed cover.

F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

G. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

2. Hinged door in front cover with flush latch and concealed hinge.

3. Key latch to match panelboards.

4. Metal barriers to separate wiring of different systems and voltage.

5. Accessory feet where required for freestanding equipment.

2.05 SLEEVES FOR RACEWAYS:

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.06 SLEEVE SEALS:

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. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.

B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.

2. Pressure Plates: Plastic. Include two for each sealing element.

3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

A. **See Drawing PV-1 for specific installation notes.**

3.02 INSTALLATION:

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Install no more than the equivalent of three 90-degree bends in any conduit run.

F. 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.

G. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

H. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lbs tensile strength. Leave at least 12 inches of slack at each end of pull wire.

I. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.

2. Where otherwise required by NFPA 70.

3.03 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS:

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Rectangular Sleeve Minimum Metal Thickness:

1. For sleeve cross-section rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.

2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.

E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

F. Cut sleeves to length for mounting flush with both surfaces of walls.

G. Extend sleeves installed in floors 2 inches above finished floor level.

H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed.

I. Seal space outside of sleeves with grout for penetrations of concrete and masonry.

J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.

K. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with firestop materials. Comply with Division 07 Section "Penetration Firestopping."

L. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.

M. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

3.04 SLEEVE-SEAL INSTALLATION:

A. Install to seal underground, exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.05 FIRESTOPPING:

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.06 PROTECTION:

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

End
Section 26 05 33
Raceway and Boxes for Electrical Systems

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Warning labels and signs.
5. Instruction signs.
6. Equipment identification labels.
7. Miscellaneous identification products.

1.03 SUBMITTALS:

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

1.04 QUALITY ASSURANCE:

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

1.05 COORDINATION:

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways Carrying Circuits at 600 V or Less:

1. Black letters on an orange field
2. Legend: Indicate voltage and system or service type.

C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Tape and Stencil for Raceways Carrying Circuits More Than 600 V: 4-inch- wide black stripes on 10-inch centers diagonally over orange background that extends full length of raceway or duct and is 12 inches wide. Stop stripes at legends.

G. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

H. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.02 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS:

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

D. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

E. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.03 CONDUCTOR IDENTIFICATION MATERIALS:

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

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

D. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

F. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.04 WARNING LABELS AND SIGNS:

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.

2. 1/4-inch grommets in corners for mounting.

3. Nominal size, 7 by 10 inches.

D. Metal-Backed, Butyrate Warning Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.

2. 1/4-inch grommets in corners for mounting.

3. Nominal size, 10 by 14 inches.

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

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."

2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.05 INSTRUCTION SIGNS:

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.

1. Engraved legend with black letters on white face.

2. Punched or drilled for mechanical fasteners.

3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

2.06 EQUIPMENT IDENTIFICATION LABELS:

A. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

B. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

C. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

D. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

E. Retain paragraph below to specify type of label for identifying outdoor equipment if specified in "Identification Schedule" Article.

2.07 CABLE TIES:

A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.

3. Temperature Range: Minus 40 to plus 185 deg F.

4. Color: Black except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.

3. Temperature Range: Minus 40 to plus 185 deg F.

4. Color: Black.

C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.

1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.

3. UL 94 Flame Rating: 94V-0.

4. Temperature Range: Minus 50 to plus 284 deg F.

5. Color: Black.

2.08 MISCELLANEOUS IDENTIFICATION PRODUCTS:

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

I. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.02 IDENTIFICATION SCHEDULE:

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service and Feeders, More Than 30A, and 120 V to ground: Identify with self-adhesive vinyl label or self-adhesive vinyl tape applied in bands. Install labels at 10-foot maximum intervals.

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

1. Solar Electric (Photovoltaic Array) System DC Circuit Wiring.
2. Solar Electric (Photovoltaic Array) System AC Circuit Wiring.

C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in pull and junction boxes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service and feeder conductors.

a. Color shall be factory applied.
b. Colors for 208/120-V Circuits:

1) Phase A: Black.

2) Phase B: Red.
3) Phase C: Blue.

c. Color-coding of grounded service (neutral) and equipment grounding conductors shall be as dictated by NFPA 70.

d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

E. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.

3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

F. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

G. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power: Self-adhesive warning labels.

1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

a. Power transfer switches.
b. Controls with external control power connections.

H. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

I. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

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

b. Outdoor Equipment: Engraved, laminated acrylic or melamine label and/or Stenciled legend 4 inches high.

c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.

d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

a. Panelboards: Typewritten directory of circuits in the location provided by panel-board manufacturer. Panel-board identification shall be engraved, laminated acrylic or melamine label.

b. Enclosures and electrical cabinets.

c. Access doors and panels for concealed electrical items.

d. Switchgear.

e. Switchboards.

f. Transformers: Label that includes tag designation shown on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.

g. Enclosed switches.

h. Enclosed circuit breakers.

i. Battery-inverter units.
j. Battery racks.

k. Power-generating units.

l. Monitoring and control equipment.

m. Solar Electric (Photovoltaic Array) System Inverters

End
Section 26 05 53
Identification For Electrical Systems

26 28 16 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. Section Includes:

1. Fusible switches.
2. Enclosures.

1.03 DEFINITIONS:

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.04 PERFORMANCE REQUIREMENTS:

1.05 SUBMITTALS:

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Enclosure types and details for types other than NEMA 250, Type 1.

2. Current and voltage ratings.

3. Short-circuit current ratings (interrupting and withstand, as appropriate).

4. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

C. Field quality-control reports.

1. Test procedures used.

2. Test results that comply with requirements.

3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

D. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.

1.06 QUALITY ASSURANCE:

A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

B. Retain first paragraph below to allow drawing details based on one manufacturer's product to establish requirements and still allow competition. Coordinate with Division 01 requirements.

C. 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.

D. Comply with NFPA 70.

1.07 PROJECT CONDITIONS:

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.

2. Altitude: Not exceeding 6600 feet.

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of electric service.

2. Do not proceed with interruption of electric service without Owner's written permission.

3. Comply with NFPA 70E.

1.08 COORDINATION:

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

1.09 EXTRA MATERIALS:

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

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

2. Fuse Pullers: Two for each size and type.

PART 2 - **PRODUCTS**

2.01 FUSIBLE SWITCHES:

A. Basis-of-Design Product: Subject to compliance with requirements, provide **Square D** or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

3. Siemens Energy & Automation, Inc.

B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.

2. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.

3. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open.

4. Lugs: Mechanical and/or Compression type, suitable for number, size, and conductor material.

2.02 ENCLOSURES:

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.

2. Outdoor Locations: NEMA 250, Type 3R.

3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.

4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION:

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

C. Install fuses in fusible devices.

D. Comply with NECA 1.

3.03 IDENTIFICATION:

A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.

2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.04 FIELD QUALITY CONTROL:

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.

2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3. Perform the following infrared scan tests and inspections and prepare reports:

a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch and circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.

b. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 ADJUSTING:

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

End
Section 26 28 16
Enclosed Switches and Circuit Breakers

26 30 00 SOLAR ELECTRICAL (PHOTOVOLTAIC ARRAY) SYSTEMS

PART 1 - GENERAL

1.01 REFERENCES:

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

A. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE):

1. IEEE 100 (2000) The Authoritative Dictionary of IEEE Standards Terms
2. IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems
3. IEEE 929 Recommended Practices for Utility Interface of Photovoltaic (PV) Systems
4. IEEE 519 Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

B. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA):

1. NEMA 250 (2008) Enclosures for Electrical Equipment (1000 Volts Maximum)

C. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

1. NFPA 70; National Electrical Code 2005 edition with 2009 CT State Supplement.

D. UNDERWRITERS LABORATORIES (UL):

1. UL 1741 Standard for Safety Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources
2. UL 1703 Flat-Plate Photovoltaic Modules and Panels
3. UL 44 Thermoset-Insulated Wires and Cables
4. UL 854 Service Entrance Cables

1.02 RELATED DOCUMENTS:

This section applies to all Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections.

1.03 DEFINITIONS:

A. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE 100. IEEE 1547, IEEE 929, IEEE 519 listed in the Reference article.

B. The technical sections referred to herein are those specification sections that describe products, installation procedures, and equipment operations and that refer to this section for detailed description of submittal types.

C. The technical paragraphs referred to herein are those paragraphs in PART 2 - PRODUCTS and PART 3 - EXECUTION of the technical sections that describe products, systems, installation procedures, equipment, and test methods.

1.04 ELECTRICAL CHARACTERISTICS:

A. Electrical characteristics for this project shall be per the Architectural and Engineering Drawings.

1.05 ALTERNATE MANUFACTURERS:

A. Manufacturers other than the listed Basis of Design shall be acceptable subject to compliance with the American Recovery and Reinvestment Act of 2009; Section 1605 - Buy American.

1.06 SUBMITTALS:

A. Shop Drawings:

1. Wiring Diagrams:

a. Include wiring diagrams and installation details. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

2. Product Data:

a. Submittal shall include performance and characteristic curves.

1.07 QUALITY ASSURANCE:

A. The Midtown Student Center building at Western Connecticut State University is insured by Factory Mutual (FM) Global. Therefore the installed PV Array System shall meet all requirements set forth by FM Global, especially with regard to the Non-Penetrating Ballasted PV Racking component. Refer to "FM GLOBAL REQUIREMENTS FOR THE ROOF-TOP PV ARRAY SYSTEM" notes on Drawing PV-1. Available reserve dead load capacities are indicated on Drawing G-3 for each individual roof area.

B. Regulatory Requirements:

1. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

2. Standard Products:

a. Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-yearperiod shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in the technical section.

3. Alternative Qualifications:

a. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

4. Material and Equipment Manufacturing Date:

a. Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

1.08 WARRANTY:

A. The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

B. Provide manufacturer warranties for the following:

1. DC to AC power inverters: 10 years
2. Photovoltaic Modules: 15 years

1.09 POSTED OPERATING INSTRUCTIONS:

A. Provide for each system and principal item of equipment as specified in the technical sections for use by operation and maintenance personnel. The operating instructions shall include the following:

1. Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.

2. Start up, proper adjustment, operating, lubrication, and shutdown procedures.

3. Safety precautions.

4. The procedure in the event of equipment failure.

5. Other items of instruction as recommended by the manufacturer of each system or item of equipment.

B. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions where directed. For operating instructions exposed to the weather, provide weather-resistant materials or weatherproof enclosures. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.10 MANUFACTURER'S NAMEPLATE:

A. Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

PART 2 - PRODUCTS

2.01 PHOTOVOLTAIC CRYSTALLINE MODULES:

A. Photovoltaic modules shall be of the type specified in the drawings and shall meet the requirements herein – SolarWorld Sunmodule SW 250 Mono, or approved equal (e.g. SunEdison or Suniva).

1. All photovoltaic modules shall be tested and listed by UL 1703 or by an approved agency to ensure compliance with applicable safety standards.

2. All photovoltaic modules shall be flat plate design and shall have a minimum nameplate rating of 250 Watts.

3. The module manufacturer and model shall be listed in the California Energy Commission's Eligible Solar Electric Equipment, Eligible Photovoltaic Modules list, also known as "CEC listed."

4. Modules may have a power tolerance of +/- 3%. Preference will be given to modules with a power tolerance of -0% or better. e. Manufacturer shall provide factory flash test results in a spreadsheet format.

6. Manufacturers that classify modules by impedance and are willing to provide bin-matched modules will be given preference.

7. All modules shall be 156mm x 156mm (cell dimensions), 60 cell format.

2.02 DC TO AC POWER INVERTER:

A. Photovoltaic DC to AC power inverter shall be of the type specified in the drawings and shall meet the requirements herein – Advanced Energy AE50TX - 208 VAC or approved equal (e.g. Solectria or Power-One).

B. The inverter manufacturer and model must be certified to UL 1741 by a recognized NRTL. UL, CSA, Intertek, MET Laboratories, TUV America, and TUV Rheinland of North America are recognized NRTLs.

C. The inverter manufacturer and model must be listed in the California Energy Commission's Eligible Solar Electric Equipment, Eligible Inverters list also known as "CEC listed."

D. The inverter weighted CEC inverter efficiency must be a minimum of 96%.

E. The inverter must have a MPPT range of a minimum 320VDC to 600 VDC.
F. Noise emissions not to exceed 65dB.

G. The inverter warranty period must be a minimum of 10 years for workmanship and performance.

H. The inverter must have provisions for a twisted pair shielded data acquisition system (DAS) connection. The inverter must supply performance and trouble code faults to the DAS.

I. Enclosures must be a minimum of TYPE 4, unless approved by client.

J. Dust and debris must not enter the main electronics portion of the inverter either by forced air or enclosure openings. Any air filtration must be capable of handling at least six months of soiling in an outdoor environment before impacting the inverter performance. Some soiling of the isolation transformer or heat sink devices may be allowed, but must be accessible for cleaning.

K. The inverter must have a front panel display and keypad. During normal operation, the front panel display should show as separate line items or automatically scroll through:

1. DC Voltage
2. Current kW AC Power Output
3. Current Inverter Status (wake up, MPPT, error, etc.)
4. Daily kWh's generated
5. Cumulative kWh's generated from the time of commission
6. Total hours of operation

L. The keypad, at a minimum, should allow the user (through a password) to adjust the following:

1. Wake up DC Open Circuit Voltage
2. Minimum operational DC Voltage
3. AC voltage minimum and maximum values

M. The inverter model must automatically reset and wake up after self correcting faults. Reset and wake up to comply with UL 1741.

N. The inverter model must have an integrated load break DC and AC disconnect.

O. The inverter model must have an array combiner with a minimum of six inputs.

P. A comprehensive installation manual and operations and maintenance manual must be provided with the proposal.

Q. As part of the terms of the contract, on site inverter in field repair and troubleshooting must occur no more than 48 hours after initial contact.

2.03 PHOTOVOLTAIC RACKING SYSTEM:

A. Non-penetrating, ballasted, photovoltaic racking system shall be of the type specified in the drawings and shall meet the requirements herein – Genmounts Genesis 5° Tilt or approved equal (e.g. Daetwyler or PanelClaw).

2.04 BALANCE OF SYSTEM "BOS":

A. Photovoltaic BOS shall be of the type specified in the drawings and shall meet the requirements herein.

1. DC Homerun Circuit Cable:

a. Type RHW-2 / Use-2, 600V rated black insulation, sunlight resistant, single conductor stranded copper, No. 10 AWG.

b. All quick connectors shall be of the same manufacturer and type as the PV module.

c. Cable shall be listed and comply with UL 44 and UL 854.

2. DC Circuit Smart Combiner Box with integral output DC Disconnect Switch – SolarBOS or approved equal (e.g. Advanced Energy or Solectria).

a. Enclosure shall be NEMA 3R.

b. Combiner shall have 9 or 10 monitored DC input circuits or greater.

c. All live electrical parts shall have an internal protective cover "deadfront."

d. The combiner manufacturer and model must be certified to UL 1741 by a recognized NRTL. UL, CSA, Intertek, MET Laboratories, TUV America, and TUV Rheinland of North America are recognized NRTLs.

e. The output DC circuit from each combiner box shall have an integral, visible disconnect, with a handle lock provision in the open position.

f. The disconnect shall be non-fusible and rated for 600V DC.

2.05 PERFORMANCE MONITORING AND REPORTING SYSTEM (PMRS) WITH DATA ACQUISITION SERVER (DAS) ALSOENERGY

A. The DAS shall be Deck Monitoring / Also-Energy, or approved equal to conform to the following AlsoEnergy components:

1. Commercial Monitoring Hardware Assembled into NEMA 4 Enclosure for Refusol Inverters as per AlsoEnergy product #CH-E4-RG.

a. Acquisuite Data Logger with two RS-485-RS-232 ports.
b. Internal 120 / 240 / 277 VAC power supply.
c. Two Surge Suppressors.
d. Ethernet cable.
e. NEMA 4 Enclosure 15.75" (400mm) high x 15.75" (400mm) wide x 7.87" (200mm) tall.

2. Five (5) year revenue grade meter monitoring data storage and maintenance as per AlsoEnergy product #MF-DV-05.

3. Sub Array Monitoring, Data Storage and Maintenance as per AlsoEnergy product #MF-CB-05:

   a. For a period of five (5) years.
   b. Per zone or sub array channel.

4. Five (5) years Central Inverter Monitoring, Data Storage and Maintenance as per AlsoEnergy product #MF-DV-05.

5. Agency reporting - NE POOL as per AlsoEnergy product #AR-NE-05:

   a. Five (5) years of monthly reports.

   b. Contractor to provide set-up of site account with confirmation AlsoEnergy is the third party reporting provider.

6. Site set-up, software training (five years) and remote customer technical support for hardware and software.

7. Five (5) year warranty for all hardware.

B. Three (3) Phase revenue grade meter shall be as required by Connecticut Power and Light and the New England Power Pool Generation Information System (NEPOOL GIS) capable of interfacing with the data acquisition system.

1. Provide NEMA 4 enclosure and CTs.

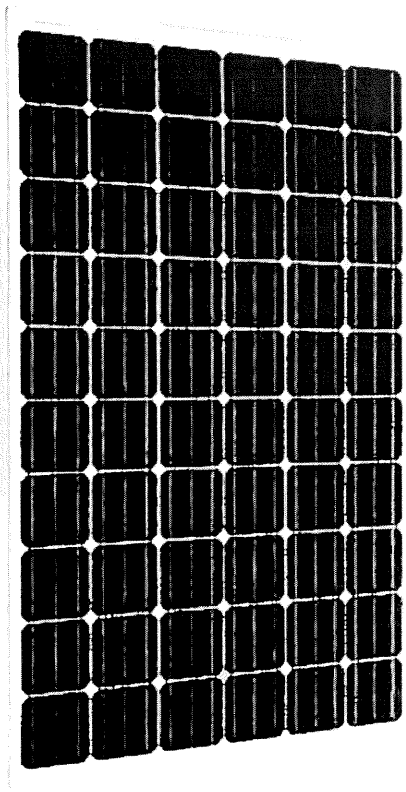
2. Up to 600 VAC

3. Contractor will have the option of purchasing the revenue grade meter from the DAS provider such as AlsoEnergy Product #MT-R6-03. Purchase of the meter from the DAS provider will require the meter to be sent to Connecticut Power and Light by the contractor for synchronization.

PART 3 - EXECUTION

Not used.

End
Section 26 30 00
Solar Electrical (Photovoltaic Array) Systems



Sunmodule™

SW 250 mono / Version 2.0 and 2.5 Frame

World-class quality
Fully-automated production lines and seamless monitoring of the process and material ensure the quality that the company sets as its benchmark for its sites worldwide.

SolarWorld Plus-Sorting
Plus-Sorting guarantees highest system efficiency. SolarWorld only delivers modules that have greater than or equal to the nameplate rated power.

25 years linear performance guarantee and extension of product warranty to 10 years
SolarWorld guarantees a maximum performance degression of 0.7% p.a. in the course of 25 years, a significant added value compared to the two-phase warranties common in the industry. In addition, SolarWorld is offering a product warranty, which has been extended to 10 years.*

*in accordance with the applicable SolarWorld Limited Warranty at purchase
www.solarworld.com/warranty

SOLARWORLD

We turn sunlight into power.

www.solarworld.com

Sunmodule™

SW 250 mono / Version 2.0 and 2.5 frame

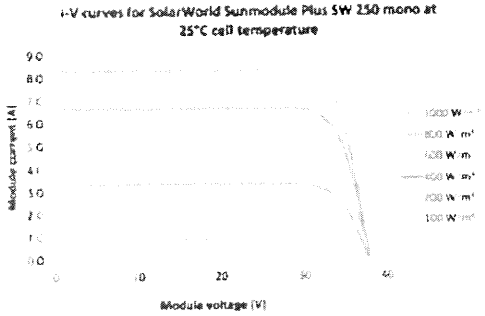
PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

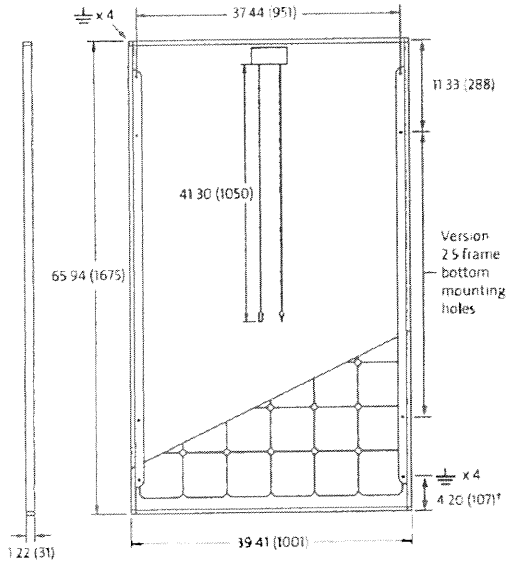
		SW 250
Maximum power	P_{max}	250 Wp
Open circuit voltage	V_{oc}	37.8 V
Maximum power point voltage	V_{mpp}	31.1 V
Short circuit current	I_{sc}	8.28 A
Maximum power point current	I_{mpp}	8.05 A

*STC: 1000W/m², 25°C, AM 1.5

THERMAL CHARACTERISTICS

NOCT	46 °C
TC I_{sc}	0.004 %/K
TC V_{oc}	-0.30 %/K
TC P_{mpp}	-0.45 %/K
Operating temperature	-40°C to 85°C





PERFORMANCE AT 800 W/m², NOCT, AM 1.5

		SW 250
Maximum power	P_{max}	183.3 Wp
Open circuit voltage	V_{oc}	34.6 V
Maximum power point voltage	V_{mpp}	28.5 V
Short circuit current	I_{sc}	6.68 A
Maximum power point current	I_{mpp}	6.44 A

Minor reduction in efficiency under partial load conditions at 25°C: at 200W/m² 95% (+/-3%) of the STC efficiency (1000 W/m²) is achieved.

COMPONENT MATERIALS

Cells per module	60
Cell type	Mono crystalline
Cell dimensions	6.14 in x 6.14 in (156 mm x 156 mm)
Front	tempered glass (EN 12150)
Frame	Clear anodized aluminum
Weight	46.7 lbs (21.2 kg)

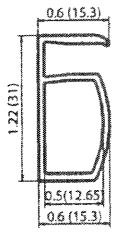
SYSTEM INTEGRATION PARAMETERS

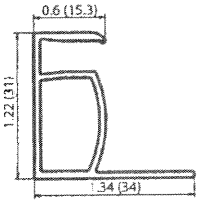
Maximum system voltage SC II		1000 V
Max. system voltage USA NEC		600 V
Maximum reverse current		16 A
Number of bypass diodes		3
UL Design Loads*	Two rail system	113 psf downward 64 psf upward
UL Design Loads*	Three rail system	170 psf downward 64 psf upward
IEC Design Loads*	Two rail system	113 psf downward 50 psf upward

*Please refer to the Sunmodule installation instructions for the details associated with these load cases.

ADDITIONAL DATA

Power tolerance[2]	0 Wp / +5 Wp
J-Box	IP65
Connector	MC4
Module efficiency	14.91 %
Fire rating (UL 790)	Class C





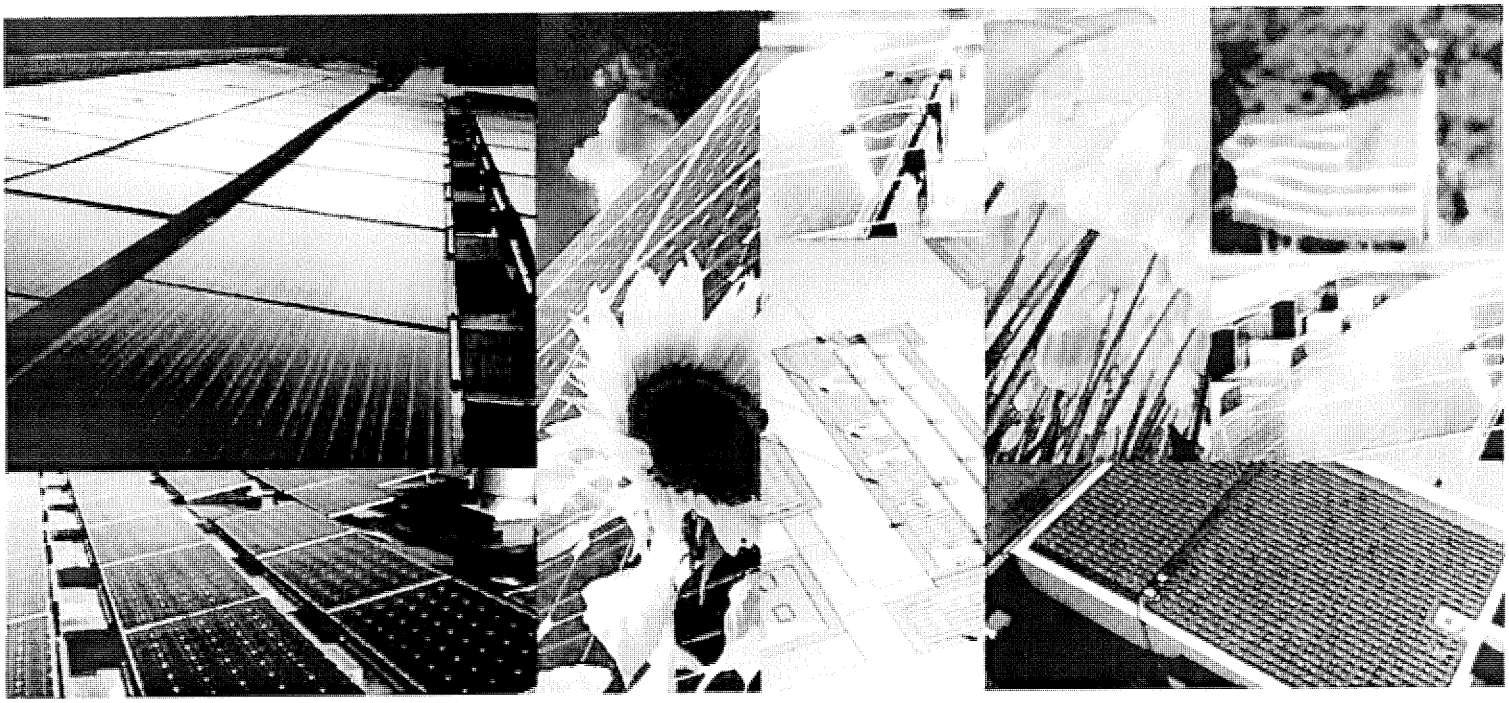
VERSION 2.0 FRAME
- Compatible with "Top-Down" mounting methods
- Grounding Locations
  4 corners of the frame

VERSION 2.5 FRAME
- Compatible with both "Top-Down" and "Bottom" mounting methods
- Grounding Locations
  - 4 corners of the frame
  - 4 locations along the length of the module in the extended flange†

1) Sunmodules dedicated for the United States and Canada are tested to UL 1703 Standard and listed by a third party laboratory. The laboratory may vary by product and region. Check with your SolarWorld representative to confirm which laboratory has a listing for the product.
2) Measuring tolerance traceable to TÜV Rheinland: +/- 2% (TÜV Power Controlled)
3) All units provided are imperial. SI units provided in parentheses.

SolarWorld AG reserves the right to make specification changes without notice.

WE OFFER A HIGH QUALITY, LOW COST, EASY INSTALLATION SOLAR MOUNTING SYSTEM IDEAL FOR GROUND OR FLAT ROOF INSTALLATIONS.



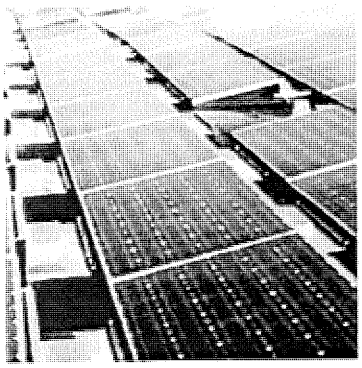
OUR FOCUS

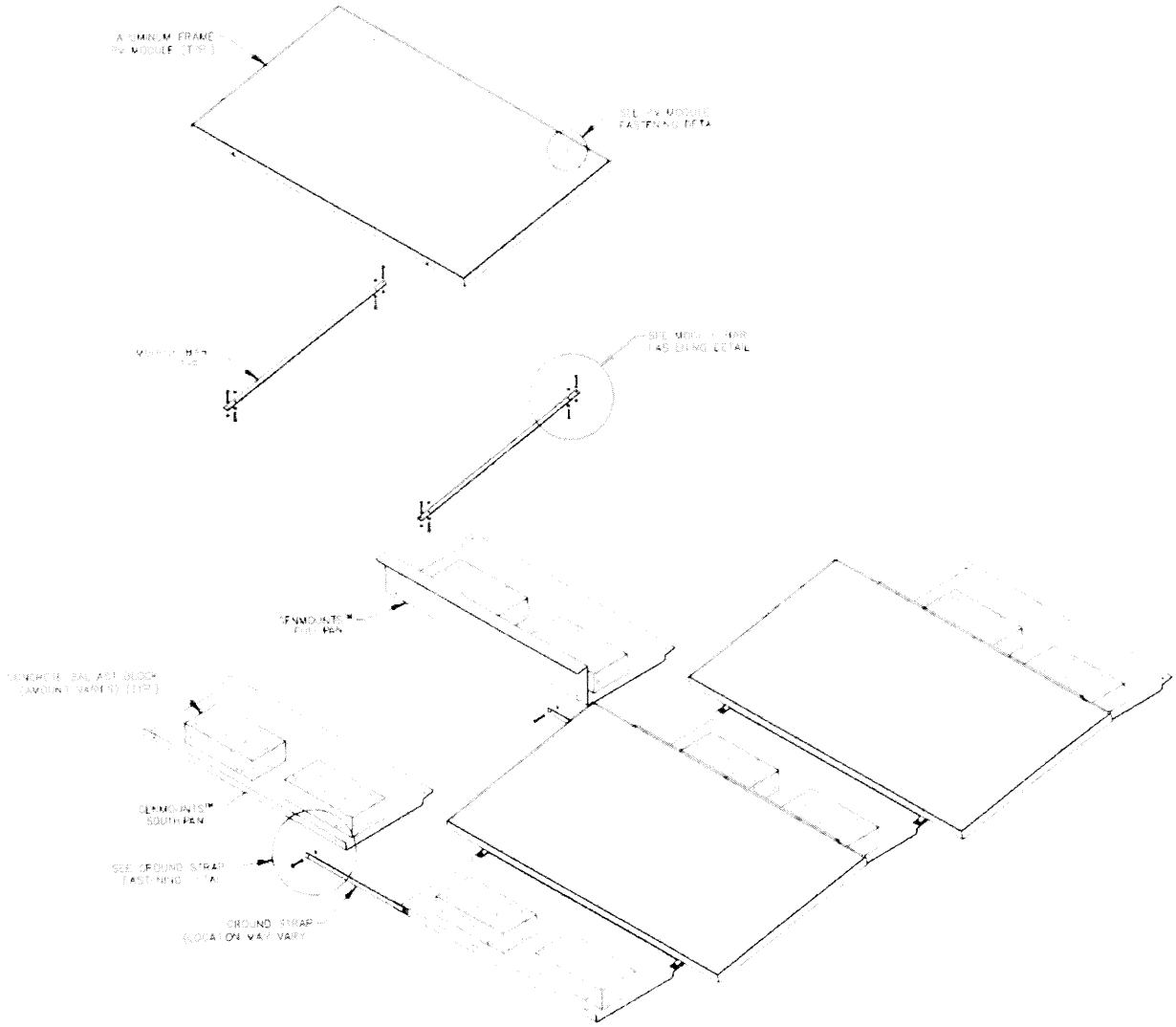
OUR PROMISE

COMMITMENT

RECOMMENDED APPLICATIONS

PRODUCT FEATURES

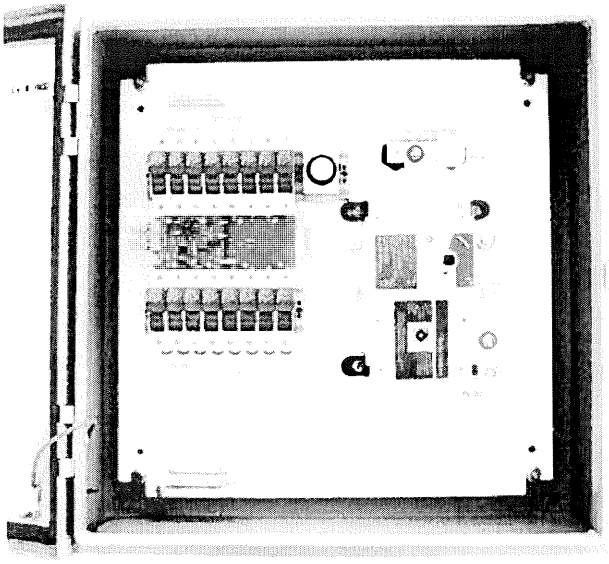



ALUMINUM FRAME
PV MODULE (TYP.)
SEE PV MODULE
FASTENING DETAIL
SEE MODULE BAR
FASTENING DETAIL
SENMOUNTS™
FULL PAN
CONCRETE BALLAST BLOCK
(AMOUNT VARIES) (TYP.)
SENMOUNTS™
SOUTH PAN
SEE GROUND STRAP
FASTENING DETAIL
GROUND STRAP
(LOCATION MAY VARY)

310 Stealth Court, Livermore, CA 94551
925.456.7744 | www.solarbos.com

Smart Disconnect Combiner

SolarBOS Smart Combiners are ETL listed to UL 1741 for 600 or 1000 Volt DC photovoltaic systems. The smart combiner includes a current sensor module which measures current of each circuit and transmits this information via Modbus/RS-485. They are designed to minimize installation cost by giving the system designer the utmost flexibility.



SolarBOS 600 VDC Smart Disconnect Combiner
CS200-16M-15-N3: 200 amp Disconnect, 16 Circuits with Monitoring, 15-amp fuses and a NEMA 3/3R Enclosure

Installer Preferred

SolarBOS Smart Disconnect Combiners can be specified with 8 to 16 input circuits with a variety off switch sizes up to 250 amps. Single or Dual Input/Output terminals are rated for 90C and enclosures are available in NEMA 3R and NEMA 4 powder coated or stainless steel.

Made in California

SolarBOS products are designed and manufactured with the system integrator in mind, using the highest quality components to ensure long-term field reliability. All products are assembled in our ETL certified facility in Livermore, California, and we guarantee customer satisfaction.

PRODUCT FEATURES:

- ETL listed to UL-1741
- 8 to 16 input circuits
- 100, 200, and 250 amp integrated disconnects
- "String Out" indicating LED's
- Compact, low-cost design
- Sensors not part of current path
- 90C input/output terminals
- NEMA-3R, 4 & 4X enclosures
- Powder coated and stainless steel enclosure options
- Rated for 600 or 1000 VDC and continuous duty
- Includes touch-safe protective cover
- Touch-safe fuse holders
- Cover doors with poured-in-place seamless gaskets
- Clean design for ample wiring room
- Configured for both positive and negative grounded arrays
- Optional configurations for floating PV arrays

Configure your BOS Solutions Online:
www.solarbos.com

SOLAR BOS

310 Stealth Court, Livermore, CA 94551
925.456.7744 | www.solarbos.com

Smart Disconnect Combiner Specifications

Disconnect Ampacity	100	200	250
# of Circuits		8 to 16	
Input Conductor Size (AWG)		#16 to 4	
Max Fuse Size (Amps)	20	20	15
Current Sensor Accuracy		± 4% of Full Scale	
Max Rated Current (ADC Continuous)		250	
Output Conductor Size Range (AWG)*		1 x #6-350	
Voltage		600 or 1000 VDC	
Data Output		RS485 Modbus	
Power Requirements		10 Watts @ 24 VDC	
Steel Enclosure Dimensions (H.W.D. in.)**		20x20x6 or 24x24x6	
Approximate Weight (Powder Coated or Stainless Steel)		45	
Fiberglass Enclosure Dimensions (H.W.D. in.)**		24x20x8 or 24x24x8	
Approximate Weight (Fiberglass)		40	
Enclosure NEMA Ratings		3R / 4 / 4X	

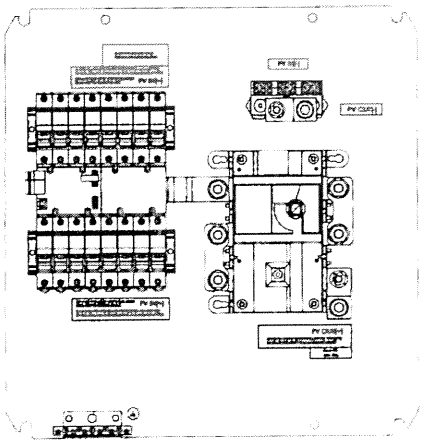
* Larger terminals available upon request. Please ask for details
** Enclosure sizes may vary when ordering transient surge suppressor.

SolarBOS Part Numbers

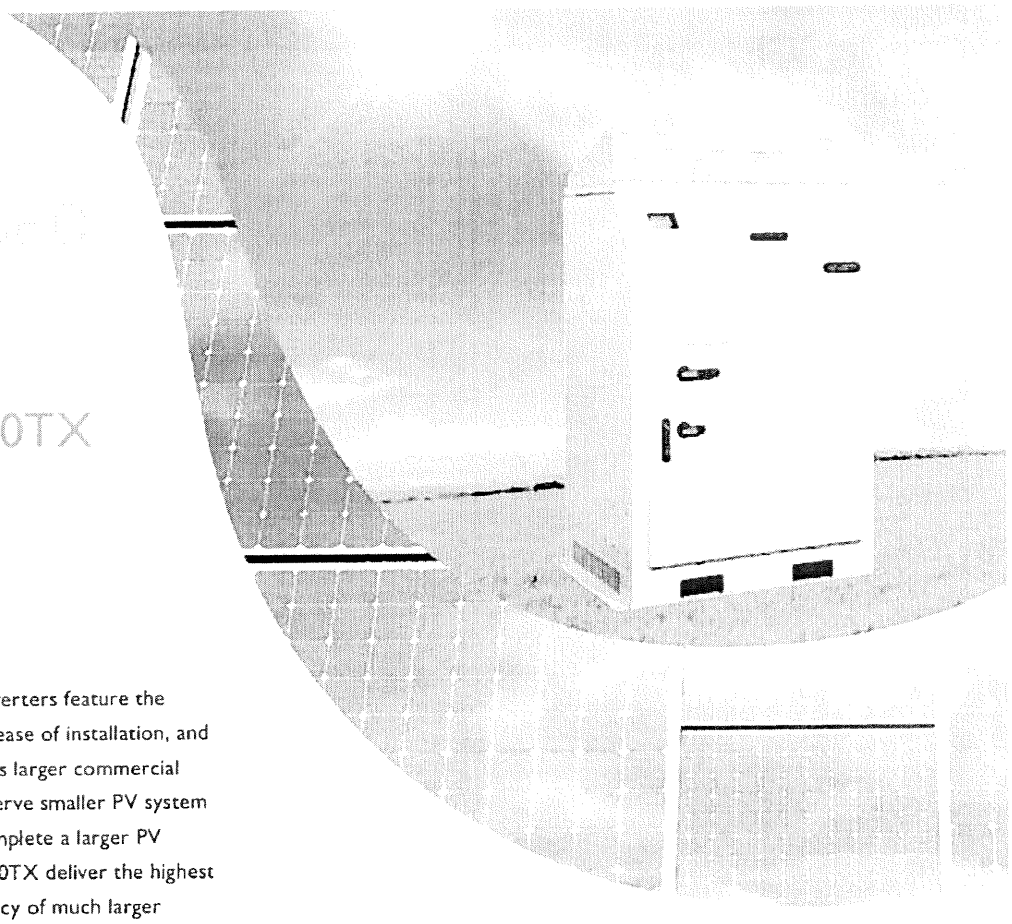
A common part number for a Smart Disconnect Combiner is a **CS200-12M-15-N3**. This reads as a Combiner, Single Output, 200 amp disconnect, 12 Input Circuits with Monitoring, 15-amp Fuses and a NEMA-3/3R Enclosure.

SolarBOS Smart Combiner Option

Transient Surge Suppression—CST200-12M-15-N4
This reads as a Combiner, Single Output, Surge Suppressor, 200 amp Disconnect, 12 Input Circuits with Monitoring, 15-amp Fuses and a NEMA-4 Enclosure.



Example of 16 Circuit
Smart Disconnect Combiner



AE 35TX and AE 50TX

The AE 35TX and AE 50TX commercial inverters feature the same industry leading reliability, efficiency, ease of installation, and lifetime maintainability of Advanced Energy's larger commercial inverters. These two models are sized to serve smaller PV system designs, or to provide the perfect fit to complete a larger PV project. In addition, the AE 35TX and AE 50TX deliver the highest efficiency in their class and rival the efficiency of much larger inverters.

High reliability is enabled by a ground-up design for a 20+ year operating life that features busbar power connections, card cage circuit board design, and the widest temperature rating of any inverter in its class. The highly integrated system saves installers time and money by including load break rated AC & DC service disconnects, neutral-free installation, oversized busbar landings and generous cable bending area. The AE 35TX and AE 50TX have a 295 VDC minimum MPPT voltage that enables stringing flexibility that is critical for smaller rooftop projects.

The AE 35TX and the AE 50TX are backed with an industry-leading 10-year nationwide warranty and an optional 20-year warranty; plus the most responsive service and support team in the business.

Superior Reliability

- Designed for 20+ year operating life
- Smart Air Management™
- Increased availability with >99% monitored fleet availability
- Low parts count reduces potential failure points
- Card cage circuit board system minimizes electronic interconnections

Exceptional Installability

- Bottom and side cable entry with generous bending area and oversized busbar landings
- Customizable subcombiner fusing options
- Full power output at 295 VDC enables more PV array design options
- Exterior mounting flanges for fast and easy anchoring with no pre-drilling

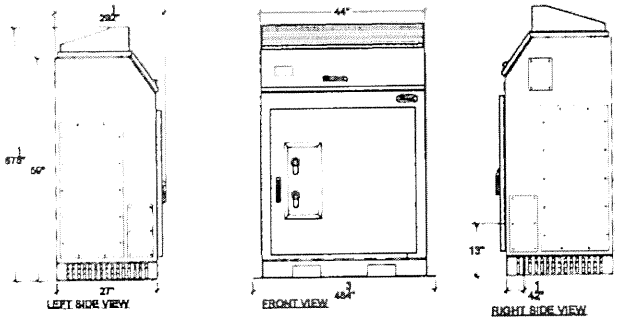
Easy to Maintain

- All maintenance and service via front access
- Fast change circuit board system shortens service time
- Load break rated AC and DC service disconnects
- Dedicated monitoring section separate from AC and DC modules

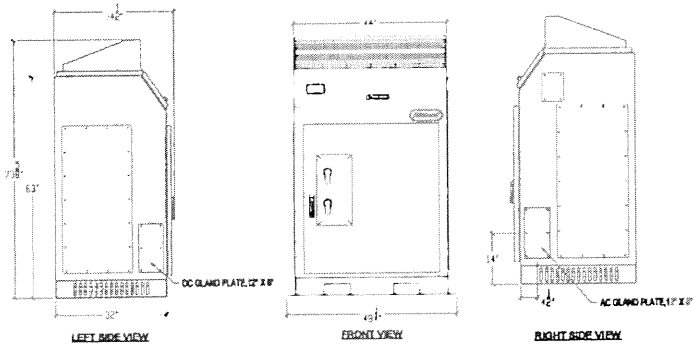
AE Solar Energy is a US based company.

Dimensions

AE 35TX



AE 50TX



AE 35TX and AE 50TX Summary Specifications*

Mechanical	AE 35TX	AE 50TX
Weight	1200 lbs	1500 lbs
Construction	Powder coated steel	Powder coated steel, optional stainless steel
Environmental Rating	NEMA 4	NEMA 4
Mounting	Pad Mount	Pad Mount
Isolation Transformer	Integrated	Integrated
Integrated AC/DC Disconnect	Included	Included
AC and DC Surge Protection	Included	Included
Electrical		
DC Inputs		
Array Configuration	Positive or negative ground	Positive or negative ground
Maximum Operating Input Current	125 A	178 A
Maximum DC Input Voltage (VOC)	600 V	600 V
MPPT Voltage Range	295-595 V	295-595 V
Open-Circuit Turn-On Voltage	330 V	330 V
AC Output		
Continuous Output Power (kW)	35 kW	50 kW
Nominal Voltage	208 Y, 480 Y, 600 Y	208 Y, 480 Y, 600 Y
Operating Voltage Range	-12% / +10%	-12% / +10%
Electrical Service Compatibility	3 phase, 4 wire, grounded Wye	3 phase, 4 wire, grounded Wye
Maximum Continuous Current	208: 100 A 480: 43 A 600: 35 A	208: 141 A 480: 61 A 600: 49 A
Short Circuit Fault Current	208: 112 Arms @ 208 VAC, 60.3 ms 480: 49 Arms @ 480 VAC, 60.3 ms 600: 39 Arms @ 600 VAC, 60.3 ms	208: 111 Arms @ 208 VAC, 60.3 ms 480: 48 Arms @ 480 VAC, 60.3 ms 600: 38 Arms @ 600 VAC, 60.3 ms
Nominal Frequency	60 Hz	60 Hz
Frequency Range	59.3 - 60.5 Hz, adjustable to 57.0 Hz	59.3 - 60.5 Hz, adjustable to 57.0 Hz
Total Harmonic Distortion	< 3% THD	< 3% THD
Efficiency		
Efficiency - Peak/CEC	208: 96.2% / 95.5% 480: 97.0% / 96.0% 600: 96.4% / 95.5%	208: 96.7% / 96.0% 480: 97.2% / 96.0% 600: 96.6% / 96.0%
Standby Losses	< 33 W	< 33 W
Inverter Controls and Monitoring		
Power Factor	> 0.99	> 0.99
Communication Interfaces and Protocols	RS-485, Ethernet, Modbus, TCP/IP	RS-485, Ethernet, Modbus, TCP/IP
Environmental		
Operating Ambient Temp. Range	-30 °C to 50 °C	-30 °C to 50 °C
Standby/Storage Ambient Temp. Range	-40 °C to 60 °C	-40 °C to 60 °C
Cooling	Forced Convection	Forced Convection
Relative Humidity	0 to 95%, non-condensing	0 to 95%, non-condensing
Elevation	6000 ft	6000 ft
Noise Emission	< 54 dBA, typical at full load	< 54 dBA, typical at full load
Regulatory		
Agency Approvals / Regulatory Compliance	UL 1741, IEEE 519, IEEE 929, IEEE 1547, CSA 107.1-1, FCC Class A	UL 1741, IEEE 519, IEEE 929, IEEE 1547, CSA 107.1-1, FCC Class A
Inverter Warranty	10 Year	10 Year

Subject to change without notice. Refer to user manual for detailed specification.
*Note: Not all performance window specifications can be achieved simultaneously. Performance varies per site.
Consult your AE sales or service representatives for specific PV system design questions at sales.support@aei.com.

Options

- Subcombiner fusing
- Integrated data monitoring solutions
- Integrated revenue grade meter
- Stainless Steel (AE 50TX only)
- Positive ground
- Preventative maintenance program
- 20-year extended warranty

Performance Monitoring

Increase uptime and reduce maintenance costs with integrated performance monitoring hardware that enables connectivity to a variety of software solutions from industry leading monitoring partners. The tight integration between Advanced Energy and our monitoring partners creates a superior service and support experience while seamlessly delivering meaningful data. Factory integration and testing of our UL listed monitoring solution ensures high reliability and significantly reduces field installation costs.

AE Solar Energy • 20730 Brinson Blvd • Bend, OR 97701 U.S.A.
www.advanced-energy.com/solarenergy
877.312.3832 • sales.support@aei.com • inverter.support@aei.com
Please see www.advanced-energy.com for worldwide contact information

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ENG-AE35-50TX-250-06 11/12

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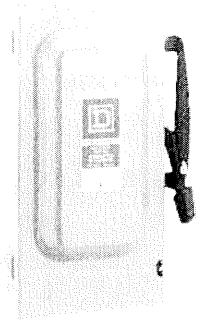
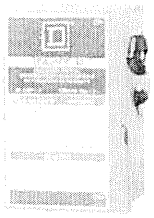
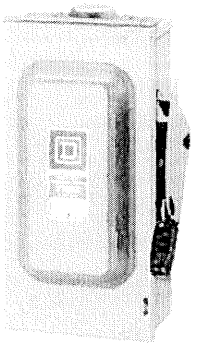
Safety Switches



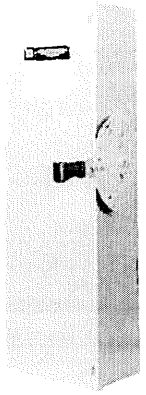
General Duty, p. 3-2



Light Duty, p. 3-2



Heavy Duty, p. 3-4



Double Throw, p. 3-14

General Duty

Fusible & Non-Fusible 3-2

Application Data and Dimensions 3-3

Standards:

- UL 98 Enclosed and Dead Front Switches. UL Listed under File E2875.
- NEMA Standards Publication KS1. Enclosed Switches.

Light Duty

Fusible 3-2

Application Data and Dimensions 3-3

Standards:

- UL 98 Enclosed and Dead Front Switches. UL Listed under File E2875.
- NEMA Standards Publication KS1. Enclosed Switches.

Heavy Duty

Fusible 3-4

Non-Fusible 3-6

Special Application Enclosures 3-7

New! Accessories 3-9

Application Data and Dimensions 3-12

Standards:

- UL 98 Enclosed and Dead Front Switches. UL Listed under File E2875 and E154828.
- NEMA Standards Publication KS1. Enclosed Switches.

Double Throw

Fusible and Non-Fusible 3-14

Application Data 3-17

Dimensions 3-18

Accessories 3-20

Standards:

- UL 98 Enclosed and Dead Front Switches. UL Listed under File E2875 (unless otherwise noted).
- NEMA Standards Publication KS1 Enclosed Switches (applies to Type DT and DTU series F only).

Martin Gerth
SQUARE D
Telemecanique
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Schneider Electric

Table 3.11: 600 Volts—Single Throw Fusible

System	Amperes	NEMA 1 Indoor		NEMA 3R Rainproof (Bolt-on Hubs, page 3-9)		NEMA 4, 4X, 5▲ 304 Stainless Steel (for 316 stainless, see page 3-7) Dust tight, Watertight, Corrosion Resistant (Watertight Hubs, page 3-9)		NEMA 12K With Knockouts (Watertight Hubs, page 3-9)		NEMA 12, 3R■ Without Knockouts (Watertight Hubs, page 3-9)		Horsepower Ratings♦ 480 Vac Std. (Using Fast Acting, One Time Fuses)	480 Vac Max. (Using Dual Element, Time Delay Fuses)	600 Vac Std. (Using Fast Acting, One Time Fuses)	600 Vac Max. (Using Dual Element, Time Delay Fuses)	dc▼	
		Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	3Ø	3Ø	3Ø	3Ø	250	600
2 Wire (2 Blades and Fuseholders)—600 Vac, 600 Vdc																	
	30	Use 3 Wire Devices For 2 Wire Applications										—	—	—	—	—	—
	60											—	—	—	—	—	—
	100											—	—	—	—	—	—
	200											—	—	—	—	—	—
	400	H265	2804.00	H265R	3616.00	H265DS	9974.00	—	—	H265AWK	3350.00	100★	250★	—	—	50	50
	600	H266	4435.00	H266R	7124.00	H266DS	14266.00	—	—	H266AWK	4894.00	150★	400★	—	—	50	50
	800	H267	6910.00	H267R□	10923.00	—	—	—	—	H267AWK	10184.00	—	—	—	—	50	50
	1200	H268	9713.00	H268R□	11994.00	—	—	—	—	H268AWK	12029.00	—	—	—	—	50	50
3 Wire (3 Blades and Fuseholders)—600 Vac, 600 Vdc▼																	
	30	H361	352.00	H361RB	599.00	H361DS	1680.00	H361A	676.00	H361AWK	637.00	5	15	7-1/2	20	5	15
	30	H3612Δ	411.00	H3612RBΔ	699.00	—	—	H3612AΔ	690.00	H3612AWKΔ	651.00	5	15	7-1/2	20	—	15
	60	H362	425.00	H362RB	703.00	H362DS	1847.00	H362A	698.00	H362AWK	656.00	15	30	15	50	—	30
	100	H363	792.00	H363RB	1096.00	H363DS	3662.00	H363A	1084.00	H363AWK	1026.00	25	60	30	75	—	50
	200	H364	1138.00	H364RB	1506.00	H364DS	5123.00	H364A	1696.00	H364AWK	1600.00	50	125	60	150	40	50
	400	H365	3034.00	H365R	3688.00	H365DS	10214.00	—	—	H365AWK	3641.00	100	250	125	350	50	50
	600	H366	5099.00	H366R	7266.00	H366DS	14056.00	—	—	H366AWK	6135.00	150	400	200	500	50	50
	800	H367	8879.00	H367R□	11000.00	—	—	—	—	H367AWK	10901.00	200	500	250	500	50	50
	1200	H368	11671.00	H368R□	13339.00	—	—	—	—	H368AWK	13137.00	200	500	250	500	50	50
4 Wire (3 Blades and Fuseholders, 1 Neutral)—600 Vac, 600 Vdc▼																	
	30	H361N	411.00	H361NRB	657.00	Use 3 Wire Devices Field-Installable Solid Neutral Assemblies. Order Separately. See page 3-10						5	15	7-1/2	20	—	15
	60	H362N	473.0	H362NRB	756.00							15	30	15	50	—	30
	100	H363N	852.00	H363NRB	1158.00							25	60	30	75	—	50
	200	H364N	1246.00	H364NRB	1605.00	H364NDS	5247.00	H364NA	1810.00	H364NAWK	1705.00	50	125	60	150	40	50
	400	H365N	3265.00	H365NR	3843.00	H365NDS	10445.00	—	—	H365NAWK	3882.00	100	250	125	350	50	50
	600	H366N	5346.00	H366NR	7369.00	H366NDS	14748.00	—	—	H366NAWK	6400.00	150	400	200	500	50	50
	800	H367N	9362.00	H367NR□	11470.00	—	—	—	—	H367NAWK	11502.00	200	500	250	500	50	50
	1200	H368N	12076.00	H368NR□	13995.00	—	—	—	—	H368NAWK	13880.00	200	500	250	500	50	50
4 Wire (4 Blades and Fuseholders)—600 Vac, 600 Vdc◊												2Ø	2Ø	2Ø	2Ø		
	30	H461	609.00	—	—	H461DS	1958.00	—	—	H461AWK	743.00	7-1/2	20	10	25	5	15
	60	H462	710.00	—	—	H462DS	2046.00	—	—	H462AWK	838.00	15	40	20	50	10	30
	100	H463	1185.00	—	—	H463DS	5583.00	—	—	H463AWK	1288.00	25	50	30	75	20	30
	200	H464	1971.00	—	—	H464DS	8397.00	—	—	H464AWK	2148.00	50	—	50	—	40	50
	400	H465	4140.00	—	—	—	—	—	—	H465AWK	4538.00	100	250	125	350	50	50
	600	H466	6736.00	—	—	—	—	—	—	—	—	150	400	200	500	50	50
6 Wire (6 Blades and Fuseholders)—600 Vac◊												3Ø	3Ø	3Ø	3Ø		
	100	—	—	—	—	H663DS	17309.00	—	—	H663AWK	3408.00	25	60	30	75	—	—
	200	—	—	—	—	H664DS	23595.00	—	—	H664AWK	8148.00	For applications requiring motor disconnect capability, use electrical interlock. Refer to page 3-9.					

▲ Complete rating is NEMA 3, 3R, 4, 4X, 5 and 12.
■ Also suitable for NEMA 3R application by removing drain screw from bottom endwall.
♦ Refer to page 7-35 for additional motor application data. The starting current of motors of more than standard horsepower may require the use of fuses with appropriate time delay characteristics.
★ For corner grounded delta systems only and with neutral assembly installed. Use switching poles for ungrounded conductors.
▼ On 3P devices, use two outside poles for switching dc.
Δ 60 A switch with 30 A fuse spacing and clips. Must use 60 A enclosure accessories including electrical interlocks.
□ Suitable for NEMA 5 applications with drain screw installed.
◊ Not suitable for use as service equipment.

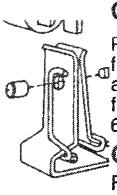
Class H Fuse Provisions:

Fusible Square D 30 through 600 A heavy duty safety switches accept Class H fuses as standard. With Class H fuses installed, the switch is UL Listed for use on systems with up to 10 kA available fault current.

Class R Fuse Provisions:

Fusible Square D 30–600 A heavy duty safety switches will accept Class R fuses as standard. A field-installable rejection kit is available which, when installed, rejects all but Class R fuses. With the installation of the rejection kit and Class R fuses, the switch is UL Listed for use on systems with up to 200 kA available fault current. See Class R fuse kits on page 3-9.

Class J Fuse Provisions:



Class R Fuse

Provisions for installing Class J fuses are included in 30 through 400 A 600 Volt, and 100 through 400 A 240 Volt, fusible heavy duty safety switches. Conversion to Class J fuse spacing requires relocating the load side fuse base assembly from the standard Class H fuse location to an alternate position as marked in the enclosure. With Class J fuses installed, the switch is UL Listed for use on systems with up to 200 kA available fault current. Switches rated 600 A, 240 or 600 Volt, require the addition of an adapter kit, H600J at **$304.** One kit per 3P switch.

Class L Fuse Provisions:

Fusible 800 A and 1200 A safety switches use Class L bolt-in fuses and are rated for use on systems with up to 200 kA at 600 Vac maximum. 1200 A switches accept class L fuses from 601–1200 A. 800 A switches accept class L fuses from 601–800 A.

Dimensions: NEMA 1 and 3R . . . page 3-12
Dimensions: NEMA 4, 4X and 5 . . . page 3-13
Accessories: . . . . . pages 3-9 through 3-11

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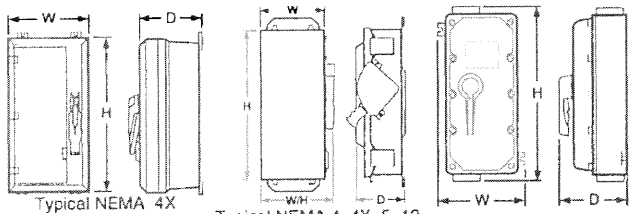
NEMA Type 4, 4X, 5, 7, 9 and 12



Typical NEMA 4X Fiberglass Reinforced Polyester and Krydon®

Typical NEMA 4, 4X, 5, 12, 12K (Stainless has flat front)

Typical NEMA 7, 9

Table 3.35: Optional Copper Only Lug Kits —

(See page 3-11 for pricing. See page 3-12 for terminal lug data for the series switches listed in the dimension table below.)

Rating (A)	Optional Lug Kit Cat. No.▲	Lug Wire Range Per Phase AWG/kcmil
30–60	CL0306F	(1) 14–8 Cu solid or 14–4 Cu strand
100	CL10F	(1) 14–8 Cu solid or 14–1/0 Cu strand
200	CL20F	(1) 6–250 Cu
400	CL40F	(1) 1–600 Cu plus (1) 6–250 Cu
600	CL60F	(2) 4–350 Cu

▲ One kit includes all phase line/load lugs for a 3-pole switch.

Table 3.36: Conduit Provisions —

NEMA 4X Fiberglass Reinforced Polyester and Krydon, NEMA 7 and 9

Rating (A)	Top and Bottom Endwall	
	NEMA 4X Fiberglass Reinforced Polyester and Krydon■	NEMA 7 and 9♦
30	3/4 in	—
60	1-1/4 in.	3/4 in.
100	2 in.	1-1/4 in.
200	2-1/2 in.	2-1/2 in.

■ Hubs and hub drilling templates are provided for field installation.
♦ Threaded conduit opening.

Cat. No.	Series	Approximate Dimensions							
		H		W		D		W/H	
		in.	mm	in.	mm	in.	mm	in.	mm
H60XFA	E1	15.93	405	9.87	251	6.96	177	9.87	251
H100XFA	E1	15.93	405	9.87	251	6.96	177	9.87	251
H221AWK, A	F6	14.60	371	6.63	168	4.96	125	7.55	192
H221DS	F6	14.93	379	7.22	183	5.11	130	8.67	220
H221-2AWK	F6	16.50	419	9.00	229	7.00	178	10.50	267
H222AWK, A	F6	14.60	371	6.63	168	4.96	125	7.55	192
H222DS	F6	14.93	379	7.22	183	5.11	130	8.67	220
H223AWK, A	F6	20.50	521	9.00	229	7.00	178	10.50	267
H223DS	F6	20.82	529	9.36	238	6.97	177	11.25	286
H224A,AWK	F6	29.00	737	17.25	438	8.75	216	18.63	473
H224DS	F6	29.00	737	17.75	451	8.88	226	19.25	489
H225AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H225NAWK, NDS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H225XKA	C2	22.56	573	10.88	276	7.75	197	10.88	276
H226AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H226NAWK, NDS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H227AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H228AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H265AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H266AWK, A, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H267AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H268AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H321AWK, A	F6	14.60	371	6.63	168	4.96	125	7.55	192
H321DS	F6	14.93	379	7.22	183	5.11	130	8.67	220
H322AWK, A	F6	14.60	371	6.63	168	4.96	125	7.55	192
H322DS	F6	14.93	379	7.22	183	5.11	130	8.67	220
H323AWK, A	F6	20.50	521	9.00	229	7.00	178	10.50	267
H323DS	F6	20.82	529	9.36	238	6.97	177	11.25	286
H324A,AWK	F6	29.00	737	17.25	438	8.75	216	18.63	473
H324DS	F6	29.00	737	17.75	451	8.88	226	19.25	489
H325AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H325NAWK, NDS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H326AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H326NAWK, NDS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H327AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H328AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H361AWA	F7	16.50	419	9.00	229	7.00	178	10.50	267
H361AWC	F7	16.50	419	9.00	229	7.00	178	10.50	267
H361AWK, A	F6	14.60	371	6.63	168	4.96	125	7.55	192
H361DS	F6	14.93	379	7.22	183	5.11	130	8.67	220
H361DSWA	F7	16.87	428	8.92	227	5.11	130	10.81	275
H361DSWC	F7	16.87	428	8.92	227	5.11	130	10.79	274
H361DF	F1	16.50	419	11.00	279	8.80	224	11.00	279
H361DX	F1	19.40	493	11.40	290	8.60	218	11.40	290
H361SS	F6	14.93	379	7.22	183	5.11	130	8.67	220
H361-2AWK, A	F6	16.50	419	9.00	229	7.00	178	10.50	267
H362AWA	F7	16.50	419	9.00	229	7.00	178	10.50	267
H362AWC	F7	16.50	419	9.00	229	7.00	178	10.50	267
H362AWH	F6	16.50	419	9.00	229	7.00	178	10.50	267
H362AWK, A	F6	16.50	419	9.00	229	7.00	178	10.50	267
H362DS	F6	16.87	428	8.92	227	6.97	177	10.81	275

Cat. No.	Series	Approximate Dimensions							
		H		W		D		W/H	
		in.	mm	in.	mm	in.	mm	in.	mm
H362DSWA	F7	16.87	428	8.92	227	5.11	130	10.81	275
H362DSWC	F7	16.87	428	8.92	227	5.11	130	10.79	274
H362DF	F1	16.50	419	11.00	279	8.80	224	11.00	279
H362DX	F1	19.40	493	11.40	290	8.60	218	11.40	290
H362SS	F6	16.87	428	8.92	227	6.97	177	10.81	275
H363AWA	F7	20.50	521	9.00	229	7.00	178	10.50	267
H363AWC	F7	20.50	521	9.00	229	7.00	178	10.50	267
H363AWK, A	F6	20.50	521	9.00	229	7.00	178	10.50	267
H363DS	F6	20.82	529	9.36	238	6.97	177	11.25	286
H363DSWA	F7	20.82	529	9.36	238	6.97	177	11.25	286
H363DSWC	F7	20.82	529	9.36	238	6.97	177	11.25	286
H363DF	F1	24.80	630	13.70	348	12.00	305	13.70	348
H363DX	F1	25.25	641	11.40	290	8.60	218	11.40	290
H363SS	F6	20.82	529	9.36	238	6.97	177	11.25	286
H364A,AWK	F6	29.00	737	17.25	438	8.75	216	18.63	473
H364DS,NDS	F6	29.00	737	17.75	451	8.88	226	19.25	489
H364NA,NAWK	F6	29.00	737	17.25	438	8.75	216	18.63	473
H364DF	E1	31.30	795	26.30	668	11.80	300	26.30	668
H364SS	F6	29.00	737	17.75	451	8.88	226	19.25	489
H365AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H365NAWK, NDS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H366AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H366NAWK, NDS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
H367AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H368AWK, NAWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
H461AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
H461DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
H462AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
H462DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
H463AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
H463 DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
H464AWK	F6	29.00	737	23.25	591	8.75	222	24.88	632
H464DS	F6	29.00	737	23.75	603	8.88	226	25.25	641
H465AWK	E4	46.25	1175	32.50	826	10.13	259	32.50	826
H663AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
H663DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
H664AWK	F6	29.00	737	23.25	591	8.75	222	24.88	632
H664DS	F6	29.00	737	23.75	603	8.88	226	25.25	641
HU265AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
HU266AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
HU267AWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
HU268AWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
HU361AWA	F7	16.50	419	9.00	229	7.00	178	10.50	267
HU361AWC	F7	16.50	419	9.00	229	7.00	178	10.50	267
HU361AWK, A	F6	14.60	371	6.63	168	4.96	125	7.55	192
HU361DS	F6	14.93	379	7.22	183	5.11	130	8.67	220
HU361DSWA	F7	16.87	428	8.92	227	5.11	130	10.81	275
HU361DSWC	F7	16.87	428	8.92	227	5.11	130	10.79	274
HU361DF	F1	16.50	419	11.00	279	8.80	224	11.00	279
HU361DX	F1	19.40	493	11.40	290	8.60	218	11.40	290
HU361SS	F6	14.93	379	7.22	183	5.11	130	8.67	220
HU362AWA	F7	16.50	419	9.00	229	7.00	178	10.50	267
HU362AWC	F7	16.50	419	9.00	229	7.00	178	10.50	267
HU362AWH	F6	16.50	419	9.00	229	7.00	178	10.50	267
HU362AWK, A	F6	16.50	419	9.00	229	7.00	178	10.50	267
HU362DS	F6	16.87	428	8.92	227	6.97	177	10.81	275
HU362DSWA	F7	16.87	428	8.92	227	5.11	130	10.81	275
HU362DSWC	F7	16.87	428	8.92	227	5.11	130	10.79	274
HU362DF	F1	16.50	419	11.00	279	8.80	224	11.00	279
HU362DX	F1	19.40	493	11.40	290	8.60	218	11.40	290
HU362SS	F6	16.87	428	8.92	227	6.97	177	10.81	275
HU363AWA	F7	20.50	521	9.00	229	7.00	178	10.50	267
HU363AWC	F7	20.50	521	9.00	229	7.00	178	10.50	267
HU363AWK, A	F6	20.50	521	9.00	229	7.00	178	10.50	267
HU363DS	F6	20.82	529	9.36	238	6.97	177	11.25	286
HU363DSWA	F7	20.82	529	9.36	238	6.97	177	11.25	286
HU363DSWC	F7	20.82	529	9.36	238	6.97	177	11.25	286
HU363DF	F1	24.80	630	13.70	348	12.00	305	13.70	348
HU363DX	F1	25.25	641	11.40	290	8.60	218	11.40	290
HU363SS	F6	20.82	529	9.36	238	6.97	177	11.25	286
HU364A,AWK	F6	29.00	737	17.25	438	8.75	216	18.63	473
HU364DF	E1	31.30	795	26.30	668	11.80	300	26.30	668
HU364DS	F6	29.00	737	17.75	451	8.88	226	19.25	489
HU364SS	F6	29.00	737	17.75	451	8.88	226	19.25	489
HU365AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
HU366AWK, DS	E4	46.25	1175	26.25	667	10.13	259	26.25	667
HU367AWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
HU368AWK	E4	69.13	1756	36.62	930	17.75	451	36.62	930
HU461AWK	E1	16.63	422	9.88	251	6.13	156	11.00	279
HU461DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
HU462AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
HU462DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
HU463AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
HU463DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
HU464AWK	F6	29.00	737	23.25	591	8.75	222	24.88	632
HU464DS	F6	29.00	737	23.75	603	8.88	226	25.25	641
HU465AWK	E4	46.25	1175	32.50	826	10.13	259	32.50	826
HU661AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
HU661DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
HU662AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
HU662DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
HU663AWK	F6	20.50	521	14.75	375	6.80	173	16.13	410
HU663DS	F6	20.82	529	15.08	383	6.97	177	16.85	428
HU664AWK	F6	29.00	737	23.25	591	8.75	222	24.88	632
HU664DS	F6	29.00	737	23.75	603	8.88	226	25.25	641

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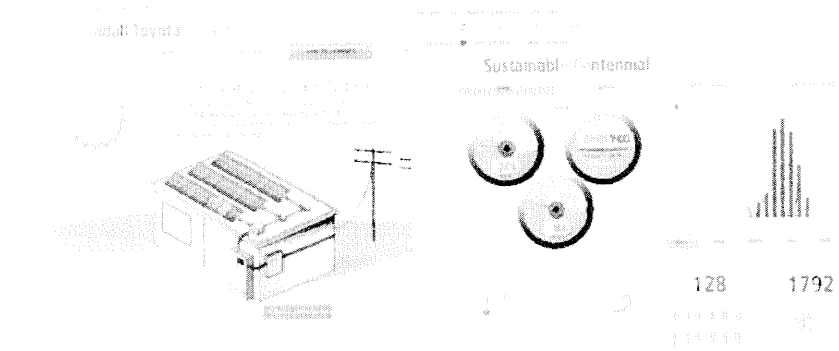
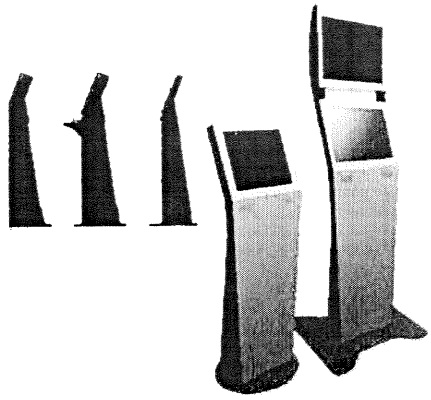
DECK Monitoring

Solar Monitoring Solutions





FEATURES:

Revenue Grade System Monitoring – Utility grade, verifiable data for billing, reporting to agencies, SREC reporting, and analytics.

Web, Kiosk, and Plasma Display Integration – Highly customizable and visually interactive web view and optional Kiosk integration. Perfect for integration into websites, store lobbies, and large screen displays.

Advanced Performance Monitoring – Our powerful data center allows users to view detailed analysis of system performance. Interactive graphs bring the power to troubleshoot and benchmark systems to the user's fingertips. Our high end data gateway can record a multitude of information including: generation, load, irradiance, volts, amps, cell temperature, weather data, and wind direction / speed.

Demand Monitoring – Our demand monitoring package allows you to accurately monitor your facility's energy usage in fifteen minute intervals. The package is fully integrated with the standard flash view including detailed graphing capabilities. This information facilitates energy conservation by identifying high energy use periods.

System Administration – Our powerful administration panel allows contractors to quickly get an overview of the performance of all their systems at once (and system owners of their individual systems). Advanced notification options allow you to be notified instantly of errors, alerts and track system performance remotely.

KEY BENEFITS:

Customizable - Easily configurable for customer choice of colors, project information and kiosk integration.

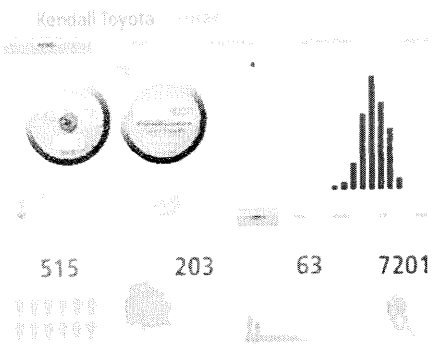
Integrated Pricing - The purchasing and installation process is simplified and streamlined. Our basic package includes flash views and contractor admin panels at no extra charge.

Power and Beauty – The standard DECK system is a combination of powerful commercial grade features and a stunning user interface. Perfect for public kiosks, web pages, and in-facility displays.

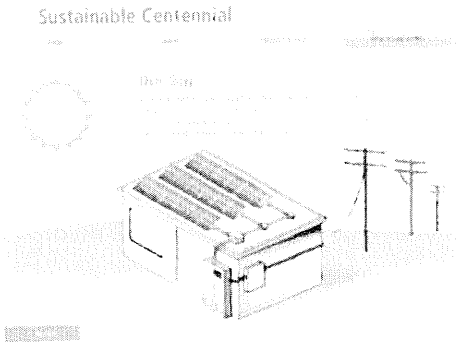
Customer Service - Custom alarms ensure installers instantly know about any performance issue. Keep connected to your customer base.

DECK Monitoring

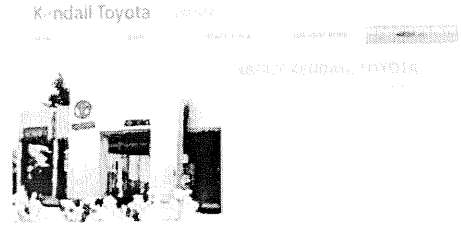
Solar Monitoring Solutions



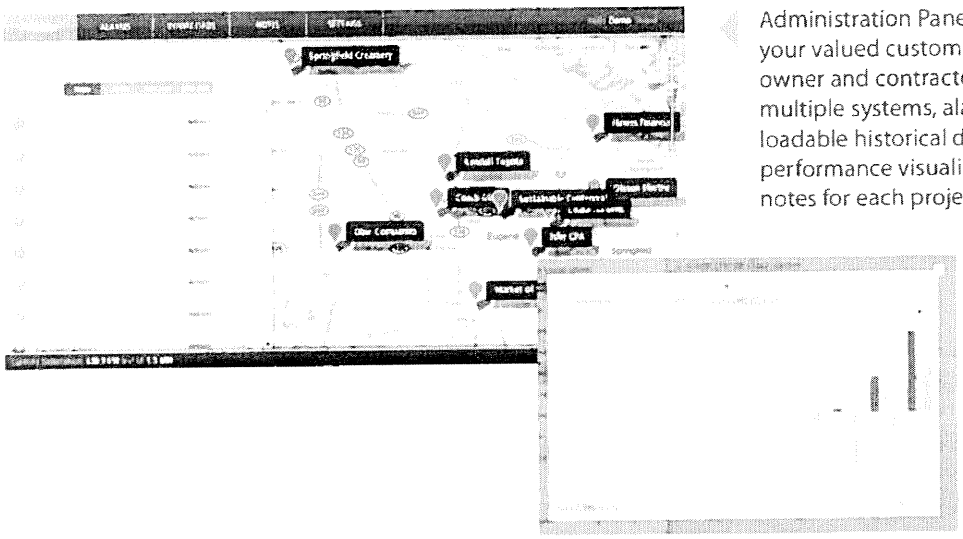
Dashboard - Energy meters display current generation, historical data, weather data, and equivalencies.



Educational Information - Visitors to your website or facility can learn about how your solar system works.



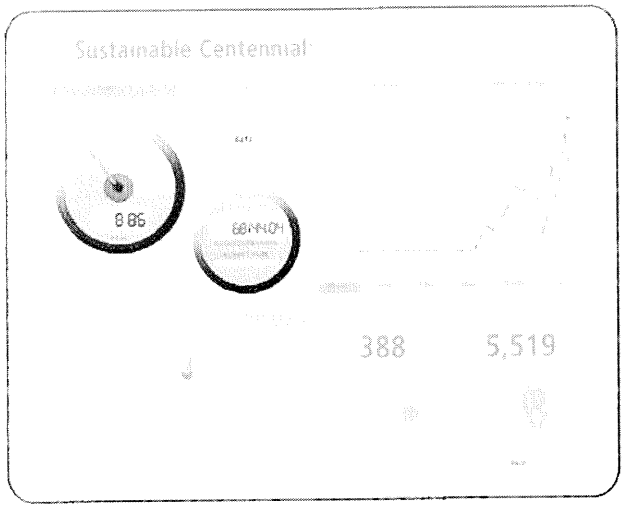
Custom Pages - Each deployment comes standard with custom pages, describing your specific installation and system details.

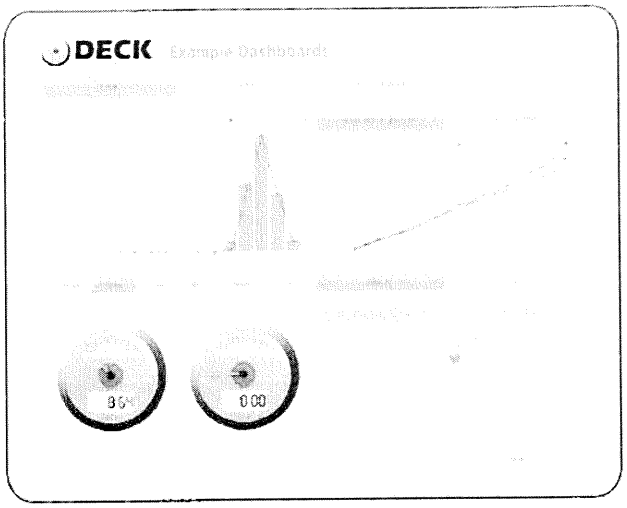


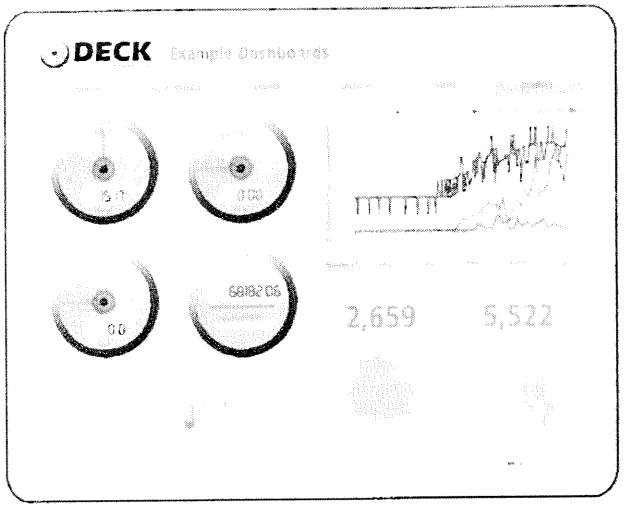
Administration Panel - Keep track of your valued customers! System owner and contractor access to view multiple systems, alarms, downloadable historical data, advanced performance visualizations, and case notes for each project.

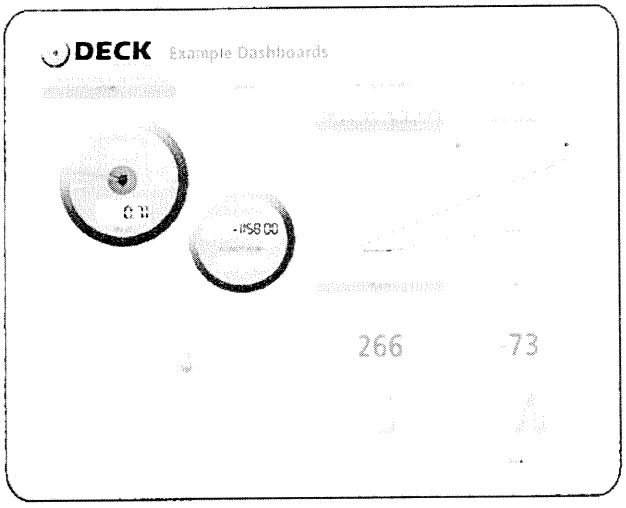
DECK Monitoring

Public Dashboard









KEY MODULES:

Energy Meters - Display renewable energy generation as well as energy use.

Historical Graph - Display historical graphs of energy generation and use. Views include detailed daily views, 3 day, weekly, monthly, and yearly graphing options.

Equivalencies - Display the equivalent energy which would have been generated or used by other sources. Options include Gasoline, Lightbulbs, Trees, CO_2, and SREC Credits.

Customization Options - Choose your choice of colors, equivalencies, and customizable project details pages. Customization options come standard with our core packages.

Weather Module - Display current weather conditions (including irradiance) on site using a compatible DECK weather station, or via the national government weather feed.

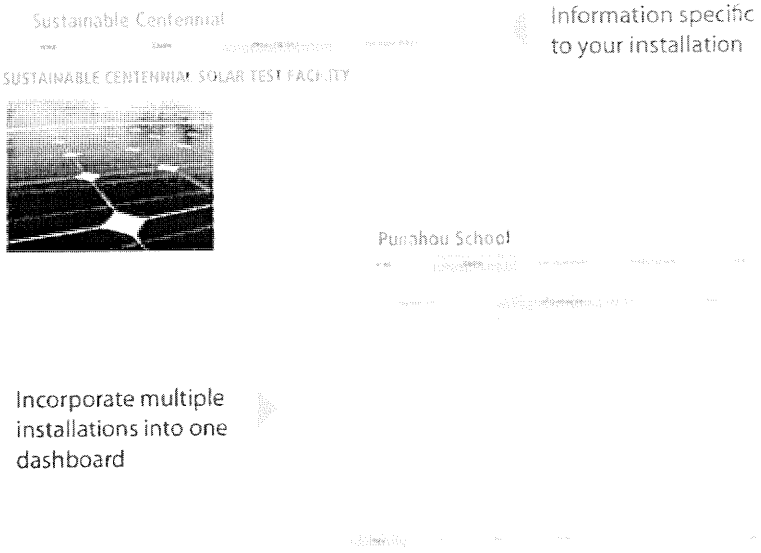
DECK Monitoring

Public Dashboard

CUSTOM PAGES:

Company Pages: Our standard package includes a custom page specific to your installation, which includes photos and text of your choice. Use this page to highlight the green efforts of your company.

Multiple Installation Integration: Do you have multiple systems which you would like to integrate into one dashboard? We can easily combine multiple systems into one public display, including graphs which break apart each installations' production (or each inverters' production).



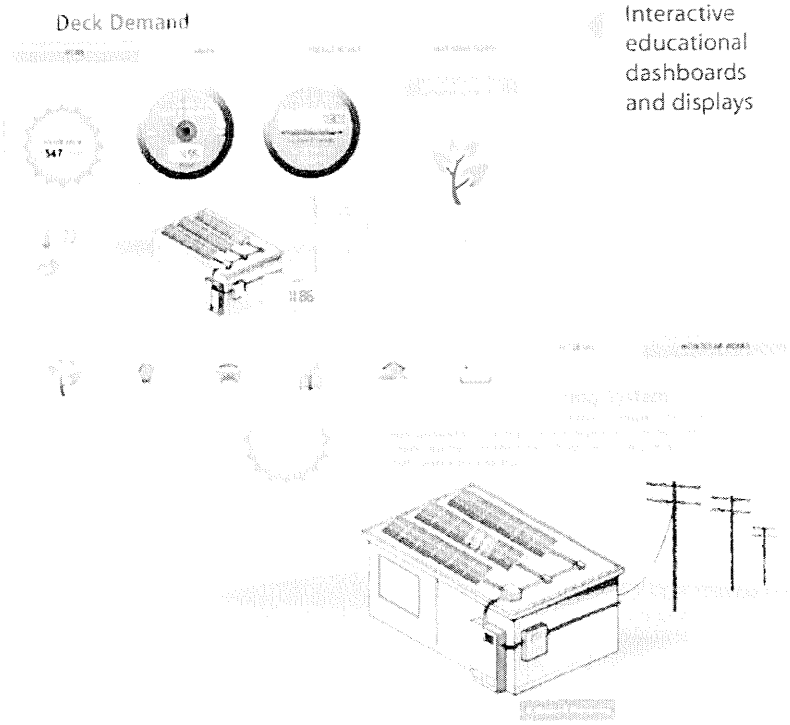
Information specific to your installation

Incorporate multiple installations into one dashboard

EDUCATIONAL FEATURES:

How Solar Works page: Every dashboard comes standard with a How Solar Works tab. This tab explains the basics of the solar systems components.

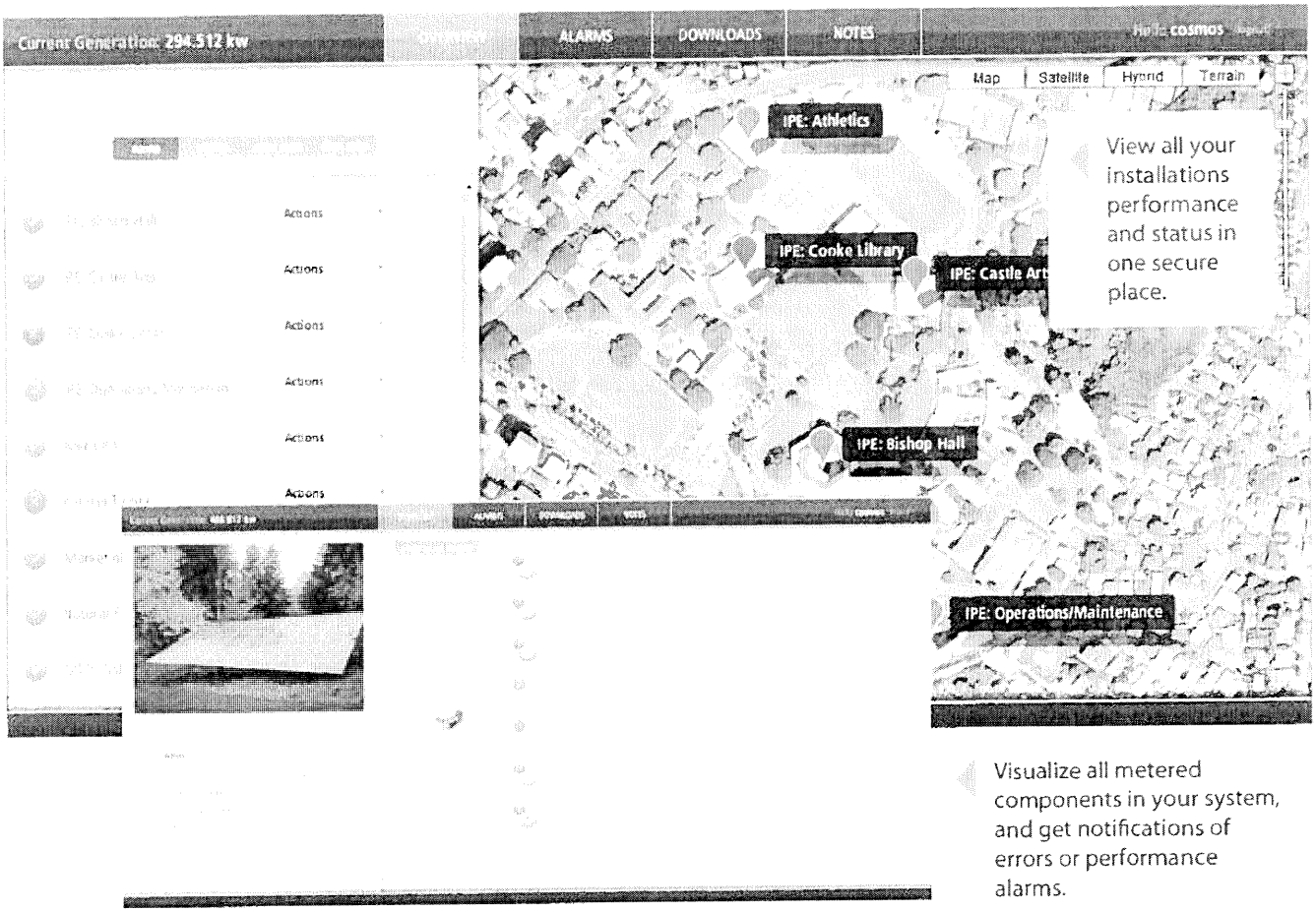
Educational Dashboard Option: A highly interactive display which incorporates educational information and is optimized for kiosk or wall mounted touch screen use. Users can see the flow of energy from the sun, through the solar panels, the inverters, the meters, and finally out to the grid. Handy tool tips at each point explain the basics of solar production, and real time data gives users feedback on current conditions. A green equivalency slider offers an easy method to switch between equivalencies - including REC credits!



Interactive educational dashboards and displays

DECK Monitoring

Admin Panel



Visualize all metered components in your system, and get notifications of errors or performance alarms.

KEY CAPABILITIES:

Provide Enhanced Support and Troubleshooting - The integrator or contractor benefits by being able to keep track of all their valued customers in one place, quickly, and efficiently. Alarms and notices can alert the integrator to potential system problems and outages instantly, and troubleshooting features can save time for both contractor and customer.

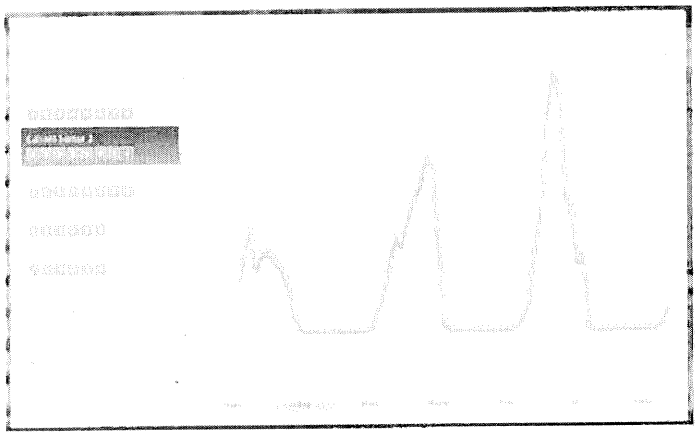
Maximize System Performance - Be immediately alerted of system performance issues which might go undetected and cause expensive system downtime.

Agency Reporting and Data Download Center- Provide automatic transfer of data to utilities in order to receive incentive payments. Certified as a PDP and PMRS in the state of California. The Data Download Center allows users to download data to their desktop at any time in an easy to use format.

DC String and Subarray Monitoring - Detailed performance data and visualization down to the string level. View underreporting arrays and strings and identify issues with system performance.

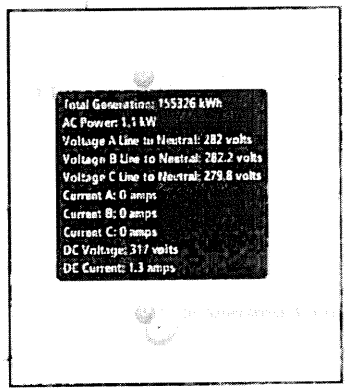
DECK Monitoring

Admin Panel



DC String and Subarray Monitoring - Detailed performance data and visualization down to the string level. View underreporting arrays and strings and identify issues with system performance.

Alarms and Notes - Create custom alarms to notify you or a member of your team in case of performance issues or fault codes from inverters. Take advantage of our hierarchical alarm system to reduce information overload for team members. Make notes specific to systems or alarms. Record who was notified of which alarms, what actions were taken and when those actions were taken. Access a running log of history on any particular system or system alarm.



Inverter and Device Data - Instant access to performance data directly from the inverter. DECK Monitoring is compatible with most commonly used commercial inverters. In addition our system views give the user instant visibility to each device which is reporting to the system.

DECK
Monitoring

DECK HARDWARE:

Components: The standard DECK Monitoring solution is comprised of a data gateway which is mounted on site. This data gateway communicates with supplied meters and data gathering hardware which connects via Modbus, Pulse, or wireless signals. Typically the included CT Meter is used to measure system generation after the inverter on the AC side.

Revenue Grade and Extendable: Our hardware components were selected for future expandability, high resolution data and low failure rates. Our system components can be incorporated into other third party systems down the road. In the future, if you would like to add demand monitoring capabilities, integrate with other EMS systems, add another array, weather station, string monitoring solutions or countless other components, you can use the same hardware and you will not have to replace the core components of the system.

KEY HARDWARE CAPABILILITIES:

Choice of meters

Demand (load) metering options

Plug and play with third party components

Expandable platform

Wireless (cellular) connectivity options

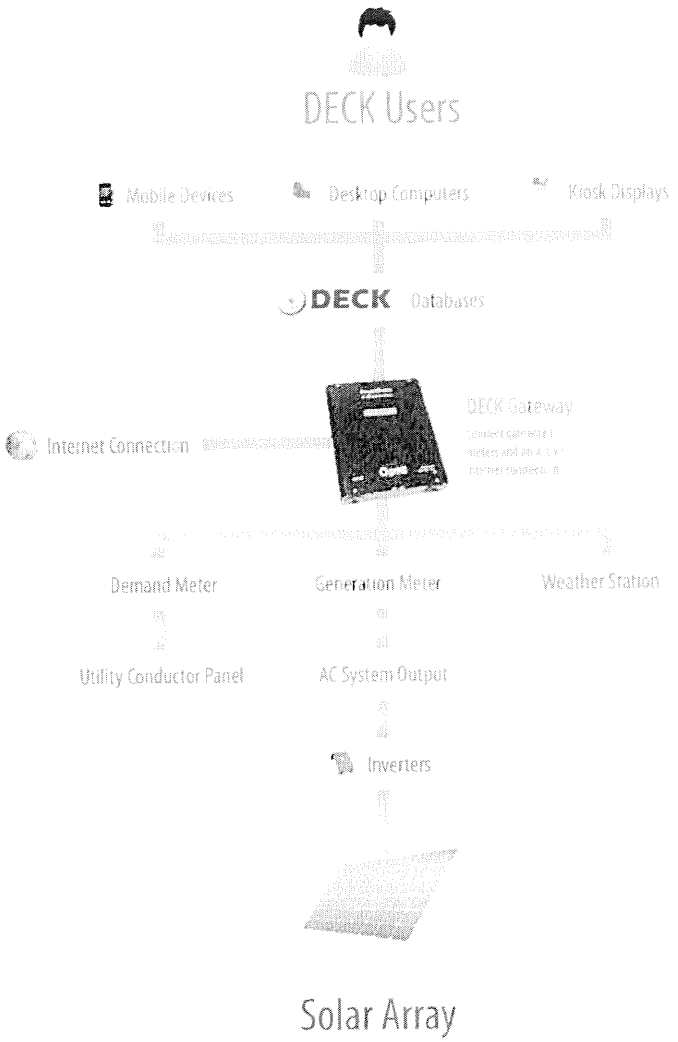
String monitoring options

String combiner box integration

Data backup stored onsite in hardware

Revenue grade data

Inverter communication capabilities

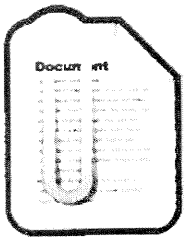


EASY INSTALLATION:

The DECK Monitoring platform is designed around plug and play connectivity, and proven communication standards. Mount the gateway to the wall in the facility, connect the internet to the gateway, and install our CT meters to get up and running. We offer a choice of CT meters for our customers including split core Veris CT meters and Shark Electro Industries CT meters.

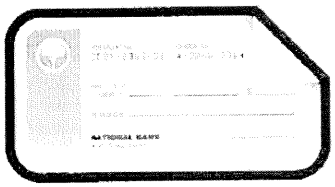
DECK Monitoring

Hardware and Deployment



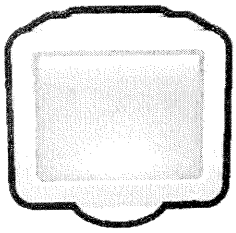
STEP 1: GET QUOTE

We can provide you with our standard price sheet, making it easy to price your system on your own. If you have any questions about our solutions or how to price them, contact our sales team and we will generate a custom quote for you or your client.



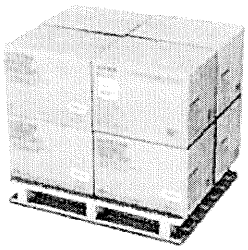
STEP 2: PLACE ORDER

Place an order with us directly, or with one of our distribution partners. You will be given the same quality service and equipment either way.



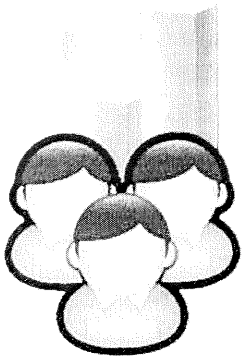
STEP 3: SITE SURVEY FORM

As soon as you place an order we will send you a link to our online site survey form. The site survey form will give us the necessary information to customize the hardware and software for your specific project. If there is any other needed information, we will contact you directly.



STEP 4: SHIPMENT

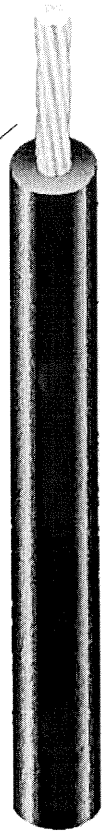
We will pre-configure your hardware and software so it is ready to install, and then drop ship your equipment to your specified shipping address. Standard solutions may ship within two to three weeks. Custom solutions may take longer depending on wait times for hardware.



STEP 5: Installation

When your team receives the equipment onsite, the software will already be deployed. At this point once the hardware is connected and configured, the installation will be complete.

PV PHOTOVOLTAIC WIRE
600 VOLT



STRANDED COPPER CONDUCTORS

Bare or Tinned Stranded Copper Conductors

XLP Insulation

Direct Burial

-40°C to +90°C

600 Volt

APPLICATIONS

Suitable for use as follows:

- For use in solar power applications
- Rated 90°C for exposed or concealed wiring in wet or dry locations
- Rated for direct burial

SPECIFICATIONS

- Stranded copper conductors
- XLP insulation
- UL Subject 4703
- UL 44
- UL 854

CONSTRUCTION

- Southwire PV Photovoltaic Wire is manufactured using stranded copper conductors with single layer XLP insulation
- Bare or Tinned Conductors
- -40°C to +90°C
- Sunlight Resistant
- RoHS Compliant
- Direct Burial
- Sample Print Legend:
  SOUTHWIRE E316464 (O) (UL) PV WIRE 10 AWG (5.26mm2) CU 600V 90° WET OR DRY (-40°C) SUN RES DIRECT BURIAL VW-1 OR USE RHW-2 600V — RoHS

WEIGHTS, MEASUREMENTS AND PACKAGING

SIZE (AWG)	NUMBER OF STRANDS	INSULATION THICKNESS	NOMINAL O.D.	NET WEIGHT
14	19	0.060	0.190	26.8
12	19	0.060	0.207	36.1
10	19	0.060	0.231	50.6
8	19	0.075	0.292	80.3
14	7	0.060	0.190	26.8
12	7	0.060	0.207	36.1
10	7	0.060	0.231	50.6
8	7	0.075	0.292	80.3

Other sizes and strand configurations are available upon request. Also available in various colors.

Southwire OEM Division

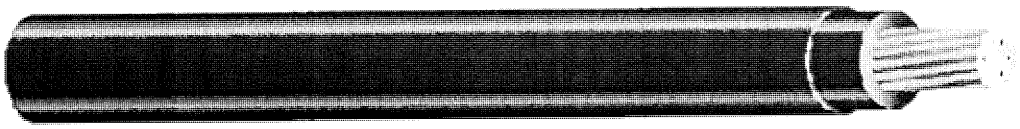
UL LISTED

MADE IN USA

green Spec RoHS Compliant

SIMpull THHN™ THWN

600 Volts. Copper Conductor
Thermoplastic Insulation/ SIM Nylon Sheath
Heat, Moisture, Gasoline, and Oil Resistant II
Also Rated MTW and THWN 2
SIM Technology® for Easier Pulling



APPLICATIONS

Southwire SIMpull THHN or THWN-2 conductors are primarily used in conduit and cable trays for services, feeders, and branch circuits in commercial or industrial applications as specified in the National Electrical Code. Voltage for all applications is 600 volts. SIMpull THHN conductors are designed to be used without application of pulling lubricant. Allowable temperatures are as follows:

- THHN or T90 Nylon- Dry locations not to exceed 90° C
- THWN-2- Wet or dry locations not to exceed 90° C or locations not to exceed 75° C when exposed to oil
- TWN75- Wet locations not to exceed 75° C
- MTW- Wet locations or when exposed to oil at temperatures not to exceed 60° C or dry locations not to exceed 90° C (with ampacity limited to that for 75° C conductor temperature per NFPA 79)
- AWM- Dry locations not to exceed 105° C when rated and used as appliance wiring material

SPECIFICATIONS

Southwire SIMpull THHN ® or THWN-2 or MTW (also AWM) comply with:

- ASTM - All applicable standards
- UL Standard 83, 1581, and 1063(MTW)
- T90 Nylon/TWN75 sizes through 1000 kcmil CSA C22.2 No. 75
- NOM-ANCE 90° C
- Federal Specification A-A-59544
- National Electrical Code, NFPA 70
- VW-1 - Sizes 14 through 1 AWG
- CT rated in sizes 1/0 AWG and larger
- FT1
- AWM - Sizes 14 through 6 AWG. MTW available in stranded only
- NEMA WC-70 Construction Requirements
- RoHS/REACH Compliant

Construction

Southwire SIMpull THHN or THWN-2 or MTW copper conductors are soft annealed copper. #14 - 4/0 AWG uses a combination unilay strand and 250 kcmil and larger uses a compressed copper strand. The wire is insulated with a tough heat and moisture resistant poly vinyl chloride (PVC), over which a SIM (SLIKQWIK® Infused Membrane) nylon (polyamide) or UL Recognized equal jacket is applied. Available in black, white, red, blue, purple, green, yellow, orange, brown and gray. Some colors are subject to economic order quantity.Marked sunlight resistant in sizes 2 AWG and larger.

THWN-2 available in sizes 8 AWG and larger .

Sizes 14 - 10 AWG are available with SIMpull Technology only in SIMpull Barrel configurations.

Southwire
One Southwire Drive
Carrollton, Ga. 30119 USA

MADE IN THE USA

NoLube™

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SIMpull THHN

Conductor		Insulation Thickness (mils)	Jacket Thickness (mils)	Nominal O.D. (mils)	Approx. Weight per 1000' (lbs)	Allowable Ampacities+			
Size (AWG or kcmil)	Number of Strands					60° C	75° C	90° C	Standard Package
14*	1	15	4	102	15	15	15	15	AC
12*	1	15	4	119	23	20	20	20	AC
10*	1	20	4	150	36	30	30	30	AC
14*	19	15	4	109	16	15	15	15	AC
12*	19	15	4	128	24	20	20	20	AC
10*	19	20	4	161	38	30	30	30	AC
8	19	30	5	213	63	40	50	55	ABCD
6	19	30	5	249	95	55	65	75	ABCD
4	19	40	6	318	152	70	85	100	ABCD
3	19	40	6	346	189	85	100	115	ABCD
2	19	40	6	378	234	95	115	130	ABCD
1	19	50	7	435	299	110	130	145	ABCD
1/0	19	50	7	474	372	125	150	170	ABCD
2/0	19	50	7	518	462	145	175	195	ABCD
3/0	19	50	7	568	575	165	200	225	ABCD
4/0	19	50	7	624	718	195	230	260	ABCD
250	37	60	8	694	851	215	255	290	ABCD
300	37	60	8	747	1012	240	285	320	ABC
350	37	60	8	797	1174	260	310	350	ABC
400	37	60	8	842	1334	280	335	380	ABC
500	37	60	8	926	1655	320	380	430	ABCD
600	61	70	9	1024	1987	350	420	475	ABC
750	61	70	9	1126	2464	400	475	535	BC
1000	61	70	9	1275	3257	455	545	615	C

* Sizes 14 - 10 AWG available with patented Sim Technology® No Lube® jacket only in SIMpull® Wire Barrel configurations.
+Allowable ampacities shown are for general use as specified by the 2011 Edition of the National Electrical Code Section 310.15 and 240.4(D). Unless the equipment is marked for use at higher temperatures the conductor shall be limited to the following per NEC 110.14(C).
60° C - When terminated to equipment for circuits rated 100 ampers or less or marked for 14 - 1 AWG conductors.
75° C - When terminated to equipment for circuits rated over 100 ampers or marked for conductors larger than1 AWG.
90° C - THHN dry locations and THWN wet or dry locations for ampacity adjustment purposes using NEC section 310.15.

Standard Package:
A - 2500' Reel
B - 1000' Reel
C - 500' Spool
D - 5000' Reel

Southwire
One Southwire Drive
Carrollton, Ga. 30119 USA

MADE IN THE USA

NoLube™

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Carlon® Rigid Nonmetallic Conduit (RNC), Fittings & Accessories

Carlon® manufactures the most complete line of nonmetallic conduits and fittings in the electrical industry. Carlon Schedule 40 and Schedule 80 conduits are designed for use aboveground and underground as described in the National Electrical Code. Specify only Carlon conduits and fittings to insure raceway system integrity.

Features

Ease of Installation Nonmetallic conduits are 1/4 to 1/5 the weight of metallic systems, can be installed in less than half the time, and are easily fabricated on the job.

Safety Nonmetallic conduits are nonconductive, assuring a safe system.

Impact Resistant Carlon Schedule 40 and Schedule 80 nonmetallic conduits are resistant to sunlight and are listed for exposed or outdoor usage. The use of expansion fittings allows the system to expand and contract with temperature variations.

Corrosion Resistant Carlon conduits and fittings are nonmetallic and will not rust or corrode.

Carlon nonmetallic Schedule 40 and Schedule 80 conduits and elbows are manufactured to NEMA TC-2, Federal specification WC1094A and UL 651 specifications. Fittings are manufactured to NEMA TC-3, Federal specification WC1094A and UL514B. Both conduit and fittings carry respective UL or ETL Listings and UL or ETL labels.

Schedule 40 PVC Rigid Nonmetallic Conduit (RNC).

(Heavy Wall EPC)

ETL Listed to UL 651 in compliance to the NEC

LISTED E35297

RUS Listed

Listed for underground applications encased in concrete or direct burial. Also for use in exposed or concealed applications aboveground.

• Sunlight resistant • Rated for use with 90°C conductors • Superior weathering characteristics

With Integral Bell*

Schedule 40 Heavy Wall

Part No.			Std. Crate Qty.		Wt. Per	Dimensions		
10'	20'	Nom. Size	10'	20'	100'	O.D.	I.D.	Wall
49005-010		1/2"	6000'		17	.840	.622	.109
49007-010	49007-020	3/4"	4400'	8800'	23	1.050	.824	.113
49008-010	49008-020	1"	3600'	7200'	34	1.315	1.049	.133
49009-010	49009-020	1 1/4"	3300'	6600'	46	1.660	1.380	.140
49010-010	49010-020	1 1/2"	2250'	4500'	55	1.900	1.610	.145
49011-010	49011-020	2"	1400'	2800'	73	2.375	2.067	.154
49012-010	49012-020	2 1/2"	930'	1860'	124	2.875	2.469	.203
49013-010	49013-020	3"	880'	1760'	163	3.500	3.068	.216
49014-010	49014-020	3 1/2"	630'	1260'	196	4.000	3.548	.226
49015-010	49015-020	4"	570'	1140'	232	4.500	4.026	.237
49016-010	49016-020	5"	380'	760'	315	5.563	5.047	.258
49017-010	49017-020	6"	260'	520'	409	6.625	6.065	.280

Rigid nonmetallic conduit is normally supplied in standard 10' lengths, with one belled end per length. For specific requirements, it may be produced in lengths shorter or longer than 10', with or without belled ends.

Use RNC Fittings with Schedule 40 and Schedule 80 Conduit.

Notes: 1. Special fittings and conduit sizes will be quoted on request.
2. DON'T FORGET TO ORDER CEMENT.
3. Carlon reserves the right to ship to the nearest unitized quantity.

Gross Automation (877) 268-3700 · www.carlonsales.com · sales@grossautomation.com

Schedule 80 PVC Rigid Nonmetallic Conduit (RNC)

(Extra Heavy Wall EPC-80)

ETL Listed to UL 651 in compliance to the NEC

LISTED E35297

RUS Listed

Listed for use in aboveground and belowground applications that are subject to physical damage.

- Sunlight resistant • Rated for use with 90°C conductors • Superior weathering characteristics
- For use in areas subject to physical damage

With Integral Bell*

Schedule 80 Extra Heavy Wall

Part No. 10'	20'	Nom. Size	Std. Crate Qty. 10'	20'	Wt. Per 100'	Dimensions O.D.	I.D.	Wall
49405-010	49405-020	1/2"	6000'	12000'	21	.840	.546	.147
49407-010	49407-020	3/4"	4400'	8000'	30	1.050	.742	.154
49408-010	49408-020	1"	3600'	7200'	44	1.315	.957	.179
49409-010	49409-020	1 1/4"	3300'	6600'	60	1.660	1.278	.191
49410-010	49410-020	1 1/2"	2250'	3600'	72	1.900	1.500	.200
49411-010	49411-020	2"	1400'	2800'	101	2.375	1.939	.218
49412-010	49412-020	2 1/2"	930'	1880	154	2.875	2.323	.276
49413-010	49413-020	3"	880'	1760'	210	3.500	2.900	.300
49415-010	49415-020	4"	570'	1140'	308	4.500	3.826	.337
49416-010	–	5"	380'	–	428	5.563	4.813	.375
49417-010	49417-020	6"	260'	520'	588	6.625	5.761	4.32

Rigid nonmetallic conduit is normally supplied in standard 10' lengths, with one belled end per length. For specific requirements, it may be produced in lengths shorter or longer than 10', with or without belled ends.

Use RNC Fittings with Schedule 40 and Schedule 80 Conduit.

Notes: 1. Special fittings and conduit sizes will be quoted on request.
2. DON'T FORGET TO ORDER CEMENT.
3. Carlon reserves the right to ship to the nearest unitized quantity.

Support of Carlon Rigid Nonmetallic Conduit in Aboveground Installations

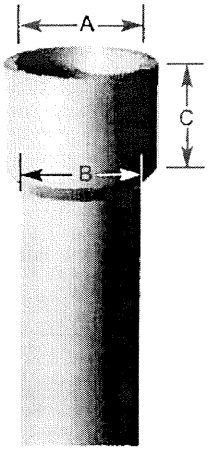
Table 352.30(B) NEC shows the support requirements for Schedule 40 and Schedule 80 rigid PVC nonmetallic conduit.

Plastic conduit should always be installed away from steam lines, etc. Support straps should allow for lineal movement caused by expansion and contraction.

Maximum ambient temperature is 122°F (50°C).

Table 352.30(B), NEC

Trade Size	Maximum Spacing Between Supports (feet)
1/2 - 1	3
1 1/4 - 2	5
2 1/2 - 3	6
3 1/2 - 5	7
6	8



Acceptable Dimensions in Inches of Integral Bell per UL 651

Trade Size	A At Entrance (in.) Maximum	Minimum	B At Bottom (in.) Maximum	Minimum	C Nominal Bell Depth (in.)
1/2	0.860	0.844	0.844	0.828	1.375
3/4	1.074	1.054	1.056	1.036	1.500
1	1.340	1.320	1.320	1.300	1.750
1 1/4	1.689	1.665	1.667	1.643	1.875
1 1/2	1.930	1.906	1.906	1.882	2.750
2	2.405	2.381	2.381	2.357	3.250
2 1/2	2.905	2.875	2.883	2.853	3.250
3	3.530	3.500	3.507	3.477	3.875
3 1/2	4.065	3.965	4.007	3.977	3.875
4	4.565	4.465	4.506	4.476	4.625
5	5.643	5.543	5.583	5.523	5.625
6	6.708	6.608	6.644	6.584	6.375

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Typical Properties of Conduit Raw Material Compound

Thermal

	ASTM Test	Typical Values
Co-efficient of Thermal Expansion-inch/inch/°F (properties @ 73.4°F)	D696	3.38×10^{-5}
Heat Distortion °F at 264 psi	D648	160°F
Thermal Conductivity BTU (hr.) (ft.) (°F/in.)	N/A	1.3

Mechanical

	ASTM Test	Typical Values
Specific Gravity	D792	1.43 - 1.6
Tensile Strength (psi) @ 73.4°F	D638	5,000-6,500
Izod Impact ft lbs./in. of notch	D256	0.65 - 1.5
Flexural Strength (psi)	D790	12,500
Compressive Strength (psi)	D695	9,000
Hardness (Durometer D)	D2240	85

Electrical

	ASTM Test	Typical Values
Dielectrical Strength volts/mil	D149	1100
Dielectric Constant 60 CPS @ 30°C	D150	4.00
Power Factor 60 CPS @ 30°C	D150	1.93

Impedance (Volts lost per ampere per 100 feet)

	3. 90% P.F.	80% P.F.	1. 90% P.F.	80% P.F.
Steel Conduit	.0118	.0123	.0136	.0142
Schedule 40®	.0105	.0106	.0121	.0122

Using 250 KCmil Cu. conductor. comparable values for other conductor sizes.

Wire Fill

Maximum number of conductors in Schedule 40 PVC conduit

(Based on Table 1, Chapter 9 of the NEC)

Type Letters	Conductor Size AWG, MCM	Trade Size ½	¾	1	1¼	1½	2	2½	3	3½	4	4¼	5	6	8
THWN	14	13	24	39	69	94	154								
	12	10	18	29	51	79	114	164							
	10	6	11	18	32	44	73	194	160						
	8	3	5	9	19	22	36	51	71	106	136				
THHN	6	1	4	6	11	15	26	37	57	76	98	125	154		
	4	1	2	4	7	9	16	22	35	47	60	75	94	137	236
FEP (14 thru 2)	3	1	1	3	6	8	13	19	29	39	51	64	90	116	201
	2	1	1	3	5	7	11	16	25	33	43	54	67	97	169
FEPB (14 thru 8)	1		1	1	3	5	9	12	18	25	32	49	59	72	125
	1/0		1	1	3	4	7	10	15	21	27	33	42	61	105
PFA (14 thru 4/0)	2/0		1	1	2	3	6	8	13	17	22	28	35	51	88
	3/0		1	1	1	3	5	7	11	14	18	23	29	42	73
PFAH (14 thru 4/0)	4/0		1	1	1	2	4	6	9	12	15	19	24	35	61
	250			1	1	1	3	4	7	10	12	16	20	28	49
Z (14 thru 4/0)	300			1	1	1	3	4	6	8	11	13	17	24	42
	350			1	1	1	2	3	5	7	9	12	15	21	37
	400				1	1	1	3	5	6	8	10	13	19	33
XHHW (4 thru 500MCM)	500				1	1	1	2	4	5	7	9	11	16	27
	600				1	1	1	1	3	4	5	7	9	13	22
	700					1	1	1	3	4	5	6	8	11	19
	750					1	1	1	2	3	4	6	7	11	19
XHHW	6	1	3	5	9	13	21	30	47	63	81	102	128	185	320
	600				1	1	1	1	3	4	5	7	9	13	22
	700					1	1	1	3	4	5	6	7	11	19
	750					1	1	1	2	3	4	6	7	10	18

Maximum number of conductors in Schedule 80 PVC conduit

(Based on Table 1, Chapter 9 of the NEC)

Conductor Size AWG, MCM		Trade Size ½	¾	1	1¼	1½	2	2½	3	4	5
# 14	THW	4	8	13	24	34	57	82	128		
	THHN	10	19	33	58	81	135	194	0		
12	THW	3	6	11	20	28	47	67	105	183	
	THHN	8	14	24	43	60	100	144	0		
10	THW	3	5	9	16	22	37	54	85	148	
	THHN	5	9	15	27	38	64	92	143		
8	THW	1	2	4	8	11	19	28	44	77	121
	THHN	1	4	7	13	18	31	45	70	123	195
6	THW	1	1	3	6	8	14	20	32	56	88
	THHN	1	3	5	9	13	22	32	50	88	140
4	THW	0	1	2	4	6	10	15	24	42	66
	THHN	1	1	3	6	8	13	20	31	54	86
3	THW	0	1	1	4	5	9	13	20	36	57
	THHN	1	1	2	5	7	11	17	26	46	73
2	THW	0	1	1	3	4	8	11	17	31	49
	THHN	1	1	1	4	5	9	14	22	38	61
1	THW	0	1	1	1	3	5	8	13	22	35
	THHN	0	1	1	3	4	7	10	16	28	45
0	THW	0	0	1	1	2	4	7	11	19	30
	THHN	0	1	1	2	3	6	8	13	24	38
00	THW	0	0	1	1	1	4	6	9	16	26
	THHN	0	1	1	1	3	5	7	11	20	32
000	THW	0	0	1	1	1	3	5	8	14	22
	THHN	0	0	1	1	2	4	6	9	16	26
0000	THW	0	0	1	1	1	3	4	6	11	18
	THHN	0	0	1	1	1	3	5	8	14	22
250	THW	0	0	0	1	1	1	3	5	9	14
	THHN	0	0	0	1	1	2	4	6	11	18
300	THW	0	0	0	1	1	1	3	4	8	13
	THHN	0	0	0	1	1	1	3	5	9	15
350	THW	0	0	0	1	1	1	2	4	7	11
	THHN	0	0	0	1	1	1	3	4	8	13
400	THW	0	0	0	0	1	1	1	3	6	10
	THHN	0	0	0	1	1	1	2	4	7	12
500	THW	0	0	0	0	1	1	1	3	5	8
	THHN	0	0	0	0	1	1	1	3	6	10
600	THW	0	0	0	0	0	1	1	1	4	7
	THHN	0	0	0	0	1	1	1	3	5	8
700	THW	0	0	0	0	0	1	1	1	3	6

Weight Comparison

Carlon Schedule 40® rigid nonmetallic conduit compared to other rigid conduit in pounds per 100 feet (approx.)

Nom. Size	Carlon Schedule 40® Rigid Nonmetallic Conduit	Carlon Schedule 80® Rigid Nonmetallic Conduit	Aluminum	Electrical Metallic Tubing (EMT)	Inter-mediate Metal Conduit (IMC)	Rigid Metal Conduit (RMC)
½	18	22	27	30	57	79
¾	23	29	36	46	78	105
1	35	43	53	66	112	153
1¼	48	60	70	96	114	201
1½	57	72	86	112	176	246
2	76	100	116	142	230	334
2½	125	153	183	230	393	527
3	164	212	239	270	483	690
3½	198		288	350	561	831
4	234	310	340	400	625	982
5	317	431	465	Not Made	Not Made	1344
6	412	592	612	Not Made	Not Made	1770

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Expansion and Contraction

Temperature Considerations for Rigid Nonmetallic Conduit Compensation for Linear Expansion

Like all construction materials, PVC will expand or contract with variations in temperatures. The coefficient of linear expansion in PVC conduit is 3.38 x 10^{-5} in./in./°F as compared to 1.2 x 10^{-5} for aluminum and 0.6 x 10^{-5} for steel. An expansion coupling is needed whenever the change in length due to temperature variation will exceed 1/2 in.

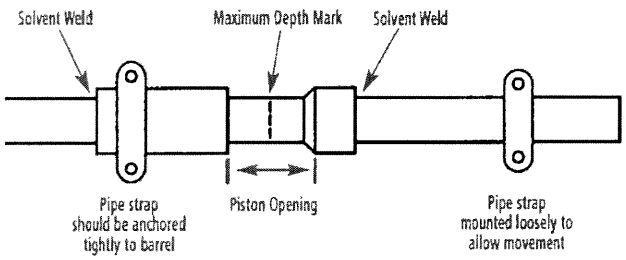
Add 30°F to the estimated temperature range when conduit is installed in direct sunlight to allow for radiant heating.

An expansion coupling consists of two sections of conduit, one telescoping inside another. When installing expansion couplings, alignment of piston and barrel is important. Be sure to mount expansion joint level for best performance.

For a vertical run, the expansion coupling must be installed close to the top of the run with the barrel jointing down, in order that rain water does not run into the opening. The lower end of the conduit run must be secured at the bottom so that any length change due to temperature variation will result in an upward movement.

Expansion Characteristics of PVC Rigid Nonmetallic Conduit
Coefficient of Thermal Expansion = 3.38 x 10^{-5} in./in./°F

Temperature Change in Degrees F	Length Change in inches per 100 FL of PVC Conduit	Temperature Change in Degrees F	Length Change in inches per 100 FL of PVC Conduit	Temperature Change in Degrees F	Length Change in inches per 100 FL of PVC Conduit	Temperature Change in Degrees F	Length Change in inches per 100 FL of PVC Conduit
5	0.2	55	2.2	105	4.2	155	6.3
10	0.4	60	2.4	110	4.5	160	6.5
15	0.6	65	2.6	115	4.7	165	6.7
20	0.8	70	2.8	120	4.9	170	6.9
25	1.0	75	3.0	125	5.1	175	7.1
30	1.2	80	3.2	130	5.3	180	7.3
35	1.4	85	3.4	135	5.5	185	7.5
40	1.6	90	3.6	140	5.7	190	7.7
45	1.8	95	3.8	145	5.9	195	7.9
50	2.0	100	4.1	150	6.1	200	8.1



Determine the Piston Opening

The expansion joint must be installed to allow both expansion and contraction of the conduit run. The correct piston opening for any installation condition should use the following formula:

$$O = \left[\frac{T\ max - T\ installed}{\Delta T} \right] E$$

Where:

O = Piston opening (in.)
T max = Maximum anticipated temperature of conduit (°F)
T inst. = Temperature of conduit at time of installation (°F)
Δ T = Total change in temperature of conduit (°F)
E = Expansion allowance built into each expansion coupling (in.)

Example

380 ft. of conduit is to be installed on the outside of a building exposed to the sun in a single straight run. It is expected that the conduit will vary in temperature from 0°F in the winter to 140°F in the summer (this includes the 30°F for radiant heating from the sun.) The installation is to be made at a conduit temperature of 90°F. From the table, a 140°F temperature change will cause a 5.7 in. length change in 100 ft. of conduit. The total change for this example is 5.7" x 3.8 = 21.67" which should be rounded to 22". The number of expansion couplings will be 22" x coupling range (4" for Carlon trade sizes 1/2" through 1-1/2", and 8" for sizes 2" through 6".) If the E945D coupling is used, the number will be 22" x 4 = 5.50 which should be rounded to 6. The coupling should be placed at 62 ft. intervals (380 x 6). the proper piston setting at the time of installation is calculated as explained above.

$$O = \left[\frac{140 - 90}{140} \right] 4.0 = 1.4 \text{ in.}$$

Insert the piston into the barrel to the maximum depth. Place a mark on the piston at the end of the barrel. To properly set the piston, pull the piston out of the barrel to correspond to the 2.1 in. calculated above. See drawing at lower left.

Summary

1. Anticipate expansion and contraction of PVC conduit in aboveground, exposed installation.
2. Use an expansion coupling when length change due to temperature variation will exceed 1/2".
3. PVC conduit expands 4.1" for each 100 feet of run and a 100°F temperature change.
4. Align expansion coupling with the conduit run to prevent binding.
5. Follow the instructions to set the piston opening.
6. Rigidly fix the outer barrel of the expansion coupling so it cannot move. Mount the conduit connected to the piston loosely enough to allow the conduit to move as the temperature changes.

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Corrosion Resistance of Carlon Schedule 40 and Schedule 80 PVC Conduit and Fittings

Carlon Schedule 40 and Schedule 80 are generally acceptable for use in environments containing the chemicals below. These environmental resistance ratings are based upon tests where the specimens were placed in complete submergence in the reagent listed. Schedule 40 and Schedule 80 can be used in many process areas where chemicals not on this list are manufactured or used because worker safety requirements dictate that any air presence or splashing be at a very low level.

If there are any questions for specific suitability in a given environment, prototype samples should be tested under actual conditions.

Acetic Acid 0-20%
Acetic Acid 20-30%
Acetic Acid 30-60%
Acetic Acid 80%
Acetic Acid – Glacial
Acetic Acid Vapors
Acetylene
Adipic Acid
Alum
Aluminum Chloride
Aluminum Fluoride
Aluminum Hydroxide
Aluminum Oxychloride
Aluminum Nitrate
Aluminum Sulfate
Ammonia-Dry Gas
Ammonium Bifluoride
Ammonium Carbonate
Ammonium Chloride
Ammonium Hydroxide 28%
Ammonium Metaphosphate
Ammonium Nitrate
Ammonium Persulfate
Ammonium Phosphate – Neutral
Ammonium Sulfate
Ammonium Sulfide
Ammonium Thiocyanate
Amyl Alcohol
Anthraquinone
Anthraquinonesulfonic Acid
Antimony Trichloride
Aqua Regia
Arsenic Acid 80%
Arylsulfonic Acid
Barium Carbonate
Barium Chloride
Barium Hydroxide
Barium Sulfate
Barium Sulfide
Beet – Sugar Liquor
Benzine Sulfonic Acid 10%
Benzoic Acid
Bismuth Carbonate
Black Liquor (Paper Industry)
Bleach – 12.5% Active Cl_2
Borax
Boric Acid
Brine
Breeder Pellets – Dane. Fish
Bromic Acid
Bromine – Water
Butane
Butadiene
Butyl Alcohol
Butyl Phenol
Butylene
Butyric Acid
Calcium Bisulfite
Calcium Carbonate
Calcium Chlorate
Calcium Chloride
Calcium Hydroxide
Calcium Hypochlorite
Calcium Nitrate
Calcium Sulfate
Carbonic Acid
Carbon Dioxide Gas – Wet
Carbon Dioxide – Aqueous Solution
Carbon Monoxide
Caustic Potash
Caustic Soda
Chloracatic Acid
Chloral Hydrate
Chlorine Gas (Dry)
Chlorine Gas (Moist)
Chlorine Water
Chlorosulfonic Acid
Chrome Alum
Chromic Acid 10%
Chromic Acid 30%
Chromic Acid 40%
Chromic Acid 50%
Citric Acid
Copper Chloride
Copper Cyanide
Copper Fluoride
Copper Nitrate
Copper Sulfate
Cottonseed Oil
Cresylic Acid 50%
Crude Oil – Sour
Crude Oil – Sweet
Demineralized Water
Dextrin
Dextrose
Diglycolic Acid
Disodium Phosphate
Ethyl Alcohol
Ethylene Glycol
Fatty Acids
Ferric Chloride
Ferric Nitrate
Ferric Sulfate
Ferrous Chloride
Ferrous Sulfate
Fluorine Gas – Wet
Fluorine Gas – Dry
Fluoroboric Acid
Fluorosilicic Acid
Formaldehyde
Formic Acid
Fructose
Gallic Acid
Gas – Coke Oven
Gas – Natural (Dry)
Gas – Natural (Wet)
Gasoline – Sour
Gasoline – Refined
Glucose
Glycerine (Glycerol)
Glycol
Glycolic Acid
Green Liquor (Paper Industry)
Heptane
Hexanol, Tertiary
Hydrobromic Acid 20%
Hydrochloric Acid 0% - 25%
Hydrochloric Acid 25% - 40%
Hydrocyanic Acid or Hydrogen Cyanide
Hydrofluoric Acid 10%
Hydrofluorosilicic Acid
Hydrogen Phosphide
Hydrogen Sulfide – Dry
Hydrogen Sulfide – Aqueous Solution
Hydroquinone
Hydroxylamine Sulfate
Iodine
Kerosene
Lactic Acid 28%
Lauric Acid
Lauryl Chloride
Lauryl Sulfate
Lead Acetate
Lime Sulfur
Linoleic Acid
Linseed Oil
Lubricating Oils
Magnesium Carbonate
Magnesium Chloride
Magnesium Hydroxide
Magnesium Nitrate
Magnesium Sulfate
Maleic Acid
Malic Acid
Mercuric Chloride
Mercuric Cyanide
Mercurous Nitrate
Mercury
Methyl Sulfate
Methylene Chloride
Mineral Oils
Naphthalene
Nickel Chloride
Nickel Nitrate
Nitric Acid, Anydrous
Nitric Acid 20%
Nitric Acid 40%
Nitric Acid 60%
Nitrobenzene
Nitrous Oxide
Oils and Fats
Oils – Petroleum – (See Type)
Oleic Acid
Oxalic Acid
Palmitic Acid 10%
Perchloric Acid 10%
Phenylhydrazine Hydrochloride
Phosgene, Gas
Phosphoric Acid – 0-25%
Phosphoric Acid – 25-50%
Phosphoric Acid – 50-85%
Photographic Chemicals
Plating Solutions
Potassium Bicarbonate
Potassium Bichromate
Potassium Borate
Potassium Bromide
Potassium Carbonate
Potassium Chloride
Potassium Chromate
Potassium Cyanide
Potassium Dichromate
Potassium Ferricyanide
Potassium Ferrocyanide
Potassium Fluoride
Potassium Hydroxide
Potassium Nitrate
Potassium Perborate
Potassium Perchlorite
Potassium Permanganate 10%
Potassium Persulfate
Potassium Sulfate
Propane
Propyl Alcohol
Silicic Acid
Silver Cyanide
Silver Nitrate
Silver Plating Solutions
Sodium Acetate
Sodium Arsenite
Sodium Benzoate
Sodium Bicarbonate
Sodium Bisulfate
Sodium Bisulfite
Sodium Bromide
Sodium Chlorate
Sodium Chloride
Sodium Cyanide
Sodium Dichromate
Sodium Ferricyanide
Sodium Ferrocyanide
Sodium Fluoride
Sodium Hydroxide
Sodium Hypochlorite
Sodium Nitrate
Sodium Nitrite
Sodium Sulfate
Sodium Sulfide
Sodium Sulfite
Sodium Thiosulfate (Hypo)
Stannic Chloride
Stannous Chloride
Stearic Acid
Sulfur
Sulfur Dioxide – Gas Dry
Sulfur Trioxide
Sulfuric Acid – 0-10%
Sulfuric Acid – 10-75%
Sulfuric Acid – 75-90%
Sulfurous Acid
Tannic Acid
Tanning Liquors
Tartaric Acid
Titanium Tetrachloride
Triethanolamine
Trimethyl Propane
Trisodium Phosphate
Turpentine
Urea
Vinegar
Whiskey
White Liquor (Paper Industry)
Wines
Zinc Chloride
Zinc Chromate
Zinc Cyanide
Zinc Nitrate
Zinc Sulfate

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Suggested Format for Specifying Carlon Nonmetallic Conduit, Conduit Fittings and Junction Boxes

A. The Carlon rigid nonmetallic conduit system shall be installed as indicated on the drawings and as specified herein.

B. All wiring shall be installed in Carlon rigid nonmetallic conduit. All conduit shall be secured by means of proper fittings. All fittings shall be Carlon.

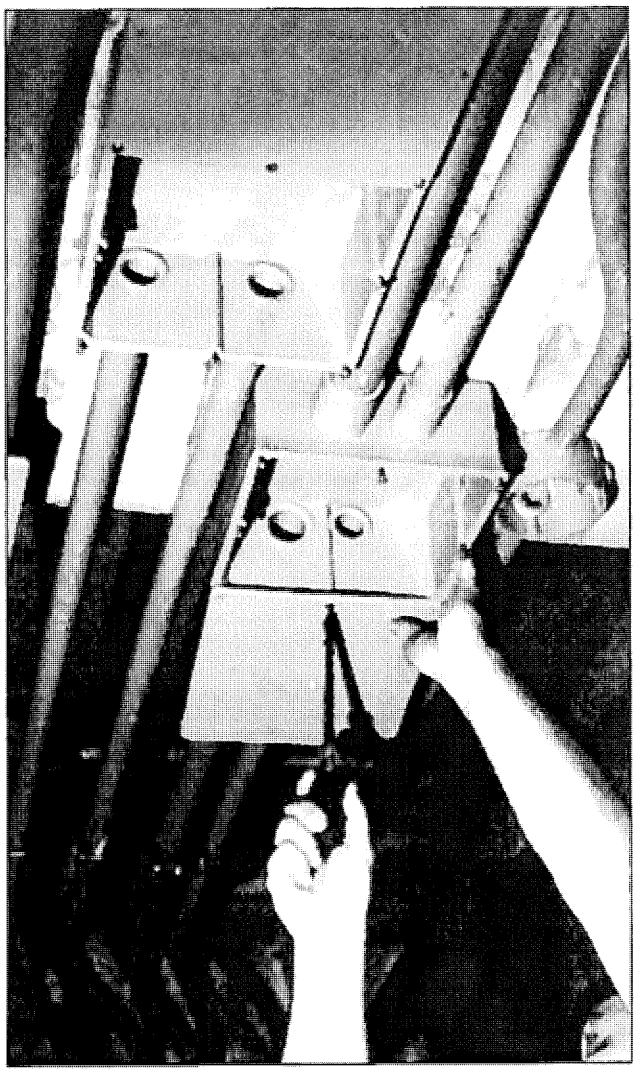
C. Carlon outlet boxes, fittings and junction boxes shall be used for all outlets, pull boxes and junction points. (Lighting fixtures shall not be supported or hung from PVC junction boxes but be supported in position by other means.)

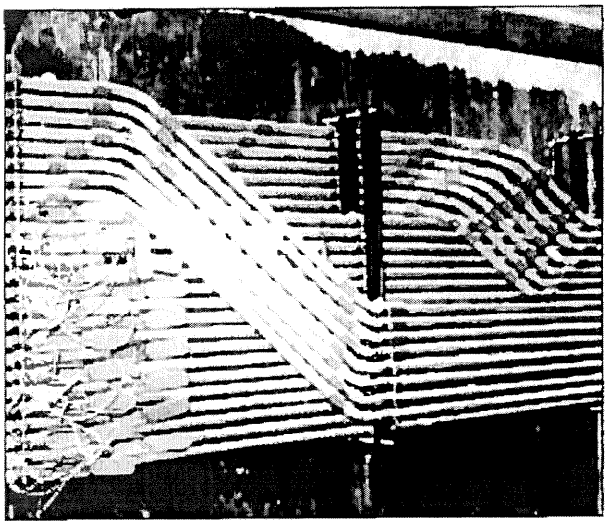
D. Exposed conduits shall be mounted securely by suitable hangers or straps with the maximum spacing of points of supports not greater than indicated by Section 352.30 of the NEC.

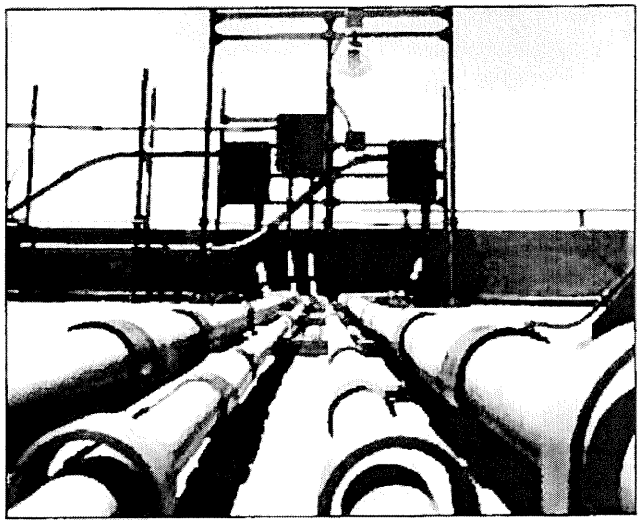
E. Except where embedded in concrete or direct buried, Carlon conduit shall be supported to permit adequate lineal movement to allow for expansion and contraction of conduit due to temperature change.

F. For aboveground installations where temperature change in excess of 14°C (25°F) is anticipated, expansion joints shall be installed. See Table 352.44(A) NEC for expansion characteristics.

G. Proper care shall be taken when field bending is employed to maintain the internal diameter and wall thickness of the conduit.







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Type UA - Liquid-Tight Flexible Metal Conduit (LFMC)

Construction
- Constructed of continuously interlocked hot dipped zinc galvanized steel core for exceptional crush and corrosion resistance.
- Durable, sunlight resistant and flame retardant thermoplastic PVC jacket that resists heat, oil and chemical breakdown.

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RoHS WEEE COMPLIANT

Results 1 - 28 of 28

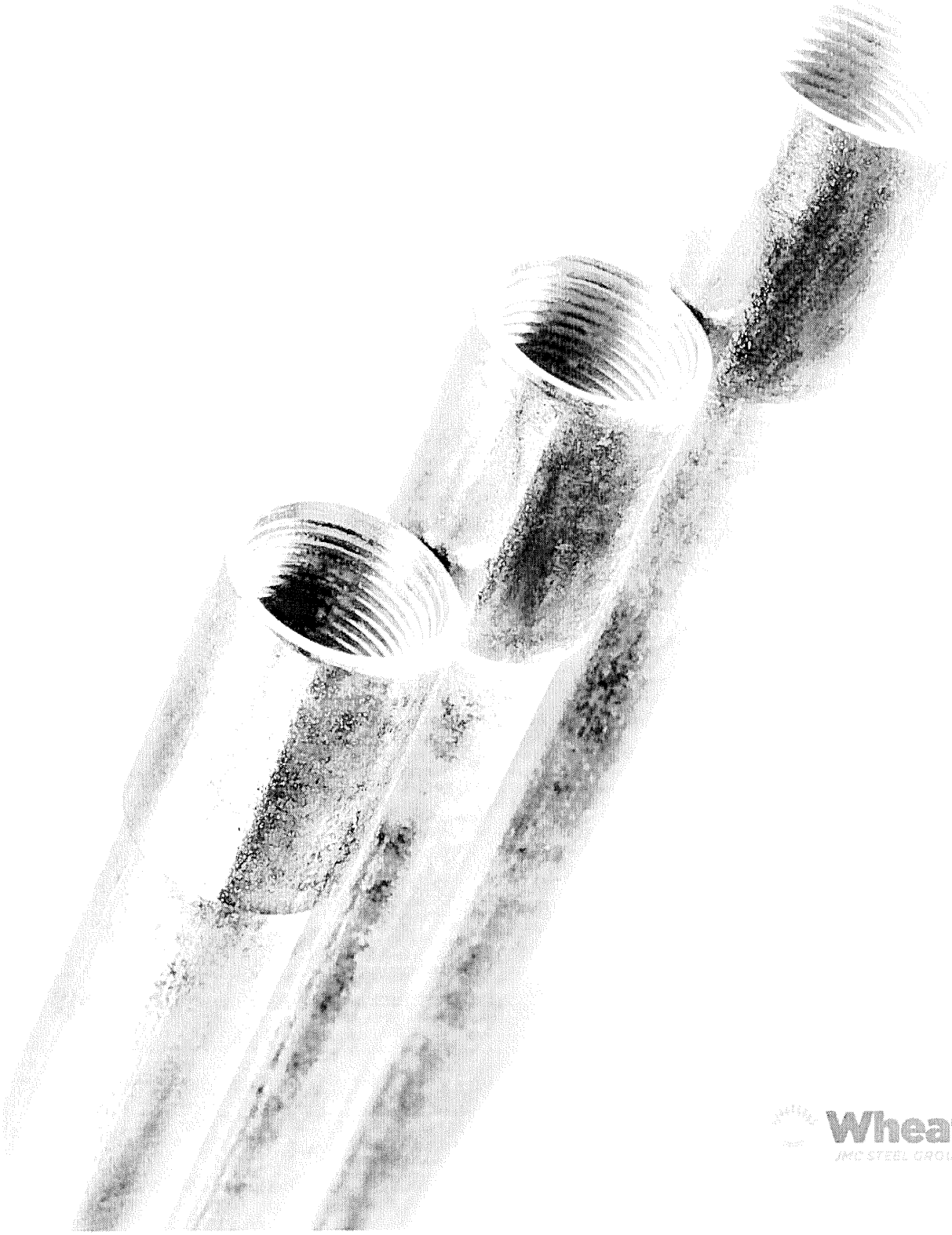
Item #	Electrical Trade Size	Length	Packaging	Inside Diameter	Outside Diameter
34202	3/8 in 12 mm	100 ft 30.48 m	Small Cartons	0.484 to 0.504 in 12.294 to 12.802 mm	0.690 to 0.710 in 17.526 to 18.034 mm
34201	3/8 in 12 mm	200 ft 60.96 m	Standard Carton	0.484 to 0.504 in 12.294 to 12.802 mm	0.690 to 0.710 in 17.526 to 18.034 mm
34204	3/8 in 12 mm	800 ft 243.84 m	Small Reels	0.484 to 0.504 in 12.294 to 12.802 mm	0.690 to 0.710 in 17.526 to 18.034 mm
34203	3/8 in 12 mm	1500 ft 457.2 m	Standard Reels	0.484 to 0.504 in 12.294 to 12.802 mm	0.690 to 0.710 in 17.526 to 18.034 mm
34212	1/2 in 16 mm	100 ft 30.48 m	Small Cartons	0.622 to 0.642 in 15.799 to 16.307 mm	0.822 to 0.840 in 20.879 to 21.336 mm
34211	1/2 in 16 mm	200 ft 60.96 m	Standard Carton	0.622 to 0.642 in 15.799 to 16.307 mm	0.822 to 0.840 in 20.879 to 21.336 mm
34214	1/2 in 16 mm	500 ft 152.4 m	Small Reels	0.622 to 0.642 in 15.799 to 16.307 mm	0.822 to 0.840 in 20.879 to 21.336 mm
34213	1/2 in 16 mm	1000 ft 304.8 m	Standard Reels	0.622 to 0.642 in 15.799 to 16.307 mm	0.822 to 0.840 in 20.879 to 21.336 mm
34222	3/4 in 21 mm	100 ft 30.48 m	Small Cartons	0.820 to 0.840 in 20.828 to 21.336 mm	1.030 to 1.050 in 26.162 to 26.670 mm
34221	3/4 in 21 mm	150 ft 45.72 m	Standard Carton	0.820 to 0.840 in 20.828 to 21.336 mm	1.030 to 1.050 in 26.162 to 26.670 mm
34228	3/4 in 21 mm	500 ft 152.4 m	Small Reels	0.820 to 0.840 in 20.828 to 21.336 mm	1.030 to 1.050 in 26.162 to 26.670 mm
34229	3/4 in 21 mm	1000 ft 304.8 m	Standard Reels	0.820 to 0.840 in 20.828 to 21.336 mm	1.030 to 1.050 in 26.162 to 26.670 mm
34231	1 in 27 mm	100 ft 30.48 m	Standard Carton	1.041 to 1.066 in 26.441 to 27.076 mm	1.290 to 1.315 in 32.766 to 33.401 mm

34238	1 in 27 mm	400 ft 121.92 m	Small Reels	1.041 to 1.066 in 26.441 to 27.076 mm	1.290 to 1.315 in 32.766 to 33.401 mm
34241	1-1/4 in 35 mm	50 ft 15.24 m	Standard Carton	1.380 to 1.410 in 35.052 to 35.814 mm	1.630 to 1.660 in 41.402 to 42.164 mm
34248	1-1/4 in 35 mm	250 ft 76.2 m	Small Reels	1.380 to 1.410 in 35.052 to 35.814 mm	1.630 to 1.660 in 41.402 to 42.164 mm
34251	1-1/2 in 41 mm	50 ft 15.24 m	Standard Carton	1.575 to 1.600 in 40.005 to 40.640 mm	1.865 to 1.900 in 47.371 to 48.260 mm
34254	1-1/2 in 41 mm	150 ft 45.72 m	Small Reels	1.575 to 1.600 in 40.005 to 40.640 mm	1.865 to 1.900 in 47.371 to 48.260 mm
34261	2 in 53 mm	50 ft 15.24 m	Standard Carton	2.020 to 2.045 in 51.308 to 51.943 mm	2.340 to 2.375 in 59.436 to 60.325 mm
34268	2 in 53 mm	100 ft 30.48 m	Small Reels	2.020 to 2.045 in 51.308 to 51.943 mm	2.340 to 2.375 in 59.436 to 60.325 mm
34272	2-1/2 in 63 mm	25 ft 7.62 m	Standard Carton	2.480 to 2.505 in 62.992 to 63.627 mm	2.840 to 2.875 in 72.136 to 73.025 mm
34274	2-1/2 in 63 mm	100 ft 30.48 m	Standard Reels	2.480 to 2.505 in 62.992 to 63.627 mm	2.840 to 2.875 in 72.136 to 73.025 mm
34281	3 in 78 mm	25 ft 7.62 m	Standard Carton	3.070 to 3.100 in 77.978 to 78.740 mm	3.460 to 3.500 in 87.884 to 88.900 mm
34284	3 in 78 mm	100 ft 30.48 m	Standard Reels	3.070 to 3.100 in 77.978 to 78.740 mm	3.460 to 3.500 in 87.884 to 88.900 mm
34301	3-1/2 in 91 mm	25 ft 7.62 m	Standard Carton	3.500 to 3.540 in 88.900 to 89.916 mm	3.960 to 4.000 in 100.584 to 101.600 mm
34304	3-1/2 in 91 mm	100 ft 30.48 m	Standard Reels	3.500 to 3.540 in 88.900 to 89.916 mm	3.960 to 4.000 in 100.584 to 101.600 mm
34291	4 in 103 mm	25 ft 7.62 m	Standard Carton	4.000 to 4.040 in 101.600 to 102.616 mm	4.460 to 4.500 in 113.284 to 114.300 mm
34294	4 in 103 mm	100 ft 30.48 m	Standard Reels	4.000 to 4.040 in 101.600 to 102.616 mm	4.460 to 4.500 in 113.284 to 114.300 mm

Results 1 - 28 of 28

MADE AND MELTED IN AMERICA

Steel Rigid Metal Conduit



Wheatland Tube

JMC STEEL GROUP

Steel Rigid Metal Conduit:

The ultimate protection

Steel rigid metal conduit has the thickest walls of the steel raceways, and is hot-dip galvanized. Rigid metal conduit provides a high level of protection for conductors and cables installed in compliance with the National Electrical Code (NEC).

10' and 20' lengths

Couplings produced in-house

Conduit threaded on both ends

Coupling supplied on one end, color-coded thread protector on other end

Accurate circular cross section with uniform wall thickness

Interior surface free from defects injurious to conductors

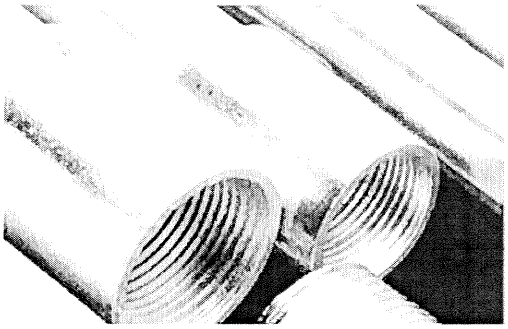
Hot-dip galvanized OD and ID

Contains recycled steel

Designed for Quality and Efficiency
At Wheatland Tube, we leverage our experience and the latest technologies to provide a consistent quality product with on-time deliveries. We manufacture rigid metal conduit from mild steel strip in our CW and state of-the-art ERW mills, with the industry's leading hot-dip galvanizing process for OD and ID corrosion protection. Our complete in-house production capabilities and quality control programs provide consistency in production.

Green and Sustainable
Rigid metal conduit contains recycled steel content of various amounts, depending on the steel manufacturing process, and provides decades of reliable service if properly maintained. Conductors may be easily removed and new conductors or cables inserted. Future circuits may be added in the same conduit, as permitted by the code. At the end of its life, the steel may be fully recycled.

Tested and Certified for Safety
Our rigid metal conduit is Listed to UL Standard for Safety for Electrical Rigid Metal Conduit—Steel, UL 6. Rigid metal conduit is manufactured in accordance with ANSI® C80.1, UL-6 and federal



specifications WW-C-581. The pitch of rigid metal conduit threads conforms to the American National Standard for Pipe Threads, General Purpose (Inch), ANSI/ASME B1.20.1. The taper of threads is 3/4 inch per foot (1 in 16). Our steel rigid metal conduit provides protection from severe physical damage, the highest level recognized by the code, for cables and conductors. Rigid metal conduit reduces exposure to electromagnetic fields, shields against harmful electromagnetic interference and is recognized as an equipment-grounding conductor by NFPA 70: National Electrical Code 250.118 (2). Email info@wheatland.com for a copy of Georgia Tech's Grounding and ElectroMagnetic Interference (GEMI) Analysis software.

Also available in 20'

RIGID METAL CONDUIT WEIGHTS AND DIMENSIONS (10' LENGTHS)

TRADE SIZE	METRIC DESIGNATOR	THREADS/ INCH	WEIGHT PER 100 FT.		NOMINAL OUTSIDE DIAMETER		NOMINAL INSIDE DIAMETER*		NOMINAL WALL THICKNESS*	
			lbs.	kg	in.	mm	in.	mm	in.	mm
½	16	14	82	37.2	0.840	21.34	0.632	16.05	0.104	2.64
¾	21	14	109	49.4	1.050	26.67	0.836	21.23	0.107	2.72
1	27	11½	161	73.0	1.315	33.40	1.063	27.00	0.126	3.20
1¼	35	11½	218	98.9	1.660	42.16	1.394	35.41	0.133	3.38
1½	41	11½	263	119.3	1.900	48.26	1.624	41.25	0.138	3.51
2	53	11½	350	158.8	2.375	60.33	2.083	52.91	0.146	3.71
2½	63	8	559	253.6	2.875	73.03	2.489	63.22	0.193	4.90
3	78	8	727	329.8	3.500	88.90	3.090	78.49	0.205	5.21
3½	91	8	880	399.2	4.000	101.60	3.570	90.68	0.215	5.46
4	103	8	1030	467.2	4.500	114.30	4.050	102.87	0.225	5.72
5	129	8	1400	635.0	5.563	141.30	5.073	128.85	0.245	6.22
6	155	8	1840	834.6	6.625	168.28	6.093	154.76	0.266	6.76

Applicable tolerances: Outside Diameter ½–1 ½: ±0.015" (16–41: ±0.38 mm), 2–6: (53–155) ± 1%.

PACKAGING (10' LENGTHS)

TRADE SIZE	METRIC DESIGNATOR	THREAD PROTECTOR COLOR	QUANTITY/ BUNDLE		QUANTITY/LIFT*				WEIGHT/LIFT		VOLUME/LIFT	
			ft.	m	Pieces	Bundles	ft.	m	lbs.	kg	cu. ft.	cu. m
½	16	Black	100	30.5	—	25	2500	762	2050	929.9	19.4	0.6
¾	21	Red	50	15.2	—	40	2000	610	2180	988.8	26.7	0.8
1	27	Blue	50	15.2	—	25	1250	381	2013	913.1	22.2	0.6
1¼	35	Red	—	—	90	—	900	274	1962	889.9	28.3	0.8
1½	41	Black	—	—	80	—	800	244	2104	954.4	27.2	0.8
2	53	Blue	—	—	60	—	600	183	2100	952.5	36.1	1.0
2½	63	Black	—	—	37	—	370	113	2068	938.0	35.0	1.0
3	78	Blue	—	—	30	—	300	91	2181	989.3	41.5	1.2
3½	91	Black	—	—	25	—	250	76	2200	997.9	43.3	1.2
4	103	Blue	—	—	20	—	200	61	2060	934.4	48.6	1.4
5	129	Blue	—	—	15	—	150	46	2100	952.5	52.1	1.5
6	155	Blue	—	—	10	—	100	30	1840	834.6	43.8	1.2

** The quantity per lift conforms to the National Electrical Manufacturers Association Standards Publication RN-2 Packaging of Master Bundles for Steel Rigid Metal Conduit, Intermediate Metal Conduit (IMC) and Electrical Metallic Tubing (EMT).*
Pack quantities for Canadian distribution does not comply with NEMA RN-2.

PACKAGING (20' LENGTHS)

TRADE SIZE	METRIC DESIGNATOR	THREAD PROTECTOR COLOR	QUANTITY/LIFT			WEIGHT/LIFT		VOLUME/LIFT	
			Pieces	ft.	m	lbs.	kg	cu. ft.	cu. m
2	53	Blue	30	600	183	2100	952.5	36.1	1.0
2½	63	Black	18	360	110	2014	913.6	35.0	1.0
3	78	Blue	15	300	91	2180	988.8	41.5	1.2
3½	91	Black	12	240	73	2112	958.0	43.3	1.2
4	103	Blue	10	200	61	2060	934.4	48.6	1.4
5	129	Blue	7	140	43	1960	889.0	52.1	1.5
6	155	Blue	5	100	30	1840	834.6	43.8	1.2

The length is nominal and subject to the tolerance of UL Standard for Safety for Electrical Rigid Metal Conduit – Steel, UL 6.

STEEL RMC UL LISTED NO. E52152

Wheatland Tube

Wheatland Tube

JMC Steel Group

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About Wheatland Tube Electrical Conduit and Fittings

Wheatland Tube produces a broad spectrum of electrical conduit, including hot-dip galvanized steel rigid metal conduit, steel intermediate metal conduit (IMC), steel electrical metallic tubing (EMT), a full line of steel and aluminum elbows and nipples, and steel couplings. We also supply rigid aluminum conduit and couplings.

For more information, contact Wheatland Tube at:
800.257.8182 or **info@wheatland.com**
Or, visit our website at wheatland.com

The Strength to **Deliver**

MADE AND MELTED IN AMERICA

FasTrak™ Plus Electrical Metallic Tubing (EMT)

Wheatland Tube
JMC STEEL GROUP

FasTrak™ Plus Electrical Metallic Tubing (EMT):

An easy but tough wiring solution

With enhanced ID coating, FasTrak Plus EMT offers exceptional wire-pulling performance. A lightweight, smooth-pull wiring solution, easy to bend, yet tough enough for all locations that comply with the National Electric Code® (NEC®), including dry, wet, exposed, concealed or hazardous locations.

Also available in 20'

5' lengths – trade sizes ½ and

Accurate circular cross section with uniform wall thickness

Interior surface free from defects injurious to conductors

Lightweight, easy to install

Galvanized OD with additional clear coating

Proprietary ID coating for fast wire-pulling performance

Contains recycled steel

Designed for Quality and Efficiency
At Wheatland Tube, we leverage our experience and the latest technologies to provide a consistent quality product with on-time deliveries. We manufacture FasTrak Plus EMT from mild steel strip in state-of-the-art ERW mills with the industry's leading in-line galvanizing process that applies molten zinc to the outside diameter. A clear coating is then applied to the outside diameter to inhibit rust and reduce storage stains. The inside diameter is sprayed with a proprietary coating for corrosion resistance and easy wire pulling. Product is then inspected visually and with instruments to ensure all meet the product standard specifications. Our complete in-house production capabilities and quality control programs provide consistency in production.

Green and Sustainable
FasTrak Plus EMT contains recycled steel content of various amounts, depending on the steel manufacturing process, and will provide decades of reliable service if properly maintained. Conductors may be easily removed and new conductors or cables inserted. Future circuits may be added in the same conduit, as permitted by the code. At the end of its life, the steel may be fully recycled.

Tested and Certified for Safety
FasTrak Plus EMT is CSA Certified to CSA C22.2 No. 83.1-07 or UL® Listed to UL 797, depending on the market being supplied. It is manufactured in accordance with ANSI® C80.3, UL 797 and federal specifications WW-C-563. It provides mechanical protection for cables and conductors, reduces electromagnetic field exposure, shields against electromagnetic interference and is recognized as an equipment grounding conductor by NFPA 70: NEC 250.118 (4). Email info@wheatland.com for a copy of Georgia Tech's Grounding and ElectroMagnetic Interference (GEMI) Analysis software.

For more information, call **800.257.8182** or visit **wheatland.com**

Also available in 20'

EMT WEIGHTS AND DIMENSIONS (10' LENGTHS*)

TRADE SIZE	METRIC DESIGNATOR	WEIGHT PER 100 FT.		OUTSIDE DIAMETER		INSIDE DIAMETER**		WALL THICKNESS**	
		lbs.	kg	in.	mm	in.	mm	in.	mm
1/2	16	30	13.6	0.706	17.93	0.622	15.80	0.042	1.07
3/4	21	46	20.9	0.922	23.42	0.824	20.93	0.049	1.24
1	27	67	30.4	1.163	29.54	1.049	26.64	0.057	1.45
1 1/4	35	101	45.8	1.510	38.35	1.380	35.05	0.065	1.65
1 1/2	41	116	52.6	1.740	44.20	1.610	40.89	0.065	1.65
2	53	148	67.1	2.197	55.80	2.067	52.50	0.065	1.65
2 1/2	63	216	98.0	2.875	73.03	2.731	69.37	0.072	1.83
3	78	263	119.3	3.500	88.90	3.356	85.24	0.072	1.83
3 1/2	91	349	158.3	4.000	101.60	3.834	97.38	0.083	2.11
4	103	393	178.3	4.500	114.30	4.334	110.08	0.083	2.11

** 5' lengths of EMT are available in trade sizes ½" – 4".*

*** For information only, not a UL 797 requirement.*

Applicable tolerances: Length: 10' (3.05 m) ± ¼" (± 6 mm), Outside diameter: ½ through 2: ± 0.005" (16 through 53: ± 0.13 mm), 2 ½: ± 0.010" (63: ± 0.25 mm), 3: ± 0.015" (78: ± 0.38 mm), 3 ½ and 4: ± 0.020" (91 and 103: ± 0.5 mm)

PACKAGING (10' LENGTHS)

TRADE SIZE	METRIC DESIGNATOR	BUNDLE TAPE COLOR	QUANTITY/BUNDLE		QUANTITY/LIFT*				WEIGHT/LIFT		VOLUME/LIFT	
			ft.	m	Pieces	Bundles	ft.	m	lbs.	kg	cu. ft.	cu. m
1/2	16	Black	100	30.5	–	70	7000	2134	2100	952.5	31.7	0.9
3/4	21	Red	100	30.5	–	50	5000	1524	2300	1043.3	36.1	1.0
1	27	Blue	100	30.5	–	30	3000	914	2010	911.7	36.5	1.0
1 1/4	35	Red	50	15.2	–	40	2000	610	2020	916.3	38.2	1.1
1 1/2	41	Black	50	15.2	–	30	1500	457	1740	789.3	37.9	1.1
2	53	–	–	–	120	–	1200	366	1776	805.6	46.7	1.3
2 1/2	63	–	–	–	61	–	610	186	1318	597.8	41.5	1.2
3	78	–	–	–	51	–	510	155	1341	608.3	48.9	1.4
3 1/2	91	–	–	–	37	–	370	113	1291	585.6	48.6	1.4
4	103	–	–	–	30	–	300	91	1179	534.8	50.0	1.4

** The quantity per lift conforms to the National Electrical Manufacturers Association Standards Publication RN-2, Packaging of Master Bundles for Steel Rigid Conduit, Intermediate Metal Conduit (IMC) and Electrical Metallic Tubing (EMT). Pack quantities for Canadian distribution does not comply with NEMA RN-2.*

PACKAGING (20' LENGTHS)

TRADE SIZE	METRIC DESIGNATOR	QUANTITY/LIFT*			WEIGHT/LIFT		VOLUME/LIFT	
		Pieces	ft.	m	lbs.	kg	cu. ft.	cu. m
1/2	16	175	3500	1066.8	1045	474	12.1	0.34
3/4	21	125	2500	762	1144	518.9	14.8	0.42
1	27	75	1500	457.2	1010	458.1	14.1	0.40
1 1/4	35	50	1000	304.8	1005	455.9	15.8	0.45
1 1/2	41	37	740	225.6	858	389.4	15.6	0.44
2	53	37	740	225.6	1098	497.9	24.8	0.70
2 1/2	63	19	380	115.8	822	373	21.8	0.62
3	78	19	380	115.8	998	452.9	32.3	0.92
3 1/2	91	19	380	115.8	1325	600.9	42.2	1.20
4	103	10	200	61	787	356.8	28.1	0.80

** The quantity per lift conforms to the National Electrical Manufacturers Association Standards Publication RN-2, Packaging of Master Bundles for Steel Rigid Conduit, Intermediate Metal Conduit (IMC) and Electrical Metallic Tubing (EMT). Pack quantities for Canadian distribution does not comply with NEMA RN-2.*

STEEL EMT
UL LISTED
NO. [illegible]

Wheatland Tube

Wheatland Tube

JMC Steel Group

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About Wheatland Tube Electrical Conduit and Fittings

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