



State of Connecticut
 Eastern Connecticut State University
 83 Windham Street
 Willimantic, CT 06226

Bid number	Mandatory Pre-Bid	Bid Opening Date	Bid Opening Time	Date Issued
ECSU-2012-16	Date: 5/6/13 Time: 9am Place: Facilities Conference Room, Charter Oak Road	5/20/13	2:00 PM	April 29, 2013

Agency Contact:

Cindy Hodis
 Acquisitions Manager
 860-465-5148
 Email: hodisc@easternct.edu

AFFIRMATION OF BIDDER: The undersigned bidder affirms and declares:

1. That this proposal is executed and signed by said bidder with full knowledge and acceptance of the provisions of Form ECSU-02 (Standard Bid and Contract Terms and Conditions) of current issue and in effect on the date of bid issue.
2. Your written signature below indicates agreement of terms and conditions on page 2 and 3 of this document.

BIDDER INFORMATION				
Complete Company Name (Trade Name, DBA)			Social Security or Federal Employer ID Number	
Company Address:	Street	City	State	Zip Code
Contact Name (typed or printed)	Email address		Telephone Number	Fax Number
Signature of Person Authorized to Sign Bids on Behalf of the above named company				Date Executed
Is your business currently a Department of Administrative Services Certified Small Business Enterprise: <input type="checkbox"/> Yes (Attach Certificate to Bid) <input type="checkbox"/> No				
Is your business a: <input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation (Type & State of Incorporation) _____ <input type="checkbox"/> LLC – sole owner <input type="checkbox"/> LLC – Partnership <input type="checkbox"/> LLC - Corporation				
If you are a State Employee, indicate your position/ agency/ and address:				
Remittance Address (If different from above):				
Total Bid Price: \$				
RETURN BID TO ECSU IN A SEALED ENVELOPE CLEARLY MARKED IN THE LOWER LEFT CORNER WITH THE BID NUMBER, DUE DATE AND TIME. (NOTE: FACSIMILE BIDS ARE <u>NOT</u> ACCEPTABLE) ECSU PURCHASING DEPARTMENT EASTERN ROAD GELSI & YOUNG HALL, ROOM 344 WILLIMANTIC, CT 06226				

THIS FORM AND REQUIRED PROPOSAL SCHEDULE FORMS MUST BE COMPLETED AND RETURNED WITH BID PROPOSAL

EXECUTIVE ORDERS: 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 cancelled, terminated or suspended by the State Labor Commissioner for violation of noncompliance with said Executive Order No. Three, or any State or federal law concerning nondiscrimination, withstanding that the Labor Commissioner is not a party to this contract. The parties of 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 of 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 Labor Commissioner. This contract is also 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 cancelled, 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 of this contract, as a 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.

CONNECTICUT GENERAL STATUTES, Current through Gen. St., Rev. to 1-1-97**

Sec. 4a-60. (Formerly Sec. 4-114a). **Nondiscrimination and affirmative action provisions in contracts** of the State and political subdivisions other than municipalities.

(a) Every contract to which the State or any political subdivision of the State other than a municipality is a party shall contain the following provisions: (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 sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to sections 46a-56, 46a-68e and 46a-68f; (5) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as related 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 project.

(b) 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 by a person or persons: (1) Who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise and (3) who are members of a minority, as such term is defined in subsection (a) of section 32-9n; and "good faith" means that degree of diligence which a reasonable person would exercise in the

performance of legal duties and obligations. "Good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements.

(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 (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; 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.

Sec. 4a-60a. Contracts of the State and political subdivisions, other than municipalities, to contain provisions re nondiscrimination on the basis of sexual orientation.

(a) Every contract to which the State or any political subdivision of the State other than a municipality is a party shall contain the following

provisions: (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; (4) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

(b) The contractor shall include the provisions of 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; 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 this 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

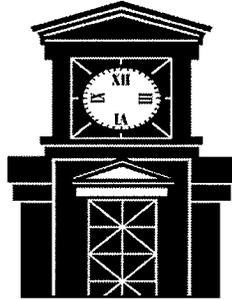
The State of Connecticut shall assume no liability for payment for services under the terms of this agreement until the contractor is notified that this agreement has been accepted by the using agency and, if applicable, approved by the Office of Policy and Management (OPM), the Department of Administrative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

SPECIFICATIONS

PLANETARIUM CONDENSING UNIT REPLACEMENT

EASTERN CONNECTICUT STATE UNIVERSITY
WILLIMANTIC, CONNECTICUT 06226-2295

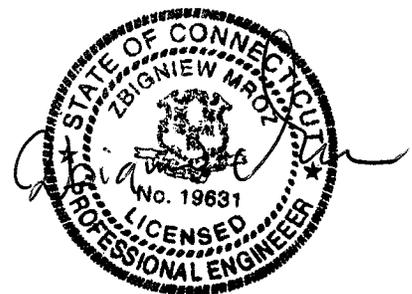
PROJECT # ECSU-2012-16



Prepared by:

Engineering Division
Facilities Management and Planning
Eastern Connecticut State University
Willimantic, Connecticut 06226-2295

April 15, 2013



EASTERN CONNECTICUT STATE UNIVERSITY
PLANETARIUM CONDENSING UNIT REPLACEMENT

DATE: April 26, 2013

A. GENERAL CONDITIONS

1. Notice to Bidders, Time and Dates:
 - a. Contractors are required to visit the site for a pre-bid meeting and inspection. The pre-bid meeting shall be on **May 6, 2013** at **9** am, at the **Conference room of the Facilities Building**.
 - b. The scope of work for this contract shall be as outlined in the technical sections attached.
 - c. Time of the work will be as follows:
 - 1) On-site work shall begin on **June 15, 2013** and be completed by **July 2, 2013**.
 - 2) Construction is allowed between 7:00 a.m. and 5:00 p.m., Monday through Friday. Any alternate days or time must be pre-approved by ECSU.
2. The ECSU Engineer will be **Zbigniew Mroz, P.E.**, Department of Facilities Management and Planning, telephone (860) **465-4495**.
3. The Contractor shall provide an on-site experienced supervisor with responsibility for all aspects of the job and supervision of sub-contractors at all times during daily job performance. All work shall be performed with appropriately licensed personnel as required by the state and local authorities.
4. Warrantee: All workmanship and materials shall be guaranteed for a minimum period of **Eighteen Months** after final acceptance by the Agency. Necessary warrantee repairs or replacements shall be corrected by the Contractor at no expense to the Agency. If, after proper notification, the required repairs or replacements are not corrected by the Contractor, the Agency shall have required corrections performed by others and all expenses incurred shall be forwarded to the Contractor. All materials shall be first quality and of a type approved for use in the project herein specified. They shall be delivered in their original, unopened containers with the approved manufacturer's identification and stored along with the Contractor's tools and equipment in an area designated by the Agency Supervisor. Any and all warranties, service manuals, diagrams, and instructions associated with the project shall be turned over to the ECSU Representative.
5. The Contractor shall provide a Material Safety Data Sheet (MSDS) for all products to be used at the time material/equipment cut sheets and shop drawings are submitted for review. Non-receipt of the MSDS for any product proposed for use will delay the job from starting. Compliance with all ECSU Safety Programs is mandatory. All State of

EASTERN CONNECTICUT STATE UNIVERSITY
PLANETARIUM CONDENSING UNIT REPLACEMENT

Connecticut, ECSU, OSHA, and related safety compliance directives are hereby made a part of this specification to the same extent as if written out herein in full to the extent that such recommendations are not in conflict with applicable codes.

6. The Contractor shall execute every precaution in protecting ECSU property and equipment and shall repair and/or replace damaged items at no charge to the Agency.
7. The Contractor is responsible for total coordination of all aspects of the job until final acceptance. The Contractor shall be solely responsible for damages, losses or liability due to theft or vandalism. The Contractor shall be responsible for the protection of ECSU property during the completion of all work on ECSU property.
8. Workmanship by the Contractor shall be in accordance with the standards of the trade and of the highest quality performed by skilled experienced tradesmen.
9. The Contractor shall furnish all labor, tools, equipment, and material in accordance with state and local building codes for the completion of the project.
10. The Contractor shall perform change orders upon receiving written notification by the Agency only. The Contractor shall be allowed a 5% markup for overhead and 10% markup for profit.
11. Any and all licenses or permits required shall be obtained and paid for by the Contractor.
12. If the presence of asbestos/transite is suspected at any stage of the work, the Contractor is to stop work immediately and contact the Owner's Representative for testing and removal.
- 13.
14. The Contractor shall carry insurance as required by the State of Connecticut. If ECSU does not have a valid Certificate of Insurance on file, the Contractor shall submit a certificate before commencing work (Attachment 1).
15. ECSU reserves the right to cancel any project at any time if it deems it to be in the best interest of the University.
16. The Contractor shall submit proof that all the sub-contractors have been paid before submitting their final payment request.
17. Unless otherwise noted, the payment for work under this agreement shall be one lump sum at the completion of the work.

B. TECHNICAL SCOPE OF WORK AND GENERAL CONDITIONS

EASTERN CONNECTICUT STATE UNIVERSITY
PLANETARIUM CONDENSING UNIT REPLACEMENT

1. Remove the 10 ton R-22 condensing unit, piping and cooling coil.
2. Install new 10 ton condensing based on the refrigerant R-410A
3. Replace cooling coils at air handling unit.
3. Install new, brazed refrigerant piping
4. Reconnect power and control wiring to the new units.

C. ALTERNATES

1. None

D. SUBMITTALS

1. Refer to Specifications

E. ATTACHMENTS (Drawings, Photos, etc.)

1. Certificate of Insurance.
2. CHRO Contract compliance Regulations Notification to Bidders
3. Executive Order 14
4. Nondiscrimination Certification Executive Orders
5. Non Discrimination Instructions
6. OAG Non Discrimination forms
7. W9 Vendor Profile
8. CSU Terms and Conditions
9. Division 1
10. Inspection of Proposals
11. Specifications
12. Drawing M-1

STATE OF CONNECTICUT
CERTIFICATE OF INSURANCE

This is to certify that the Company listed below has issued the policies listed below, that these policies are written in accordance with the Company's standard policies and endorsements, except as indicated below or as noted in the attachments hereto, which policies and endorsements will be made available to the Owner upon request, that they provide coverage and limits of liability shown with respect to the insurance indicated, that they are in force on this date, that all deductible amounts are indicated below, and that this Certificate is furnished in accordance with and for the purpose of satisfying the requirements of the State of Connecticut, and the Agency in connection with the award and performance of a contract or agreement with the State of Connecticut, and the Agency.

1. Name of insured _____

2. Address of insured _____

3. Location and Description of Work _____

Project No. _____

Kind and Type of Insurance	Policy No.	Effective Date	Expiration Date	IN DOLLARS Coverage and limits of Liability		
				Bodily Injury Liability		Property Damage Liability
				Single Limit	Each Accident	Aggregate
A) Protective Liability for and in the name of the State of CT See (1) Reverse Side				1,000,000	100,000	500,000
B) Contractor's Liability				1,000,000	100,000	500,000
C) Contractor Prospective Liability				1,000,000	100,000	500,000
D) Contractual Liability See (1) & (2) Reverse Side				1,000,000	100,000	500,000
E) Worker's Compensation (if self-insured Compensation Comm's Certificate Required.				STATUTORY		
F) <u>Special Hazards Insurance Type C-</u> Collapse Structural <u>Injury Type X-</u> explosion or Blast (NOT REQUIRED)				1,000,000	100,000	500,000
G) <u>Type U</u> -undergraduate Damage (not applicable)				1,000,000	100,000	500,000
H) <u>Auto Liability</u> Owned Automobiles Hired Automobiles Non-owned Automobiles				Each Person	Each Accident	
I) <u>Builders Risk</u> insurance (Fire Extended Coverage)				AS CALLED FOR ON PROJECT DATA		
J) Umbrella Policy (as needed)						

1. Unless requested otherwise by the State, it is agreed that the above named insurance company waives governmental immunity as a defense and will not use the defense of governmental immunity in the adjustment of claims or in the defense of any suit brought against the State, and it is further agreed that the company will bill all premiums and audit charges earned under the protective liability policy to the above named contractor.

2. The contractor shall at all times indemnify and save harmless the State of Connecticut, the Agency, 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 Agency, or of the contractor, his subcontractors, or material men, 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 Agency) caused in whole or in part by the acts, omissions, or neglect of 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, material man, 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 ordered to start work or the actual start whichever occurs first until the completion as certified by the Owner.

Such insurance as is herein certified applies to all operations of the insured in connection with the work herein described at the locations stated.

In the event of any restrictive amendment to, any change in or cancellation of any one or more of said policies the

Insurance Company

will give not less than thirty days written notice to the party to whom the certificate is issued of such amendment, change or cancellation.

(Original and two copies to be submitted to the awarding Agency in the State of Connecticut. Copy to be furnished named insurance.)

Dated this _____ day of _____ 19 _____

Insurance Company _____

Address _____

Authorized Agency _____

Authorized Agent _____

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)

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

PART I - Bidder Information

<p>Company Name Street Address City & State Chief Executive</p>	<p>Bidder Federal Employer Identification Number _____ Or Social Security Number _____</p>
<p>Major Business Activity (brief description)</p>	<p>Bidder Identification (response optional/definitions on page 1)</p> <p>-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__</p>
<p>Bidder Parent Company (If any)</p>	<p>- Bidder is certified as above by State of CT Yes__ No__</p>
<p>Other Locations in Ct. (If any)</p>	<p>- DAS Certification Number _____</p>

PART II - Bidder Nondiscrimination Policies and Procedures

<p>1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes__ No__</p>	<p>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__</p>
<p>2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes__ No__</p>	<p>8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes__ No__</p>
<p>3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes__ No__</p>	<p>9. Does your company have a mandatory retirement age for all employees? Yes__ No__</p>
<p>4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes__ No__</p>	<p>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__</p>
<p>5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes__ No__</p>	<p>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__</p>
<p>6. Does your company have a collective bargaining agreement with workers? Yes__ No__ 6a. If yes, do the collective bargaining agreements contain non-discrimination 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__</p>	<p>12. Does your company have a written affirmative action Plan? Yes__ No__ If no, please explain.</p> <p>13. Is there a person in your company who is responsible for equal employment opportunity? Yes__ No__ If yes, give name and phone number.</p>

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)

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)
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Executive Order No. 14: This Agreement is subject to the provisions of Executive Order No. 14 of Governor M. Jodi Rell, promulgated on April 17, 2006. Pursuant to this Executive Order, the Contractor shall use cleaning and/or sanitizing products having properties that minimize potential impacts on human health and the environment, consistent with maintaining clean and sanitary facilities.

NON DISCRIMINATION

1. Non-discrimination. References in this section to "contract" shall mean this Contract and references to "contractor" shall mean the Contractor.
- (a) The following subsections are set forth here as required by section 4a-60 of the Connecticut General Statutes:
 - (1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut. The contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved; (2) the contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the commission; (3) the contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the commission advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, 46a-68e and 46a-68f; (5) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56.
 - (b) If the contract is a 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) "Minority business enterprise" means any small contractor or supplier of materials fifty-one per cent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) Who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise and (3) who are members of a minority, as such term is defined in subsection (a) of section 32-9n; and "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations. "Good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements.

- (d) Determination of the contractor's good faith efforts shall include but shall not be limited to the following factors: The contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.
- (e) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.
- (f) The contractor shall include the provisions of sections (a) and (b) above in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with section 46a-56; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.
- (g) The following subsections are set forth here as required by section 4a-60a of the Connecticut General Statutes:
 - (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; and
 - (4) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.
- (h) The contractor shall include the provisions of section (g) above in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with section 46a-56; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.

For the purposes of this entire Non-Discrimination section, "contract" includes any extension or modification of the contract, "contractor" includes any successors or assigns of the contractor, "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced, and "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders. For the purposes of this section, "contract" does not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, (2) a quasi-public agency, as defined in Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

EXECUTIVE ORDERS Nos. 3, 17, 16, and 7C:

Executive Orders. The Contract is subject to the provisions of Executive Order No. 7C of Governor M. Jodi Rell, promulgated July 13, 2006, concerning contracting reforms, Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, all of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, CCSU shall provide a copy of these orders to the Contractor.

Office of Policy and Management

REQUIRED FOR ALL CONTRACT TYPES

Nondiscrimination Certification

Effective Date: June 30, 2009



Form A Representation By Individual



Form D New Resolution By Entity



Form B Representation By Entity



Form E Prior Resolution By Entity



Form C Affidavit 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.

A nondiscrimination certification is required for all State contracts – regardless of type, term, cost, or value. The appropriate form must be submitted to the awarding State agency prior to contract execution. **See list of exempt entities (below).**

FORMS & DESCRIPTIONS

There are five different certification forms. 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 <i>Representation</i>	
Entity	Form B <i>Representation</i>	Form C <i>Affidavit</i>
		Form D <i>New Resolution</i>
		Form E <i>Prior Resolution</i>

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 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

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

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STATE OF CONNECTICUT
NONDISCRIMINATION CERTIFICATION – Representation
By Entity
For Contracts Valued at Less Than \$50,000

Written representation that 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 less than \$50,000 for each year of the contract. Complete all sections of the form. Submit to the awarding State agency prior to contract execution.

REPRESENTATION OF AN ENTITY:

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

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

represent that I am authorized to execute and deliver this representation 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 Date

Printed Name



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

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

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

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 contractor 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.

STATE OF CONNECTICUT - AGENCY VENDOR FORM

SP-26NB Rev. 4/03

IMPORTANT: ALL parts of this form must be completed, signed and returned by the vendor.

READ & COMPLETE CAREFULLY

COMPLETE VENDOR LEGAL BUSINESS NAME		Taxpayer ID # (TIN): <input type="checkbox"/> SSN <input type="checkbox"/> FEIN	
WRITE/TYPE SSN/FEIN NUMBER ABOVE			
BUSINESS NAME , TRADE NAME, DOING BUSINESS AS (IF DIFFERENT FROM ABOVE)			
BUSINESS ENTITY: <input type="checkbox"/> CORPORATION <input type="checkbox"/> LLC CORPORATION <input type="checkbox"/> LLC PARTNERSHIP <input type="checkbox"/> LLC SINGLE MEMBER ENTITY <input type="checkbox"/> NON-PROFIT <input type="checkbox"/> PARTNERSHIP <input type="checkbox"/> INDIVIDUAL/SOLE PROPRIETOR			
NOTE: IF INDIVIDUAL/SOLE PROPRIETOR, INDIVIDUAL'S NAME (AS OWNER) MUST APPEAR IN THE LEGAL BUSINESS NAME BLOCK ABOVE.			
BUSINESS TYPE: A. SALE OF COMMODITIES B. MEDICAL SERVICES C. ATTORNEY FEES D. RENTAL OF PROPERTY (REAL ESTATE & EQUIPMENT)			
E. OTHER (DESCRIBE IN DETAIL)			
UNDER THIS TIN, WHAT IS THE PRIMARY TYPE OF BUSINESS YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE) →			
UNDER THIS TIN, WHAT OTHER TYPES OF BUSINESS MIGHT YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE) →			
NOTE: IF YOUR BUSINESS IS A <i>PARTNERSHIP</i> , YOU MUST ATTACH THE NAMES AND TITLES OF ALL PARTNERS TO YOUR BID SUBMISSION.			
NOTE: IF YOUR BUSINESS IS A <i>CORPORATION</i> , IN WHICH STATE ARE YOU INCORPORATED?			
VENDOR ADDRESS	STREET	CITY	STATE ZIP CODE
Add Additional Business Address & Contact information on back of this form.			
VENDOR E-MAIL ADDRESS		VENDOR WEB SITE	
REMITTANCE INFORMATION: INDICATE BELOW THE REMITTANCE ADDRESS OF YOUR BUSINESS. <input type="checkbox"/> SAME AS VENDOR ADDRESS ABOVE.			
REMIT ADDRESS	STREET	CITY	STATE ZIP CODE
CONTACT INFORMATION: NAME (TYPE OR PRINT)			
1 ST BUSINESS PHONE:	Ext. #	HOME PHONE:	
2 ND BUSINESS PHONE:	Ext. #	1 ST PAGER:	
CELLULAR:		2 ND PAGER:	
1 ST FAX NUMBER:		TOLL FREE PHONE:	
2 ND FAX NUMBER:		TELEX:	
WRITTEN SIGNATURE OF PERSON AUTHORIZED TO SIGN PROPOSALS ON BEHALF OF THE ABOVE NAMED VENDOR			DATE EXECUTED
← SIGN HERE			
TYPE OR PRINT NAME OF AUTHORIZED PERSON		TITLE OF AUTHORIZED PERSON	
IS YOUR BUSINESS CURRENTLY A DAS CERTIFIED SMALL BUSINESS ENTERPRISE? <input type="checkbox"/> YES (ATTACH COPY OF CERTIFICATE) <input type="checkbox"/> NO			
IF YOU ARE A <i>STATE EMPLOYEE</i> , INDICATE YOUR POSITION, AGENCY & AGENCY ADDRESS			
FOR PURCHASE ORDER DISTRIBUTION: 1) CHECK ONLY ONE BOX BELOW 2) INPUT E-MAIL ADDRESS OR FAX # (IF CHECKED)			
<input type="checkbox"/> E-MAIL		<input type="checkbox"/> FAX	
		<input type="checkbox"/> USPS MAIL <input type="checkbox"/> EDI	
If EDI was selected, give us a person to contact in your company to set up EDI:			
NAME:			
E-MAIL ADDRESS:			
TELEPHONE NUMBER:			
FOR REQUEST FOR QUOTATION (RFQ) DISTRIBUTION: 1) CHECK ONLY ONE BOX BELOW 2) INPUT E-MAIL ADDRESS OR FAX # (IF CHECKED)			
<input type="checkbox"/> E-MAIL		<input type="checkbox"/> FAX	
		<input type="checkbox"/> USPS MAIL	

ADD FURTHER BUSINESS ADDRESS, E-MAIL & CONTACT INFORMATION ON SEPARATE SHEET IF REQUIRED

Request for Taxpayer Identification Number and Certification

**Give form to the
 requester. Do not
 send to the IRS.**

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return)	
	Business name, if different from above	
	Check appropriate box: <input type="checkbox"/> Individual/Sole proprietor <input type="checkbox"/> Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Limited liability company. Enter the tax classification (D=disregarded entity, C=corporation, P=partnership) ▶ <input type="checkbox"/> Exempt payee <input type="checkbox"/> Other (see instructions) ▶	
	Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
	City, state, and ZIP code	
	List account number(s) here (optional)	

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number
or
Employer identification number

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here	Signature of U.S. person ▶	Date ▶
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,

- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a “saving clause.” Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called “backup withholding.” Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate Instructions for the Requester of Form W-9.

Also see *Special rules for partnerships* on page 1.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the “Name” line. You may enter your business, trade, or “doing business as (DBA)” name on the “Business name” line.

Limited liability company (LLC). Check the “Limited liability company” box only and enter the appropriate code for the tax classification (“D” for disregarded entity, “C” for corporation, “P” for partnership) in the space provided.

For a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Regulations section 301.7701-3, enter the owner’s name on the “Name” line. Enter the LLC’s name on the “Business name” line.

For an LLC classified as a partnership or a corporation, enter the LLC’s name on the “Name” line and any business, trade, or DBA name on the “Business name” line.

Other entities. Enter your business name as shown on required federal tax documents on the “Name” line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the “Business name” line.

Note. You are requested to check the appropriate box for your status (individual/sole proprietor, corporation, etc.).

Exempt Payee

If you are exempt from backup withholding, enter your name as described above and check the appropriate box for your status, then check the “Exempt payee” box in the line following the business name, sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following payees are exempt from backup withholding:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2),
2. The United States or any of its agencies or instrumentalities,
3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,
4. A foreign government or any of its political subdivisions, agencies, or instrumentalities, or
5. An international organization or any of its agencies or instrumentalities.

Other payees that may be exempt from backup withholding include:

6. A corporation,
7. A foreign central bank of issue,
8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,
9. A futures commission merchant registered with the Commodity Futures Trading Commission,
10. A real estate investment trust,
11. An entity registered at all times during the tax year under the Investment Company Act of 1940,
12. A common trust fund operated by a bank under section 584(a),
13. A financial institution,
14. A middleman known in the investment community as a nominee or custodian, or
15. A trust exempt from tax under section 664 or described in section 4947.

The chart below shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 9
Broker transactions	Exempt payees 1 through 13. Also, a person registered under the Investment Advisers Act of 1940 who regularly acts as a broker
Barter exchange transactions and patronage dividends	Exempt payees 1 through 5
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 7

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation (including gross proceeds paid to an attorney under section 6045(f), even if the attorney is a corporation) and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, and payments for services paid by a federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited liability company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting www.irs.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, and 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). Exempt payees, see *Exempt Payee* on page 2.

Signature requirements. Complete the certification as indicated in 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

Call the IRS at 1-800-829-1040 if you think your identity has been used inappropriately for tax purposes.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS personal property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: spam@uce.gov or contact them at www.consumer.gov/idtheft or 1-877-IDTHEFT(438-4338).

Visit the IRS website at www.irs.gov to learn more about identity theft and how to reduce your risk.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee ¹
b. So-called trust account that is not a legal or valid trust under state law	The actual owner ¹
5. Sole proprietorship or disregarded entity owned by an individual	The owner ³
For this type of account:	Give name and EIN of:
6. Disregarded entity not owned by an individual	The owner
7. A valid trust, estate, or pension trust	Legal entity ⁴
8. Corporate or LLC electing corporate status on Form 8832	The corporation
9. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
10. Partnership or multi-member LLC	The partnership
11. A broker or registered nominee	The broker or nominee
12. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or "DBA" name on the second name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons who must file information returns with the IRS to report interest, dividends, and certain other income paid to you, mortgage interest you paid, the acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA, or Archer MSA or HSA. The IRS uses the numbers for identification purposes and to help verify the accuracy of your tax return. The IRS may also provide this information to the Department of Justice for civil and criminal litigation, and to cities, states, the District of Columbia, and U.S. possessions to carry out their tax laws. We may also disclose this information to other countries under a tax treaty, to federal and state agencies to enforce federal nontax criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism.

You must provide your TIN whether or not you are required to file a tax return. Payers must generally withhold 28% of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to a payer. Certain penalties may also apply.



EASTERN CONNECTICUT STATE UNIVERSITY

83 WINDHAM STREET • WILLIMANTIC, CONNECTICUT 06226 • 860-465-5000

INSPECTION OF PROPOSALS AND CONFIDENTIAL INFORMATION

Proposals may be available for public inspection upon notice of award and shall be available for public inspection after the contract is signed by all parties. Information marked as “confidential” in any proposal shall be honored as such, to the extent allowable under the Freedom of Information Act.

The University treats Proposals as confidential until after the award is issued. At that time they become subject to disclosure under the Freedom of Information Act. If a respondent wishes to supply any information, which it believes is exempt from disclosure under the Act that respondent should summarize such information in a separate envelope and each page submitted should clearly state “Confidential”, but otherwise be presented in the same manner as the Proposal. However, any such information is provided entirely at the respondent’s own risk and the University assumes no liability for any loss or damage which may result from the University’s disclosure at any time of any information provided by the respondent in connection with its proposal.

01000 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Number **ECSU-2012-16** is entitled **Planetarium Condensing Unit Replacement**. It is to be located in **Willimantic**, Connecticut. It is to be completed and ready for use by the Owner and Agency within the Contract Time specified in Section 00020 Bid Proposal Form.
- B. The Project Description:
1. This Project does not Exceed the Threshold Limits as defined by the Connecticut General Statutes.
- C. Project Location: The **ECSU Campus**, located in **Willimantic**, Connecticut.
-

01001 OWNER AND AGENCY

- A. Owner: The Owner is the Eastern Connecticut State University.
1. The authorized representative for the Owner is **Nancy Tinker, Director of Facilities Management & Planning**. The Director of Facilities Management & Planning is located at Eastern Connecticut State University, Facilities Building, 83 Windham Street, Willimantic, Connecticut 06226. Phone: **860-465-5348**; Fax: **860-465-5318**; E-mail: **tinkern@easternct.edu**.
-

01002 ARCHITECT AND ENGINEER:

- A. The Architectural Firm is **Facilities Management and Planning of Eastern Connecticut State University**, and is located at **83 Windham Street, Willimantic, Connecticut**. The Engineer representing the firm for this project is **Zbigniew Mroz**. Phone: **860-465-4495**; Fax: **860-465-4599**; E-mail: **mrozz@easternct.edu**.
1. The Engineer or their accredited representative is referred to in the Contract Documents as "Engineer" or by pronouns which imply them. As information for the Contractor, the Engineer's status is defined as follows:
 - a. The Engineer will not make interpretations or decisions directly to the Contractor. All interpretations or decisions will be conveyed through the Construction Administrator.
 - b. As the authorized representative of the Owner, the 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".
 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.
-

01003 CONSTRUCTION ADMINISTRATOR:

- A. The Construction Administrator is **Zbigniew Mroz**, and is located at **Eastern Connecticut state University, Facilities Building, 83 Windham Street., Willimantic Connecticut, 06226**.
Phone: **860-465-4495**; Fax: **860-465-4599**; E-mail: **mrozz@easternct.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:
 - a. 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.
 - b. 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.
-

01010 SUMMARY OF WORK

- A. Summary of Work includes but is not limited to the following:
 - 1 *Removal and disposal of the existing condensing unit, evaporator cooling coils from the existing multizone air handling unit and removal of piping.*
 - 2 *Installation of the new 10 ton condensing unit, new evaporator coils and piping including insulation. New system will be based on refrigerant R-410a.*
 - 3 *Reconnection of the power including installation of new circuit breakers*
- B. 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.
- C. 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. Work Sequence - Phase(s):
 - 1. The entire Project shall be constructed in a single Phase. Work shall be substantially complete, ready for occupancy within 35 Calendar Days of commencement of the Work.

01011 EXAMINATION OF SITE

- A. 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.
- B. Contractors should investigate and satisfy themselves as to the conditions affecting the work, including but not 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.
- C. Pre-Bid Conference:
 - 1. A Mandatory Pre-Bid Conference and tour of the site will be conducted as scheduled in the Notice to Bidders. This scheduled conference is the only official opportunity for the bidders to tour the site with the Owner, Engineer, Construction Administrator, and Agency.

01012 PROJECT DOCUMENTS

- A. The Specifications and Drawings are intended to describe and illustrate the materials and labor necessary for the work of this Project.
- B. Throughout the Technical Specifications, the Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction Form 816, 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.

01013 DOCUMENTS FURNISHED

- A. The General Contractor will be given 2 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.
- B. 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 Engineer. Additional sets of AutoCAD compatible (latest version) Floor Plans on disks from the Engineer at the cost of their reproduction, to the contractor.

01014 CONTRACTOR'S USE OF PREMISES

- 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.

01015 OCCUPANCY REQUIREMENTS

- A. **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 Engineer. 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.
- B. **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, Engineer 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 Engineer by the Construction Administrator. A letter will be issued by the Project Manager and Engineer 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 Engineer 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 Public Works, Engineer, and Contractor, if required.
 - 6. The Project Manager will request a signed "Certificate of Compliance" from the , Engineer, 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:
 - a. 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, Engineer 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 Engineer by the Construction Administrator. A letter will be issued by the Project Manager and Engineer to Construction Administrator granting such occupancy and will state the terms and conditions of occupancy.
4. 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.
5. The Engineer 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.
6. The Project Manager will request a signed "Certificate of Compliance" from Commissioner of the Department of Public Works, Engineer, and Contractor, if required.
6. The Project Manager will request a signed "Certificate of Compliance" from the Engineer, and Contractor, and forward the Certificate to the State Building Inspector 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 the project.
9. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.
10. Work after Agency Occupancy:
 - a. 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.

01019 CONTRACT CONSIDERATIONS

A. Allowances:

1. Not used.

01027 APPLICATION FOR PAYMENT

- A. Schedule of Values:** Submit the "Schedule of Values" to the Construction Administrator at the earliest possible date but no later than (21) twenty Calendar Days after the Contract Start Date. A separate "Schedule of Value" shall be provided for each Phase of identified in Section 01010 Summary of Work, Work Sequence - Phase(s).

1. 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 of the Specification Section on electronic media printout.
 2. Identification: Project identification on the Schedule of Values shall include, but not be limited to, the following:
 - a. Owner
 - b. Project Number
 - c. Project Name
 - d. Project Location
 - e. Contractor's name and address.
 3. Arrange the "Schedule of Values" in tabular format as required by the Owner, containing separate columns including, but not limited to, the following Items:
 - a. Item Number.
 - b. Description of Work with Related Specification Section or Division Number.
 - c. Scheduled Values broken down by description number, type material, units of each material.
 - d. Name of subcontractor.
 - e. Name of manufacturer or fabricator.
 - f. Name of supplier.
 - g. Retainage.
 - h. Contract sum in sufficient detail.
 4. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 5. 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.
 6. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
 7. 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.
 8. 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.
- B Applications for Payment - General:** 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. 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 approved Owner Form, multiple pages should be used if required.
 4. For each item, provide a column including but not limited to the following items:
 - a. Item Number.
 - b. Description of Work and Related Specification Section or Division.

- c. Scheduled Value, break down by units of material and units of labor.*
 - d. Work completed from previous application.*
 - e. Work completed this period.*
 - f. Materials presently stored.*
 - g. Total completed and stored to date of application.*
 - h. Percentage of Completion.*
 - i. Balance to Finish.*
 - j. Retainage*
5. Application Preparation: Complete every entry on the form. Include final payment only and execution by a person authorized to sign legal documents on behalf of the Contractor. The Construction Administrator will return incomplete applications without action.
- a. Entries shall match data on the "Schedule of Values".
 - b. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.
6. Transmittal: Submit **3** signed and notarized original copies of each Application for Payment to the Construction Administrator. One copy shall be complete, including waivers of lien and similar attachments, when required.
- a. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Engineer.
7. 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:
- a. List of subcontractors and suppliers' name, FEIN/Social Security numbers, and Connecticut Tax Registration Numbers.*
 - b. List of principal suppliers and fabricators.*
 - c. Schedule of Values.*
 - d. Contractor's Construction Schedule (preliminary if not final).*
 - e. Schedule of principal products.*
 - f. Submittal Schedule (preliminary if not final).*
 - g. List of Contractor's staff assignments.*
 - h. List of Contractor's principal consultants.*
 - i. Copies of all applicable permits.*
 - j. Copies of authorizations and licenses from governing authorities for performance of the Work.*
 - k. Initial as-built survey and damage report, if required.*
- C. 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.
- 1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work..
 - 2. Administrative actions and submittals that shall precede or coincide with this application include, but are not limited to, the following:
 - a. Occupancy permits and similar approvals.*
 - b. Warranties (guarantees) and maintenance agreements.*
 - c. Test/adjust/balance records.*

- d. Maintenance instructions.*
 - e. Startup performance reports.*
 - f. Changeover information related to Owner's occupancy, use, operation, and maintenance.*
 - g. Final cleaning.*
 - h. Application for reduction of retainage and consent of surety.*
 - i. Advice on shifting insurance coverage.*
 - j. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.*
- D. 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:
- Completion, Final Inspection, and Final Payment, in the General Conditions and Supplementary Conditions.
- 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 without undue delay.*
 - 5. Transmittal of required Project construction records to the Owner.*
 - 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.*
 - 9. The requirements of the General Conditions and Supplementary Conditions for Final Acceptance, Final Completion, Final Inspection, and Final Payment.*
 - 10. Asbestos, Lead or other hazardous material manifests.*
 - 11. Completion of "Building Contractor Reporting Form" as supplied by Department of Public Works, for all Contractors, Subcontractors, Vendors, Suppliers, etc. who work on the Contract. The form includes the following information:*
 - 12. Contractor/Subcontractor name.*
 - 13. FEIN/Social Security Numbers*
 - 14. Connecticut Tax Registration Numbers*
 - 15. Type of work*
 - 16. Name of business and address*
 - 17. Remittance address.*

01030 SUPPLEMENTAL BIDS (NOT APPLICABLE)

- A. Definition:** A Supplemental Bid is an amount proposed by bidders and stated on the Bid Proposal Form for certain work defined in the Bidding Documents that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

01035 MODIFICATION PROCEDURES

- A Summary:** This Section specifies administrative and procedural requirements for handling and processing contract modifications.
- B. Minor Changes in the Work:**

1. The Engineer, 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.

C. Proposal Request:

1. Engineer/Owner-Initiated Requests For Proposals: The Engineer 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.
2. “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.
3. 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 Engineer’s/Owner’s review.
4. 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.
 - a. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
 - b. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
 - c. 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 566-7033.
 - d. 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.

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 Engineer, the contractor shall submit a “Request for Information” in writing to the Engineer via 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. 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.
 - a. 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.
 - b. 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.
 - c. The Engineer will review all “Requests for Information” to determine whether they are “Requests for Information” within the meaning of this term. If it is determined that the document is not a “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.
 - d. 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 Engineer to respond to the request provided that the Engineer responds within **the seven (7) Calendar Days** set forth above.

- e. A “Requests for Information Response” from Engineer will not change any requirement of the contract documents. In the event the contractor believes that the “Requests for Information Response” will cause a change to the requirements of the contract document, the contractor shall immediately give written notice to the Construction Administrator stating that the contractor believes the “Requests for Information Response” will result in “Change Order” and the Contractor intends to submit a “Change Order Proposal” request. Failure to give such written notice immediately shall waive the contractor’s right to seek additional time or cost under the requirement these Requirements.

E. Change Order Proposal:

1. When either a “Request for Information” from the Contractor or a “Proposal Request” from the Engineer 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 Engineer 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.
 - a. 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.
 - b. 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.
 - c. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
 - d. Comply with requirements in Section 01631 Equals and Substitutions if the proposed change requires an equal or substitution of one product or system for a product or system specified.
2. The State of Connecticut construction contract has the following tax exemptions:
 - a. Purchasing of materials which will be physically incorporated and become a permanent part of the project.
 - b. Tools, supplies and equipment used in fulfilling the construction contract are not exempt.
 - c. 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
3. “Change Order Request” Forms: Use “Change Order Proposal” and “Change Order Proposal Worksheets” forms as required by Owner.
4. “Change Order Proposal” cannot be submitted without the Contractor either prior submission of a “Request for Information” from the Contractor or as a response to a “Proposal Request” submitted by the Engineer or Owner.
5. 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.

F. 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 Engineer through the Construction Administrator may issue a “Construction Change Directive” on a “Construction Change Directive” as authorized by the Owner on the form required 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”.
 - a. 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.
2. Documentation: The Contractor shall maintain detailed records on a time and material basis of work required by the “Construction Change Directive”.
 - a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

- b. The final value shall be negotiated based on the supporting data to determine the value of the work.

G. Change Order Procedures:

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 Engineer, Owner and the Contractor on "Change Order" form as required by the Owner.

01040 COORDINATION

A. Construction Administrator:

1. The Construction Administrator is identified in Section 01003 Construction Administrator.
2. Construction Mobilization:
 - a. Cooperate with the Construction Administrator in the allocation of mobilization areas of the site, for agency facility access, traffic, and parking facilities.
 - b. During Construction, coordinate use of site and facilities through the Construction Administrator.
 - c. Comply with Construction Administrators procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
 - d. Comply with instructions of the Construction Administrator for use of temporary utilities and construction facilities.

B. 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.

C. 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.

D. 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.*

E. 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.

3. Coordination Drawings:
 - a. 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.
 - b. All the electrical information can be included on the HVAC drawings.
 - c. The Construction Administrator will review the completed coordination drawing for general compliance and then submit it to the Engineer for his review. All subcontractors shall rework the mylar drawings until all systems are properly coordinated.
4. The Construction Administrator will meet with the Contractor on all major items of coordination.
5. See also General Conditions Article 7.

01045 CUTTING AND PATCHING

- A. Openings and chases may not be shown on the Drawings. It is the responsibility of the Contractor to examine the Electrical, Heating, Cooling, Ventilating Drawings and to provide chases, channels or openings where needed.
- B. The Contractor shall install sleeves, inserts and hangers furnished by the trades needing same.
- C. 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.
- D. Permission shall be obtained from the Construction Administrator before cutting beams, arches, lintels or other structural members.
- E. 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. Obtain approval from the Engineer's of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. *Foundation construction.*
 - b. *Bearing and retaining walls.*
 - c. *Structural concrete.*
 - d. *Structural steel.*
 - e. *Lintels.*
 - g. *Structural decking.*
 - i. *Miscellaneous structural metals.*
 - j. *Exterior curtain-wall construction.*
 - k. *Equipment supports.*
 - l. *Piping, ductwork, vessels, and equipment.*
- F. Do cutting and patching to integrate all elements of the work. Provide penetrations of existing surfaces. Provide samples for testing. Seal penetrations through walls, ceilings as applicable; restore or preserve fire-rated and smoke-barrier construction. Construction and finishes shall match original work.
- G. The Contractor 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.
- H. 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.
- I. See also General Conditions Article 23.

01050 FIELD ENGINEERING

- A. Not Used

01095 REFERENCE STANDARDS & DEFINITIONS

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. References to standard specifications and codes refer to the editions current at the bid due date. An exception is, buildings exceeding the threshold limit must be in substantial compliance with the requirements of the effective code at the time of receipt of completed application to the Office of State Building Inspector (OSBI). References include their addenda and errata, if any, and shall be considered a part of these specifications as if they were printed herein in full.
- C. The manufacturers' standard warranties or guarantees shall apply when their products are used on this project.
- D. Flame Spread Ratings - all materials that are required or obligated to meet specified standards shall be submitted to the owner for their records as part of the shop drawing submittal process for their construction records.

01120 RENOVATION/DEMOLITION PROJECT PROCEDURES

A 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.

B. Inspection- General:

- 1. Verify that demolition is complete and areas are ready for installation of new Work..
- 2. Beginning of restoration Work means acceptance of existing conditions.

C. Project Procedures for Work Involving Asbestos Containing Material (ACM):

- 1. The Construction Administrator 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 be made by the owner to remove all ACM.
- 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. with **seven (7)** Calendar Days.
- 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 testing results are in a separate Volume of this Project Manual. 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.
- 4. See also General Conditions Article 23.

D. Project Procedures for Work Involving Lead Containing Material:

- 1. Exposure levels for lead in the construction industry are regulated by 29 CFR 1926.62. Construction activities disturbing surfaces containing lead-based paint (LBP) which are likely to be employed, such as sanding, grinding, welding, cutting and burning, have been known to expose workers to levels of lead in excess of the Permissible Exposure Limit (PEL). Conduct demolition and removal Work specified in the technical sections of this specification in conformance with these regulations. In addition, construction debris/waste may be classified as hazardous waste. Disposal of hazardous waste material shall be in accordance with 40 CFR Parts 260 through 271 and Connecticut Hazardous Waste Management Regulations Section 22a-209-1; 22a-209-8(c); 22a-449(c)-11; and 22a-449(c)-100 through 110.

2. The Contractor's Work shall be based on a child under the age of six (6) in residence; the Work shall also be in accordance with Connecticut Regulations Section 19a-111-1 through 11.
3. This facility was constructed prior to 1978 and is likely to have painted surfaces containing lead-based paint.
4. Testing for lead-based paint has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the LBP testing are for information purposes only. The testing results are in a separate Volume of this Project Manual. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of LBP. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

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 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 01045 "Cutting and Patching".
3. Refinish visible existing surfaces to remain in renovated spaces, to specified condition for each material, with neat transition to adjacent finishes in accordance with Section 01045 "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. Not Used

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 01700 "Project Closeout", clean Agency occupied areas of Work

01121 SALVAGEABLE MATERIALS

- A. Not used

01200 PROJECT MEETINGS

A. 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:
 - a. *Tentative construction schedule.*
 - b. *Critical work sequencing.*
 - c. *Progress meeting schedule.*
 - d. *Designation of responsible personnel.*
 - e. *Procedures for processing field decisions and Change Orders.*
 - f. *Procedures for processing Applications for Payment.*
 - g. *Distribution of Contract Documents.*
 - h. *Submittal of Shop Drawings, Product Data, and Samples.*
 - i. *Preparation of record documents.*
 - j. *Use of the premises.*
 - k. *Parking availability.*
 - l. *Office, work, and storage areas.*
 - m. *Equipment deliveries and priorities.*
 - n. *Safety procedures.*
 - o. *First aid.*
 - p. *Security.*
 - q. *Housekeeping.*
 - r. *Working hours.*
 - s. *Coordination with Audio-Visual and Telecommunications.*

B. 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 Engineer, 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 Engineer, 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.
 - a. 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.
 - b. 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.

01300 SUBMITTALS

A. Summary:

1. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:
 - a. *Submittal schedule.*
 - a. *Shop Drawings.*
 - c. *Product Data.*
 - d. *Samples.*
 - e. *Quality assurance submittals.*
 - f. *Proposed "Substitutions Request" form.*
 - g. *Warranty samples.*
 - h. *Coordination Drawings.*
 - i. *O & M Manuals*

B. Administrative Submittals: Refer to other Division 1 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 #.*

C. 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 Division 2 through 16.
 - a. Preparation of Coordination Drawings is specified in Division 1 Section "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.

D. 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.
2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity.
3. 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.
4. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
5. The Engineer reserves the right to reject incomplete submitted packages.
6. 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 resubmittals.
 - a. Allow (2) two weeks for initial review. Allow additional time if the Engineer must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow (2) two for reprocessing each submittal.
 - d. 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.

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

1. The minimum number of copies required for each submittal shall be at a minimum 7 copies or as determine otherwise at the pre-construction conference or by the Construction Administrator.
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.
3. Include the following information on the label for processing and recording action taken.
 - a. *Project Name and State of Connecticut Project Number.*
 - b. *Date.*
 - c. *Name and address of the Architect, Construction Administrator, and Owner Representative.*
 - d. *Name and address of the Contractor.*
 - e. *Name and address of the subcontractor.*
 - f. *Name and address of the supplier.*
 - g. *Name of the manufacturer.*
 - h. *Number and title of appropriate Specification Section.*
 - i. *Drawing number and detail references, as appropriate.*
 - j. *Indicate either initial or resubmittal.*
 - k. *Indicate deviations from Contract Documents.*

- l. Indicate if "equal" or "substitution".*
- F. 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 Engineer will not accept submittals received from sources other than the Contractor.
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 Schedule prepare a complete schedule of submittals. Submit the schedule to the Construction Administrator within 30 days of Contract Award.
 2. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule
 3. Prepare the schedule in chronological order. Provide the following information:
 - a. Schedule date for the initial submittal.
 - b. Related section number.
 - c. Submittal category (Shop Drawings, Product Data, or Samples).
 - d. Name of Subcontractor.
 - e. Description of the part of Work covered.
 - f. Scheduled date for resubmittal.
 - g. Scheduled date for the Architect's final release of approval.
- H. 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.
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.
- I. 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.
- J. 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:
 - a. *Accidents and unusual events.*
 - b. *Stoppages, delays, shortages, and losses.*
 - c. *Equipment or system tests and startups.*
- K. 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:
 - a. Dimensions:
 - b. Identification of products and materials included by sheet and detail number.

- c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. 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.
 - g. Submit one (1) reproducible media and seven (4) prints as directed by the Construction Administrator. The Contractor's submittal shall identify the specification section and/or drawing number applicable to the submittal.
 - h. 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 Engineer, in writing of any deviation in the shop drawings from the requirements of the Contract Documents.
 4. The Engineer 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 General Conditions. Shop Drawings received by the Engineer 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 Engineer 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, to the Construction Administrator for his use.
 7. The Engineer'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 Engineer shall constitute acceptance by the State and the Engineer of a variation or departure that is clearly identified. Final reviewed shop drawings shall not replace or be used as a vehicle to issue or incorporate change orders.

L. 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.
2. 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:
 - a. *Manufacturer's printed recommendations.*
 - b. *Compliance with trade association standards.*
 - c. *Compliance with recognized testing agency standards.*
 - d. *Application of testing agency labels and seals.*
 - e. *Notation of dimensions verified by field measurement.*
 - f. *Notation of coordination requirements.*
3. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

4. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
5. Submittals: Submit 4 copies of each required submittal; submit 5 copies where required for maintenance manuals. The Engineer will retain one and will return the other marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
6. 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.
 - a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

M. Samples:

1. Not Used

N. 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.
 - a. 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 1 Section "Quality Control."

O. Engineer's Action:

1. Except for submittals for the record or information, where action and return is required, the Engineer will review each submittal, mark to indicate action taken, and return promptly.
 - a. Compliance with specified characteristics is the Contractor's responsibility.
2. Action Stamp: The Engineer will stamp each submittal with a uniform, action stamp. The Engineer will mark the stamp appropriately to indicate the action taken, as follows:
 - a. Final Unrestricted Release: When the Engineer 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.
 - b. Final-But-Restricted Release: When the Engineer 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.
 - c. Returned for Resubmittal: When the Engineer 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.
 - i. 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.
 - d. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Engineer will return the submittal marked "Action Not Required."
3. Unsolicited Submittals: The Engineer will discard unsolicited submittals without action.

01310 CONSTRUCTION SCHEDULE

A. Definitions:

1. 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

B. 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.

C. Quality Assurance: 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**" compatible, latest version.
3. Standards: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

D. 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 number.
3. Identify work of separate phases other 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 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. Coordinate content with Schedule of Values specified in Section 01027.

E. Submittals And Revisions To Schedules:

1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, other identifiable changes.
3. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.
4. An initial bar graph (gantt) schedule is to be prepared by the General Contractor and submitted to the Construction Administrator within **seven (7)** calendar 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. After review, resubmit

- required revised data within **five (5)** calendar days. This schedule must be revised monthly and when the actual schedule of significant items varies more than **one (1)** week from the proposed schedule.
5. Submit revised Construction Schedules each Application for Payment.
 6. Submit **four (4)** copies of the Construction Schedule to the Construction Administrator..

F. Distribution:

1. Distribute copies of the Construction Schedules to Construction Administrator, Engineer, Owner, Subcontractors, suppliers, and other concerned parties.
2. Instruct recipients to promptly report, in writing, problem anticipated by projections indicated in schedules.

01380 CONSTRUCTION PHOTOGRAPHS

- A. On the date the work and at the completion of work, the Contractor shall have photos taken.
- B. Take **(12 35 mm color digital photographs each time.** Note on each photograph frame the date the picture was taken and the project number. Deliver digital photographs to the Construction Administrator.

01400 QUALITY CONTROL

- A. **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 forty-eight (48) hours in advance to the test/inspection as applicable. Costs for these services are not included in the Contract Sum.
 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.
 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.
 - a. Such services include Special Inspections as required by the latest adoption of the "Connecticut State building Code".
 - b. 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.
 - c. Materials and assemblers 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.
 - d. The Owner 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 Codes.
- B. **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.
 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 noncompliance with Contract Document requirements.

2. The Owner will issue a credit change order to cover all costs incurred related to all re-tests/re-inspection due to non-compliance to the contract documents, including but not limited to the Owners costs and the Consultants costs.

C. 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:

1. Provide access to the Work.
2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
4. Provide facilities for storage and curing of test samples.
5. Deliver samples to testing laboratories.
6. Provide an approved design mix proposed for use for material mixes that require control by the testing agency.
7. Provide security and protection of samples and test equipment at the Project Site.

D. 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.
2. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
3. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample taking and testing.
 - k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on re-testing.

E. Repair and Protection:

1. 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 1 Section "Cutting and Patching."
2. Protect constructions exposed by or for quality-control service activities, and protect repaired construction.
3. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

01505 TEMPORARY ELECTRICITY AND LIGHTING

- A. Connect to existing service, provide branch wiring and distribution boxes located to provide power and lighting by construction-grade extension cords. Owner will pay cost of energy used. Take measures to conserve energy. Provide lighting for construction operations. At the termination of construction, return the facilities to their original condition.

01510 TEMPORARY HEATING, COOLING AND VENTILATING AND LIGHTING

- A. Not used

01515 TEMPORARY TELEPHONE

- A. General Contractor shall provide telephone service in his office. It is preferred the Contractor use a cellular phone. Local calls will be paid by the Contractor and toll calls by the respective users.

01520 TEMPORARY WATER

- A. Connect to existing facilities, through an approved backflow prevention device; extend branch piping with outlets so that water is available by use of hoses. Owner will pay for water used. The Contractor shall not waste water or use faulty equipment. The Contractor shall provide, at his own expense, all connections, extensions and other apparatus required for use of such services. Upon completion of the Contract, the Contractor shall disconnect temporary extensions and return utility to its original condition.

01525 TEMPORARY SANITARY FACILITIES

- A. Designated existing toilets may be used during construction. It is the responsibility of the Contractor to maintain the facilities in a clean and sanitary condition and return them to their original condition after use. No loitering or smoking will be permitted in these areas.

01530 FIRE PROTECTION

- A. The Contractor, during construction, shall be responsible for loss or damage by fire to the work of the Contract until completion. Any fire used within the structure for working purposes shall be extinguished when not in use. Bitumen or tar shall be melted on the ground only. No flammable material shall be stored in the structure in excess of amounts allowed by the authorities. No gasoline shall be stored in or close to the building at any time. The Contractor shall assign a responsible employee to be in charge of fire protection measures.

01535 CONSTRUCTION EQUIPMENT

- A. The 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 except where this is otherwise specified in any Specification Section. All such items shall meet the approval of the Owner but responsibility for design, strength and safety shall remain with the 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. and the standards of the State Labor Department.
- B. Staging, exterior and interior, required for the execution of this Contract, shall be furnished, erected, relocated if necessary and removed by the General Contractor. Staging shall be maintained in a safe condition without charge to and for the use of all trades as needed.

01540 BARRIERS AND ENCLOSURES

- A. Provide barriers to prevent public entry into construction areas and to protect existing facilities from damage by construction operations.

- B. Provide a fence around construction site; equip with vehicular and pedestrian gates with locks.
- C. Protect against vehicular traffic, materials' dumping, chemically injurious materials, puddling or running water.
- D. 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.
- E. See also General Conditions Article 19.

01545 PROTECTION

- A. Protect buildings, equipment, furnishings, grounds and plantings from damage. Any damage shall be repaired or otherwise made good at no expense to the State.
- B. Provide protective coverings and barricades to prevent damage. The 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.
- C. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- D. 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 lawn and landscaped areas.
- E. Provide temporary partitions and ceilings to separate work areas from Owner-occupied areas to prevent penetration of dust and moisture into Owner-occupied areas and equipment. Erect framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces.
- F. See also General Conditions Article 19.

01550 SECURITY

- A. Provide 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.
- B. The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism.

01555 TRAFFIC WAYS

- A. The Contractor may use on-site paved roads and parking areas but shall not encumber same or their access. Public highways shall not be blocked by standing trucks, parked cars, material storage, construction operations or in any other manner.
- B. Public roads and existing paved roads, drives and parking areas on Owner's property shall be kept free from scrap or debris due to construction operations and any damage to their surface caused by the Contractor shall be repaired by him at his own expense.
- C. If the work of the Contract affects public use of any street, road, highway or thoroughfare, the G. C. shall confer with the police authority having jurisdiction to determine if and how many police are needed for public safety in addition to any barriers and signals that may be needed. The G.C. will be responsible for payment of any needed police services.

01560 TEMPORARY CONTROLS

- A. **Temporary Environmental Controls:** 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, Pest Control.*

4. *Pollution Control.*

5. *Traffic Control.*

01565 STORM WATER CONTROL

A. Not used

01570 CLEANING

- A. Maintain areas under Contractor's control free of waste materials, debris and rubbish. Maintain in a clean and orderly condition.
- B. Remove debris and rubbish from work spaces before closing the space.
- C. Periodically clean interior areas before start of surface finishing and continue cleaning on an as-needed basis.
- D. Control cleaning operations so that dust and other particulates will not adhere to wet or newly-coated surfaces.
- E. 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.
- F. See also General Conditions Article 24.

01575 PROJECT SIGNS

A. Not used

01580 FIELD OFFICES AND SHEDS

A. Field Offices:

- 1. Not required

B. Storage and Fabrication Sheds: Not Required

01585 IDENTIFICATION BADGES

- A. Identification Badges for Contractor's Personnel, Visitors & Parking Stickers:
 - 1. The **Contractor** will provide each person working or visiting at the site with an identification badge, bearing the name of the Contractor and a number. As badges are assigned, a record shall be kept by the **Contractor** and given to the Construction Administrator and 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 Contractor's field office at the end of each day and pick them up there each morning.
 - 3. All vehicles parking in the Contractor's parking lot and those used around the site require an ID sticker. They will be issued by the **Agency**. Each contractor shall apply for parking stickers through the Construction Administrator no more than semi-monthly and shall keep record of all stickers issued.

01600 MATERIALS AND EQUIPMENT CONTROLS

A. 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.

B. 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.

01631 EQUALS AND SUBSTITUTIONS

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

1. 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.
2. Equal: 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 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 Engineer's design intent of the specified material, device, procedure, equipment, etc.
3. 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 and may be rejected or approved by the Owner. The Substitution is not equal to the specified requirement in comparison to the first manufacture 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 Engineer's design intent of the specified material, device, procedure, equipment, etc.
4. The following are not considered to be requests for Equals or Substitutions:
 - a. Revisions to the Contract Documents requested by the Owner or Engineer.
 - b. Specified options of products and construction methods included in the Contract Documents.
 - c. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities having jurisdiction.

B. Submittals:

1. Equals and Substitution Request Submittals: The Owner will consider requests for equals or substitutions if received within time period designated in the General Conditions Article 15. Requests received more than the days specified in Article 15 after the start date of the contract will be rejected.
 - a. The Contractor is required to prepare and submit 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 Engineer 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 on a "Substitution Request" form as required by the Owner:
 - a. 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.
 - b. 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.
 - c. Product Data, including Shop Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the effect on the Contractor's Construction Schedule or CPM Schedule compared to the schedule without approval of the Equal or Substitution. Indicate the effect on overall Contract Time.
 - f. Cost information, broken down, including a proposal of the net change, if any in the Contract Sum.
 - g. 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.
 - h. 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. Engineer's Action: If necessary, the Engineer will request additional information or documentation for evaluation within one week of receipt of the original request for equal or substitution request. The Engineer will notify the Construction Administrator who will notify the Owner of recommended acceptance or rejection of the proposed equal or substitution, within **one (1)** weeks of receipt of the request, or **one (1)** week 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 **one (1)** week after notification.
 - a. Any request deemed an "Equal" and accepted by the Construction Administrator, Engineer, 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".
 - b. Any request deemed a "Substitution" and rejected or approved by Construction Administrator, Engineer, 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.

C. Equal or Substitutions:

1. Conditions: The Engineer 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 Engineer. If the following conditions are not satisfied, the Engineer will return the requests to the Construction Administrator without action except to record noncompliance with these requirements.
 - a. The proposed request does not require extensive revisions to the Contract Documents.
 - b. The proposed request is in accordance with the general intent of the Contract Documents.
 - c. The proposed request is timely, fully documented, and/or properly submitted.

- d. The proposed request can be provided within the Contract Time. However, the Engineer 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.
 - e. 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 Engineer 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.
 - f. The proposed request can receive the necessary approvals, in a timely manner, required by governing authorities having jurisdiction.
 - g. The proposed request can be provided in a manner that is compatible with the Work as certified by the Contractor.
 - h. The proposed request can be coordinated with the Work as certified by the Contractor.
 - i. The proposed request can uphold the warranties required by the Contract Documents as certified by the Contractor.
2. The Contractor's submission and the Engineer'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.

01650 STARTING OF SYSTEMS

A. General:

1. Coordinate schedule for start-up of various equipment and systems.
2. Provide written notification the Construction Administrator **two (2) Calendar Days** prior to start-up of each item.
3. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, and control sequence for other conditions that may cause damage.
4. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
5. Verify in wiring and support components are complete and tested.
6. Execute the start-up under supervision of manufacturer's representative, in accordance with manufacturer's instructions.
7. When referenced in individual specification sections, require manufacturer to provide an authorized representative to be present at the site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
8. Submit a written report in accordance Section 01400 "Quality Control" that the equipment or system has been properly installed and is functioning properly.

B. Demonstration and Instructions:

1. Demonstrate operation and maintenance of Products to Owner and Agency Personnel **two (2) weeks** prior to substantial completion.
2. Demonstrate Project equipment and instruct in a classroom environment at location designated by the Construction Administrator and instructed by a qualified manufacturer's representative who is knowledgeable about the project.
3. For equipment or systems requiring seasonal operation perform demonstration for season within **six (6) months**.
4. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner and Agency Personnel in detail to explain all aspects of operation and maintenance.

5. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, and maintenance, and shutdown of each item at agreed upon scheduled time and at equipment or designated location.
6. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during demonstration.

C. Testing Adjusting, and Balancing:

1. The Contractor will employ and pay for the testing services of an independent consultant to verify the testing, adjusting, and balancing.
2. Reports will be submitted by the independent testing consultant to the Construction Administrator indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents.
3. The Owner may employ and pay for the services of an independent consultant to verify testing, adjusting, and balancing which was performed by the Contractor.

01700 CONTRACT CLOSEOUT

A. Substantial Completion:

1. Preliminary Procedures: Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.
 - a. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
 - i. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - ii. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - b. Advise the Owner of pending insurance changeover requirements.
 - c. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - d. 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.
 - e. Submit record drawings, maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - f. Deliver tools, spare parts, extra stock, and similar items.
 - g. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
 - h. Demonstration, thru 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.
 - i. Complete final cleanup requirements, including touchup painting.
 - j. Touch up and otherwise repair and restore marred, exposed finishes.
2. Inspection Procedures: The Contract 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, Engineer, and Owner will determine the inspection has failed.
3. The Contractor is responsible for all costs to re-inspect due to a failed inspection. The Owner will issue a deduct change order to cover all costs for re-inspection.
 - a. The Engineer will repeat inspection when requested and assured that the Work is substantially complete.

- b. Results of the completed inspection will form the basis of requirements for final acceptance.

B. Final Acceptance:

1. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 - a. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
 - b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - c. Submit a certified copy of the Engineer's final inspection list of items to be completed or corrected, endorsed and dated by the Engineer. 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.
 - d. Submit consent of surety to Final Payment.
 - e. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
2. 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.
 - a. Upon completion of reinspection, the Construction Administrator will prepare a certificate of final acceptance. If the Work is incomplete, the Construction Administrator will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

C. Record Document Submittals:

1. **General:** Do not use record documents for construction purposes. Protect Record Documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect'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.
2. **Record Drawings:** The 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.
 - a. Mark record sets with erasable pencil to distinguish between variations in separate categories of the Work.
 - b. Mark all new information that is not shown on Contract Drawings.
 - c. Note related change-order numbers where applicable.
 - d. 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.
 - e. Upon completion of the work, the Contractor shall submit Record Drawings to the Construction Administrator for the Owner's Records who will pass them on to the Engineer for transferring the changes to the Record Drawing to ACAD form..
 - g. Submit electronic format data of all revised drawings on CD-ROM format and in AutoCAD (latest version) compatible format.
3. **Record Specifications:** The Contractor shall maintain one complete copy of the Project Manual, including Addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
 - a. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

- b. Give particular attention to equals and substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 - c. Note related record drawing information and Product Data.
 - d. Upon completion of the Work, submit record Specifications to the Construction Administrator for the Owner's records.
- 4. Record Product Data:** The Contractor shall maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
- a. 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.
 - b. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 - c. Upon completion of markup, submit complete set of Record Product Data to the Construction Administrator for the Owner's records.
- 5. 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.
- 6. 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 01730. Included but not limited to the following types of information:
- a. *Emergency instructions.*
 - b. *Spare parts list.*
 - c. *Copies of warranties.*
 - d. *Wiring diagrams.*
 - e. *Recommended "turn-around" cycles.*
 - f. *Inspection procedures.*
 - g. *Shop Drawings and Product Data.*
- D. Closeout Procedures:**
- 1. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner'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:
 - a. *Maintenance manuals.*
 - b. *Record documents.*
 - c. *Spare parts and materials.*
 - d. *Tools.*
 - e. *Lubricants.*
 - f. *Identification systems.*
 - g. *Control sequences.*
 - h. *Hazards.*
 - i. *Cleaning.*
 - j. *Warranties and bonds.*

- k. Maintenance agreements and similar continuing commitments.*
- 2. As part of instruction for operating equipment, demonstrate the following procedures:
 - a. Startup.
 - b. Shutdown.
 - c. Emergency operations.
 - d. Noise and vibration adjustments.
 - e. Safety procedures.
 - f. Economy and efficiency adjustments.
 - g. Effective energy utilization.

E. Final Cleaning:

1. **General:** The General Conditions requires general cleaning during construction. Regular site cleaning is included in Division 1 Section 01570 "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:**
 - a. Remove labels that are not permanent labels.
 - b. 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
 - c. 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.
 - d. 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.
 - e. Clean and polish finish hardware.
 - f. Clean and polish tile and other glazed surfaces.
 - g. Clean floors; wax and buff resilient tile. Clean vinyl or rubber base.
 - h. Vacuum and/or dust walls, ceilings, lighting fixtures, ceiling diffusers and other wall and ceiling items.
 - i. Remove defacements, streaks, fingerprints and erection marks.
4. **Exterior:**
 - a. 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.
 - b. Clean exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances
 - c. Remove waste and surplus materials, rubbish and construction equipment and facilities from the site, and deposit it legally elsewhere.
 - d. 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. **Removal of Protection:** Remove temporary protection and facilities installed for protection of the Work during construction.
6. **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 Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
 - a. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Construction Administrator.
 - b. Leave building clean and ready for occupancy. If the Contractor fails to clean up, the Owner may do so, with the cost charged to the Contractor. The Owner will issue a credit change order to cover the costs.

01730 OPERATION AND MAINTENANCE DATA

- A. The Contractor shall instruct the State's designated personnel in the operation of new equipment and shall provide manuals and if required, provide video tapes of this basic maintenance of the equipment for training purposes. Provide qualified personnel for as long as necessary to instruct the State's personnel.
- B. Submit four copies of the manuals in 3-ring, loose-leaf notebooks to the Engineer for approval. Manuals may consist of plain paper copies of approved shop drawings and catalog cuts. Upon completion and approval, 3 copies will be forwarded to the State and one copy retained by the Engineer.
- C. Manuals shall include:
 1. Operating Procedures:
 - a. Typewritten procedures for each mode of operation of each piece of equipment. Procedures shall indicate the status of each component of a system in each operating mode.
 - b. Procedures shall include names, symbols, valve tags, circuit numbers, schematic wiring diagrams, locations of thermostats, manual starters, control cabinets and other controls of each system.
 - c. Emergency shut-down procedures for each piece of equipment or system, both automatic and manual, as appropriate.
 2. Maintenance Schedule:
 - a. Typewritten schedule describing manufacturers schedule of maintenance and maintenance procedures.
 3. Catalog Cuts:
 - a. To illustrate each piece of installed equipment, including options.
 - b. Include equipment descriptions including physical, electrical and mechanical; performance characteristics; installation or erection diagrams.
 - c. Include spare parts numbers and names, address and phone number of manufacturer; name, address and phone number of local representative or service department.
 4. Typewritten list of all subcontractors on the project, including name, address and phone number of local representative or service department.
4. Manuals shall be indexed with dividers indicating each system or piece of equipment.

01740 WARRANTIES AND GUARANTEES

- A. **Disclaimers and Limitations:** Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

- C. 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.
- B. 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.
- C. 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 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.
- D. 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.
- E.** 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 Contractor presents evidence that entities required to countersign such commitments are willing to do so.
- F.** The Contractor shall guarantee 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 Construction Administrator in the supplier's standard form or in the form given below if there is no standard form available.
- F.** The Contractor shall guarantee 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 Construction Administrator in the supplier's standard form or in the form given below if there is no standard form available.
 - 28. Section 15,671, Compressors and Pumps: 5-years, material and installation.
- G.** Submit certification that finish materials are fire rated as specified.
- H.** Form of Guarantees and Warranties:

*Director
Facilities Management & Planning
83 Windham Street
Willimantic, Connecticut 06226
(Project Title and Number)*

I (We) hereby guarantee and warranty)

*the _____ work on the referenced project for a period of _____ years
from _____, 19__ against failures of workmanship and materials in accordance
with the requirements of Section ____, Page ____, Paragraph ____, of the Specifications.*

Signed _____

*General Contractor
(or authorized agent)* _____

- I. Bonds shall be by approved Surety Companies, made out to the Director of Facilities Management & Planning, Eastern Connecticut State University on companies standard form.
- J. Guarantees, warranties or bonds supplied by Subcontractors, 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.

G. Submittals:

- 1. Submit written warranties prior to the date certified for Substantial Completion. If the Engineer'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 Engineer.
- 2. Forms for special warranties are included in this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Construction Administrator, for approval prior to final execution.
 - a. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- 3. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, 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-by-11-inch paper.
 - a. 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.
 - b. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
 - c. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF DIVISION 1- GENERAL REQUIREMENTS

SECTION 15077 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

SECTION 15077 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe labels.

1.2 ACTION SUBMITTAL

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

PART 2 - PRODUCTS

2.1 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
 - 2. Lettering Size: At least 1-1/2 inches high.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 PIPE LABEL INSTALLATION

- A. Locate pipe labels where piping is exposed as follows:

SECTION 15077 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

1. Near each valve and control device.
2. Near penetrations through walls.
3. Near major equipment items and other points of origination and termination.
4. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.

B. Pipe Label Color Schedule:

1. Refrigerant Piping:
 - a. Background Color: Blue.
 - b. Letter Color: White.

END OF SECTION 15077

SECTION 15088 - HVAC PIPING INSULATION

SECTION 15088 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes insulating the following HVAC piping systems:
 1. Refrigerant suction piping, indoors and outdoors.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 2. Detail insulation application at elbows, fittings, valves, and specialties.
 3. Detail removable insulation at piping specialties.
 4. Detail application of field-applied jackets.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.
- B. Insulation, including insulation thickness shall comply with 2009 IECC.

SECTION 15088 - HVAC PIPING INSULATION

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- C. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- D. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- E. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armacell LLC; AP Armaflex.
 - b. K-Flex USA; Insul-Lock, Insul-Tube, and K-FLEX LS.
 - c. Aeroflex USA, Inc.; Aerocel.

2.2 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Flexible Elastomeric: Comply with MIL-A-24179A, Type II, Class I.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Aeroflex USA, Inc.; Aero seal.
 - b. Armacell LLC; Armaflex 520 Adhesive.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-75.
 - d. K-Flex USA; R-373 Contact Adhesive.
 - 2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. PVC Jacket Adhesive: Compatible with PVC jacket.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 739, Dow Silicone.

SECTION 15088 - HVAC PIPING INSULATION

- b. Johns Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.
 - c. P.I.C. Plastics, Inc.; Welding Adhesive.
 - d. Speedline Corporation; Polyco VP Adhesive.
2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
 1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-80/30-90.
 - b. Vimasco Corporation; 749.
 2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
 3. Service Temperature Range: Minus 20 to plus 180 deg F.
 4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
 5. Color: White.
- C. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-10.
 - b. Eagle Bridges - Marathon Industries; 550.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 46-50.
 - d. Mon-Eco Industries, Inc.; 55-50.
 - e. Vimasco Corporation; WC-1/WC-5.
 - f. .Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
 2. Service Temperature Range: Minus 20 to plus 180 deg F .
 3. Solids Content: 60 percent by volume and 66 percent by weight.
 4. Color: White.

SECTION 15088 - HVAC PIPING INSULATION

2.4 SEALANTS

A. Joint Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Permanently flexible, elastomeric sealant.
3. Service Temperature Range: Minus 100 to plus 300 deg F.
4. Color: White or gray.
5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
6. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. ASJ Flashing Sealants, and Vinyl and PVC Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.5 FIELD-APPLIED FABRIC-REINFORCING MESH

A. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in., in a Leno weave, for pipe.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Mast-A-Fab.
 - b. Vimasco Corporation; Elastafab 894.

2.6 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

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- B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Johns Manville; Zeston.
 - b. P.I.C. Plastics, Inc.; FG Series.
 - c. Proto Corporation; LoSmoke.
 - d. Speedline Corporation; SmokeSafe.
 2. Adhesive: As recommended by jacket material manufacturer.
 3. Color: White.
 4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
 - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.
- C. Self-Adhesive Outdoor Jacket: 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a crosslaminated polyethylene film covered with white aluminum-foil facing.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Polyguard Products, Inc.; Alumaguard 60.
- D. PVDC Jacket for Outdoor Applications: 6-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.01 perms when tested according to ASTM E 96/E 96M and with a flame-spread index of 5 and a smoke-developed index of 25 when tested according to ASTM E 84.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Chemical Company (The); Saran 560 Vapor Retarder Film.

2.7 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ABI, Ideal Tape Division; 428 AWF ASJ.
 - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
 - c. Compac Corporation; 104 and 105.
 - d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

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2. Width: 3 inches.
 3. Thickness: 11.5 mils.
 4. Adhesion: 90 ounces force/inch in width.
 5. Elongation: 2 percent.
 6. Tensile Strength: 40 lbf/inch in width.
 7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ABI, Ideal Tape Division; 370 White PVC tape.
 - b. Compac Corporation; 130.
 - c. Venture Tape; 1506 CW NS.
 2. Width: 2 inches.
 3. Thickness: 6 mils.
 4. Adhesion: 64 ounces force/inch in width.
 5. Elongation: 500 percent.
 6. Tensile Strength: 18 lbf/inch in width.
- C. PVDC Tape for Outdoor Applications: White vapor-retarder PVDC tape with acrylic adhesive.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Chemical Company (The); Saran 560 Vapor Retarder Tape.
 2. Width: 3 inches.
 3. Film Thickness: 6 mils.
 4. Adhesive Thickness: 1.5 mils.
 5. Elongation at Break: 145 percent.
 6. Tensile Strength: 55 lbf/inch in width.

2.8 SECUREMENTS

- A. Aluminum Bands: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing or closed seal.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ITW Insulation Systems; Gerrard Strapping and Seals.
 - b. RPR Products, Inc.; Insul-Mate Strapping, Seals, and Springs.
- B. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.
- C. Wire: 0.080-inch nickel-copper alloy, 0.062-inch soft-annealed, galvanized steel.

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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. C & F Wire.

PART 3 - EXECUTION

3.1 PREPARATION

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

3.2 GENERAL INSTALLATION REQUIREMENTS

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

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4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- O. For above-ambient services, do not install insulation to the following:
 1. Vibration-control devices.
 2. Testing agency labels and stamps.
 3. Nameplates and data plates.

3.3 PENETRATIONS

- A. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
 1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 4. Seal jacket to wall flashing with flashing sealant.
- B. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- C. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions..

3.4 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, and Unions:

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1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
 2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
 3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
 4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
 5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 6. Insulate unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
 7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
 8. For services not specified to receive a field-applied jacket except for flexible elastomeric, install fitted PVC cover over elbows, tees, strainers, valves and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
 9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
 2. When union covers are made from sectional pipe insulation, extend insulation from union long at least two times the insulation thickness over adjacent pipe insulation on each side of union. Select band material compatible with insulation and jacket.

SECTION 15088 - HVAC PIPING INSULATION

3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.5 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- B. Insulation Installation on Pipe Fittings and Elbows:
 1. Install mitered sections of pipe insulation.
 2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- C. Insulation Installation on Valves and Pipe Specialties:
 1. Install preformed valve covers manufactured of same material as pipe insulation when available.
 2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
 3. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.6 FIELD-APPLIED JACKET INSTALLATION

- A. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints; for horizontal applications. Seal with manufacturer's recommended adhesive.
 1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 1. Inspect pipe, fittings, strainers, and valves, randomly selected by Engineer, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to two locations of straight pipe, two locations of threaded valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

SECTION 15088 - HVAC PIPING INSULATION

3.8 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

3.9 INDOOR PIPING INSULATION SCHEDULE

- A. Refrigerant Suction and Hot-Gas Piping: Flexible elastomeric or Polyolefin, 1.5 inch thick.

3.10 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

- A. Refrigerant Suction and Hot-Gas Piping: Insulation shall be one of the following:
 - 1. Flexible Elastomeric: 2 inches thick.

3.11 INDOOR, FIELD-APPLIED JACKET SCHEDULE

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Piping, Exposed:
 - 1. None.

3.12 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Piping, Exposed:
 - 1. PVDC: 30 mils thick..

END OF SECTION 15088

SECTION 15183 - REFRIGERANT PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes refrigerant piping used for air-conditioning applications.
- B. Demolition work includes removal of the R-22 refrigerant from the existing system for storage and recycling according to EPA regulations, federal and state laws. Venting of the refrigerant is prohibited. Disposal of the removed equipment and piping shall be part of this contract.

1.2 PERFORMANCE REQUIREMENTS

- A. Line Test Pressure for Refrigerant R-410A:
 - 1. Suction Lines for Air Conditioning Applications: According to IMC paragraph 1108 and ASHRAE 15 (pressure listed on the unit) but not less than 300 psi
 - 2. Hot-Gas and Liquid Lines: according to IMC paragraph 1108 and ASHRAE 15 (pressure listed on the unit) but not less than 535 psi.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of valve and refrigerant piping specialty indicated. Include pressure drop based on manufacturer's test data.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control test reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

- A. Comply with 2001 ASHRAE 15, "Safety Code for Refrigeration Systems."
- B. Comply with 2010 ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

1.7 PRODUCT STORAGE AND HANDLING

- A. Store piping in a clean and protected area with end caps in place to ensure that piping are clean when installed.

SECTION 15183 - REFRIGERANT PIPING

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

- A. Copper Tube: ASTM B 88, Type K or L or ASTM B 280, Type ACR.
- B. Wrought-Copper Fittings: ASME B16.22.
- C. Wrought-Copper Unions: ASME B16.22.
- D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.
- E. Brazing Filler Metals: AWS A5.8.
- F. Flexible Connectors:
 - 1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
 - 2. End Connections: Socket ends.
 - 3. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch-long assembly.
 - 4. Pressure Rating: Factory test at minimum 500 psig.
 - 5. Maximum Operating Temperature: 250 deg F.

2.2 VALVES AND SPECIALTIES

- A. Diaphragm Packless Valves:
 - 1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
 - 2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
 - 3. Operator: Rising stem and hand wheel.
 - 4. Seat: Nylon.
 - 5. End Connections: Socket, union, or flanged.
 - 6. Working Pressure Rating: 500 psig.
 - 7. Maximum Operating Temperature: 275 deg F.
- B. Packed-Angle Valves:
 - 1. Body and Bonnet: Forged brass or cast bronze.
 - 2. Packing: Molded stem, back seating, and replaceable under pressure.
 - 3. Operator: Rising stem.
 - 4. Seat: Nonrotating, self-aligning polytetrafluoroethylene.
 - 5. Seal Cap: Forged-brass or valox hex cap.
 - 6. End Connections: Socket, union, threaded, or flanged.
 - 7. Working Pressure Rating: 500 psig.
 - 8. Maximum Operating Temperature: 275 deg F.

SECTION 15183 - REFRIGERANT PIPING

C. Check Valves:

1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
3. Piston: Removable polytetrafluoroethylene seat.
4. Closing Spring: Stainless steel.
5. Manual Opening Stem: Seal cap, plated-steel stem, and graphite seal.
6. End Connections: Socket, union, threaded, or flanged.
7. Maximum Opening Pressure: 0.50 psig.
8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 275 deg F.

D. Service Valves:

1. Body: Forged brass with brass cap including key end to remove core.
2. Core: Removable ball-type check valve with stainless-steel spring.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Copper spring.
5. Working Pressure Rating: 500 psig.

E. Safety Relief Valves: Comply with ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.

1. Body and Bonnet: Ductile iron and steel, with neoprene O-ring seal.
2. Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Seat Disc: Polytetrafluoroethylene.
4. End Connections: Threaded.
5. Working Pressure Rating: 400 psig.
6. Maximum Operating Temperature: 240 deg F.

F. Straight-Type Strainers:

1. Body: Welded steel with corrosion-resistant coating.
2. Screen: 100-mesh stainless steel.
3. End Connections: Socket or flare.
4. Working Pressure Rating: 500 psig.
5. Maximum Operating Temperature: 275 deg F.

G. Moisture/Liquid Indicators:

1. Body: Forged brass.
2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
3. Indicator: Color coded to show moisture content in ppm.
4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
5. End Connections: Socket or flare.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 240 deg F.

H. Replaceable-Core Filter Dryers: Comply with ARI 730.

SECTION 15183 - REFRIGERANT PIPING

1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: Activated alumina or charcoal.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.
8. Rated Flow: 10 tons.
9. Working Pressure Rating: 500 psig
10. Maximum Operating Temperature: 240 deg F.

I. Permanent Filter Dryers: Comply with ARI 730.

1. Body and Cover: Painted-steel shell.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: Activated alumina or charcoal.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: .
8. Rated Flow:
9. Working Pressure Rating: 500 psig .
10. Maximum Operating Temperature: 240 deg F.

J. Liquid Accumulators: Comply with ARI 495.

1. Body: Welded steel with corrosion-resistant coating.
2. End Connections: Socket or threaded.
3. Working Pressure Rating: 500 psig.
4. Maximum Operating Temperature: 275 deg F.

2.3 REFRIGERANTS

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

1. Atofina Chemicals, Inc.
2. DuPont Company; Fluorochemicals Div.
3. Honeywell, Inc.; Genetron Refrigerants.
4. INEOS Fluor Americas LLC.

B. ASHRAE 34, R-410A: Azeotropic mixture of HFC-32 and HFC-125.

SECTION 15183 - REFRIGERANT PIPING

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Suction Lines for Air Conditioning Applications: Copper, Type ACR, hard drawn tubing and wrought-copper fittings with **brazed** joints.
- B. Hot-Gas and Liquid Lines: Copper, Type **ACR**, annealed temper tubing and wrought-copper fittings with **brazed** joints.
- C. Safety-Relief-Valve Discharge Piping: Copper, Type L, drawn-temper tubing and wrought-copper fittings with soldered joints.

3.2 VALVE AND SPECIALTY APPLICATIONS

- A. Install diaphragm packless or packed-angle valves in suction and discharge lines of compressor.
- B. Install service valves for gage taps at strainers if they are not an integral part of strainers.
- C. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.
- D. Except as otherwise indicated, install diaphragm packless or packed-angle valves on inlet and outlet side of filter dryers.
- E. Install a full-sized, three-valve bypass around filter dryers.
- F. Install solenoid valves upstream from each expansion valve. Install solenoid valves in horizontal lines with coil at top.
- G. Install thermostatic expansion valves as close as possible to distributors on evaporators.
 - 1. Install valve so diaphragm case is warmer than bulb.
 - 2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.
 - 3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.
- H. Install safety relief valves where required by ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to 2001 ASHRAE 15.
- I. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.
- J. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for device being protected:
 - 1. Compressor.
- K. Install filter dryers in liquid line between compressor and thermostatic expansion valve, and in the suction line at the compressor.

SECTION 15183 - REFRIGERANT PIPING

- L. Install flexible connectors at compressors.

3.3 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- B. Install refrigerant piping according to 2001 ASHRAE 15.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping adjacent to machines to allow service and maintenance.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Select system components with pressure rating equal to or greater than system operating pressure.
- I. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.
- J. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection.
- K. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.
- L. Slope refrigerant piping as follows:
 - 1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
 - 2. Install horizontal suction lines with a uniform slope downward to compressor.
 - 3. Install traps and double risers to entrain oil in vertical runs.
 - 4. Liquid lines may be installed level.
- M. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.
- N. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.

SECTION 15183 - REFRIGERANT PIPING

- O. Identify refrigerant piping and valves according to Section 15077 "Identification for HVAC Piping and Equipment."
- P. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.4 PIPE JOINT CONSTRUCTION

- A. All joints shall be **brazed**.
- B. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
 - 1. Use Type BcuP, copper-phosphorus alloy for joining copper socket fittings with copper pipe.
 - 2. Use Type BAg, cadmium-free silver alloy for joining copper with bronze or steel.

3.5 HANGERS AND SUPPORTS

- A. Hanger, support, and anchor products are specified in Section 15062 "Hangers and Supports for HVAC Piping and Equipment."
- B. Install the following pipe attachments:
 - 1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
 - 2. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
- C. Install hangers for copper tubing with the following maximum spacing and minimum rod sizes:
 - 1. NPS 1/2: Maximum span, 60 inches; minimum rod size, 1/4 inch.
 - 2. NPS 5/8: Maximum span, 60 inches; minimum rod size, 1/4 inch.
 - 3. NPS 1: Maximum span, 72 inches; minimum rod size, 1/4 inch.
 - 4. NPS 1-1/4: Maximum span, 96 inches; minimum rod size, 3/8 inch.

3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. All pressure tests shall be witnessed and approved by the representative of the Office of the State Building Inspector.
- C. Tests and Inspections:
 - 1. Comply with ASME B31.5, Chapter VI and 2003 IPC, Section 1108.
 - 2. Test refrigerant piping and specialties. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
 - 3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in Part 1 "Performance Requirements" Article.

SECTION 15183 - REFRIGERANT PIPING

- a. Fill system with nitrogen to the required test pressure.
- b. System shall maintain test pressure at the manifold gage throughout duration of test, which shall be no less than 24 hours.
- c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
- d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

3.7 SYSTEM CHARGING

- A. Charge system using the following procedures:
 1. Install core in filter dryers after leak test but before evacuation.
 2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers . If vacuum holds for 12 hours, system is ready for charging.
 3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
 4. Charge system with a new filter-dryer core in charging line.

3.8 ADJUSTING

- A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.
- B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.
- C. Adjust set-point temperature of air-conditioning to the system design temperature.
- D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:
 1. Verify that compressor oil level is correct.
 2. Open compressor suction and discharge valves.
 3. Open refrigerant valves except bypass valves that are used for other purposes.
 4. Check open compressor-motor alignment and verify lubrication for motors and bearings.
- E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION 15183

SECTION 15671 - PACKAGED COMPRESSOR AND CONDENSER UNIT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes packaged, air-cooled, refrigerant compressor and condenser units.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For compressor and condenser units. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: For power, signal, and control wiring.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Fabricate and label refrigeration system according to 2001 ASHRAE 15, "Safety Standard for Refrigeration Systems."
- C. ASHRAE/IESNA 90.1 Compliance: Applicable requirements in 2007 ASHRAE/IESNA 90.1, Section 6, "Heating, Ventilating, and Air-Conditioning."

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of compressor and condenser units that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Compressor failure.
 - b. Condenser coil leak.
 - 2. Warranty Period: one year from date of Substantial Completion.
 - 3. Warranty Period (Compressor Only): Five years from date of Substantial Completion.
 - 4. Warranty Period (Components Other Than Compressor): One year from date of Substantial Completion.
 - 5. Warranty Period (Condenser Coil Only): One year from date of Substantial Completion.

SECTION 15671 - PACKAGED COMPRESSOR AND CONDENSER UNIT

PART 2 - PRODUCTS

2.1 COMPRESSOR AND CONDENSER UNITS, AIR COOLED, 6 TO 120 TONS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Trane; a business of American Standard Companies.
 2. Carrier Corporation; Commercial HVAC Systems.
 3. Lennox International Inc.
 4. McQuay International
- B. Description: Factory assembled and tested, air cooled; consisting of casing, compressors, condenser coils, condenser fans and motors, and unit controls.
- C. Compressors: Hermetic scroll compressors designed for service with crankcase sight glass, crankcase heater, and backseating service access valves on suction and discharge ports.
1. Capacity Control: On-off compressor cycling.
- D. Refrigerant: **R-410A**.
- E. Condenser Coil: Seamless copper-tube, aluminum-fin coil, including subcooling circuit and backseating liquid-line service access valve. Factory pressure test coils, then dehydrate by drawing a vacuum and fill with a holding charge of nitrogen or refrigerant.
- F. Condenser Fan: Propeller-type vertical discharge; directly driven. Include the following:
1. Permanently lubricated, ball-bearing totally enclosed motors.
 2. Separate motor for each fan.
 3. Dynamically and statically balanced fan assemblies.
- G. Operating and safety controls include the following:
1. Manual-reset, high-pressure cutout switches.
 2. Automatic-reset, low-pressure cutout switches.
 3. Low-oil-pressure cutout switch.
 4. Compressor-winding thermostat cutout switch.
 5. Three-leg, compressor-overload protection.
 6. Control transformer.
 7. Magnetic contactors for compressor and condenser fan motors.
 8. Timer to prevent excessive compressor cycling.
- H. Accessories:
1. Low-Ambient Controller: Cycles condenser fan to permit operation down to 0 deg F with time-delay relay to bypass low-pressure switch.
 2. Gage Panel: Package with refrigerant circuit suction and discharge gages.
 3. Part-winding-start timing relay, circuit breakers, and contactors.

SECTION 15671 - PACKAGED COMPRESSOR AND CONDENSER UNIT

- I. Unit Casings: Designed for outdoor installation with weather protection for components and controls and with removable panels for required access to compressors, controls, condenser fans, motors, and drives. Additional features include the following:
 1. Steel, galvanized or zinc coated, for exposed casing surfaces; treated and finished with manufacturer's standard paint coating.
 2. Perimeter base rail with forklift slots and lifting holes to facilitate rigging.
 3. Gasketed control panel door.
 4. Nonfused disconnect switch, factory mounted and wired, for single external electrical power connection.
 5. Condenser coil grille.

- J. Capacities and Characteristics:
 1. Compressor and Condenser Unit:
 - a. Full-Load Cooling Capacity: 110.0 MBh.
 - b. Energy-Efficiency Ratio (EER): 12.2.
 - c. Compressor Suction Temperature: 45 deg F.
 - d. Capacity Steps: 2.

 2. Refrigerant Connections (dual circuits):
 - a. Liquid Pipe Sizes: 1/2.
 - b. Suction Pipe Sizes: 1 1/8.

 3. Compressors:
 - a. Number of Compressors: 2.
 - b. Rated-Load Amperes: 16.1 (each)
 - c. Locked-Rotor Amperes: 110 (each)

 4. Air-Cooled Condenser:
 - a. Ambient-Air Temperature: 95.
 - b. Airflow: 9600 cfm.
 - c. Number of Condenser Fans: 1.
 - d. Condenser Fan Motor Size: 1.0 hp.

 5. Electrical Characteristics:
 - a. Kilowatt Input: 9.01 kW.
 - b. Volts: 208.
 - c. Phase: 3.
 - d. Hertz: 60.
 - e. Maximum Circuit Amperes: 41.0
 - f. Maximum Overcurrent Protection: 45A.

SECTION 15671 - PACKAGED COMPRESSOR AND CONDENSER UNIT

2.2 SOURCE QUALITY CONTROL

- A. Energy Efficiency: Equal to or greater than prescribed by 2007 ASHRAE/IESNA 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings," Section 6, "Heating, Ventilating, and Air-Conditioning."
- B. Testing Requirements: Factory test sound-power-level ratings according to ARI 270.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb, firmly anchored in locations indicated.
- B. Equipment Mounting:
 - 1. Install compressor and condenser units on the existing cast-in-place concrete equipment bases.
- C. Maintain manufacturer's recommended clearances for service and maintenance.
- D. Loose Components: Install electrical components, devices, and accessories that are not factory mounted.

3.2 CONNECTIONS

- A. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- B. Connect precharged refrigerant tubing to unit's quick-connect fittings. Install tubing so it does not interfere with access to unit. Install furnished accessories.
- C. Connect refrigerant piping to air-cooled compressor and condenser units; maintain required access to unit. Install furnished field-mounted accessories. Refrigerant piping and specialties are specified in Section 15183 "Refrigerant Piping."

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test. Certify compliance with test parameters.
 - 2. Leak Test: After installation, charge system with refrigerant and oil and test for leaks. Repair leaks, replace lost refrigerant and oil, and retest until no leaks exist. Refer to Section 15,183, paragraph 3.6 C and 3.7 A for testing requirements.

SECTION 15671 - PACKAGED COMPRESSOR AND CONDENSER UNIT

3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor operation and unit operation, product capability, and compliance with requirements.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
5. Verify proper airflow over coils.

END OF SECTION 15671

SECTION 16000 – CONDUCTORS, RACEWAYS, CABLES AND WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Raceways
4. Circuit breakers

1.2 ACTION SUBMITTALS

- ##### A. Product Data: For each type of product.

1.3 QUALITY ASSURANCE

- ##### A. All electrical work shall be done in compliance with NEC 2005 (NFPA 70)

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

- ##### A. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.
- ##### B. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2.
- ##### C. Multiconductor Cable: Comply with NEMA WC 70/ICEA S-95-658 for with ground wire.

2.2 RACEWAYS

- ##### A. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- ##### B. GRC: Comply with ANSI C80.1 and UL 6.

2.3 CONNECTORS AND SPLICES

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

SECTION 16000 – CONDUCTORS, RACEWAYS, CABLES AND WIRING DEVICES

2.4 CIRCUIT BREAKERS

- A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- B. HACR type time delay circuit breaker to accommodate starting current of the compressor.
- C. Manufacturer (to match existing panel):
General Electric Company; GE Consumer & Industrial - Electrical Distribution.

2.5 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with 2005 NFPA 70.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders or Branch Circuits: Copper Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION

- A. Exposed Feeders or Branch Circuits: Type THHN-2-THWN-2, single conductors in raceway.

3.3 RACEWAYS APPLICATION.

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Connection to Vibrating Equipment (Including condensing units): LFMC.
 - 2. Galvanized rigid conduit upstream of the disconnect switch: GRC

3.4 INSTALLATION OF CONDUCTORS AND CABLES

- A. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- B. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

SECTION 16000 – CONDUCTORS, RACEWAYS, CABLES AND WIRING DEVICES

- C. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

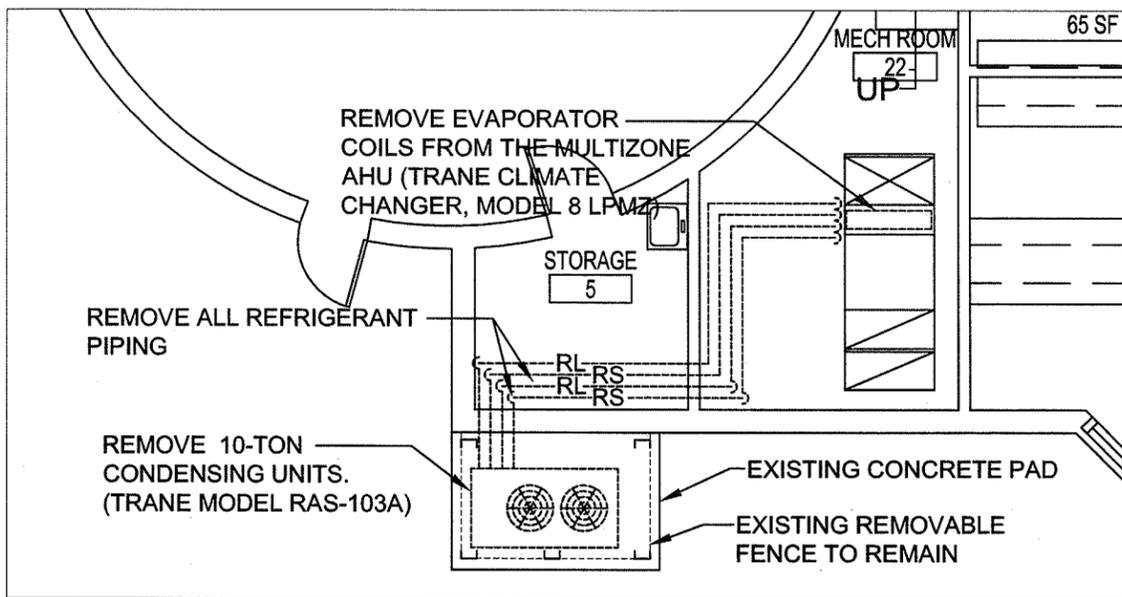
3.5 CONNECTIONS

- 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-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material.

3.6 FIELD QUALITY CONTROL

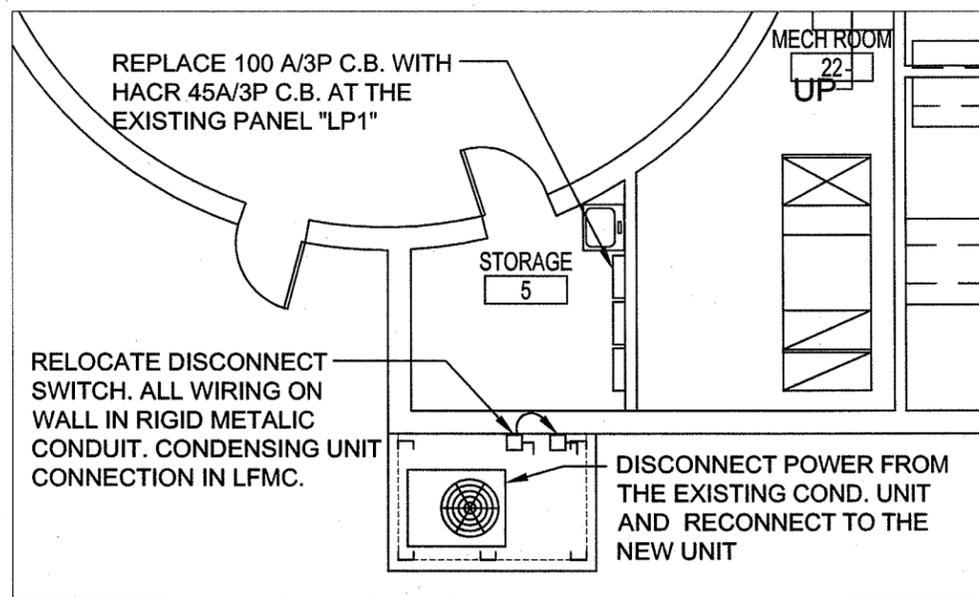
- A. Perform the following tests and inspections:
 - 1. Perform each visual and mechanical inspection.
- B. Cables will be considered defective if they do not pass tests and inspections.

END OF SECTION 16120



HVAC DEMOLITION PLAN

SCALE : 1/8"=1'-0"

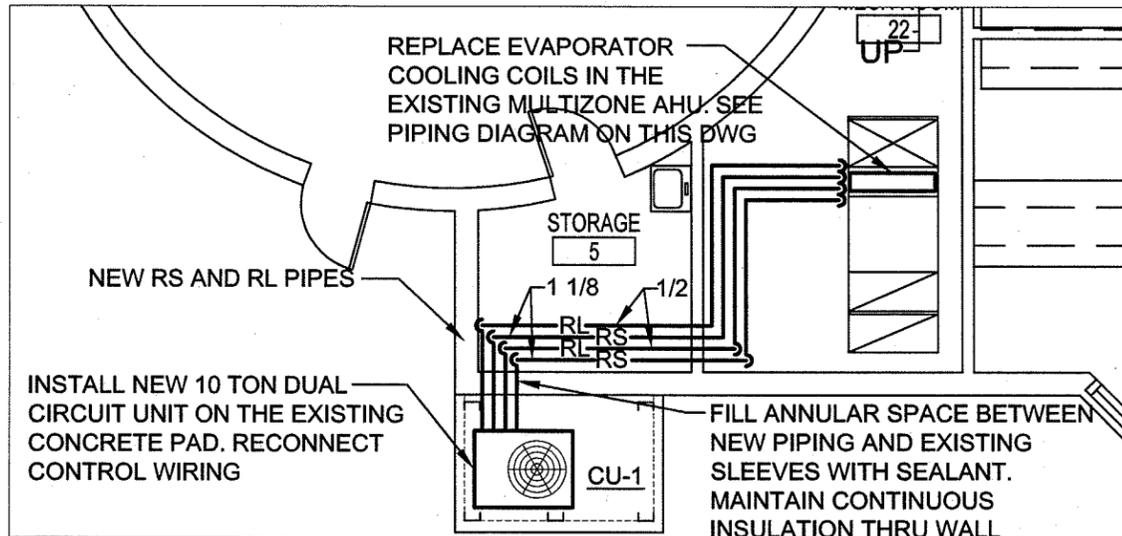


ELECTRICAL PLAN

SCALE : 1/8"=1'-0"

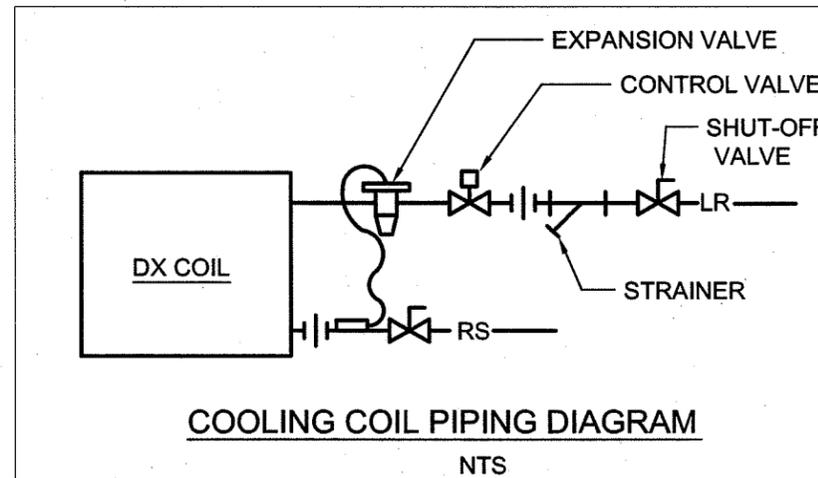
ELECTR. LEGEND

- EXISTING TO REMOVE
- JUNCTION BOX
- ⊞ DISCONNECT SWITCH
- CB CIRCUIT BREAKER



HVAC CONSTRUCTION PLAN

SCALE : 1/8"=1'-0"

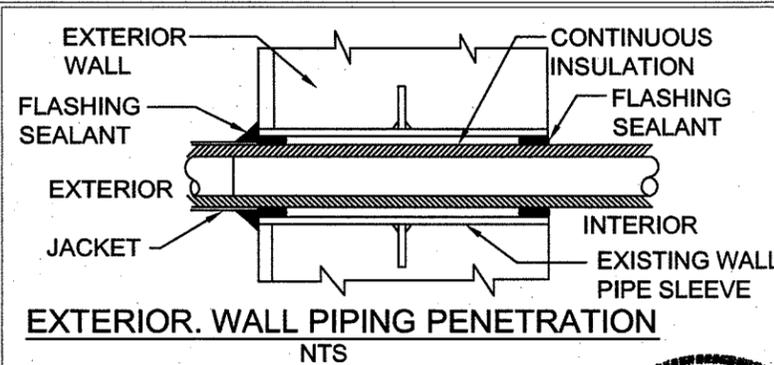


COOLING COIL PIPING DIAGRAM

NTS

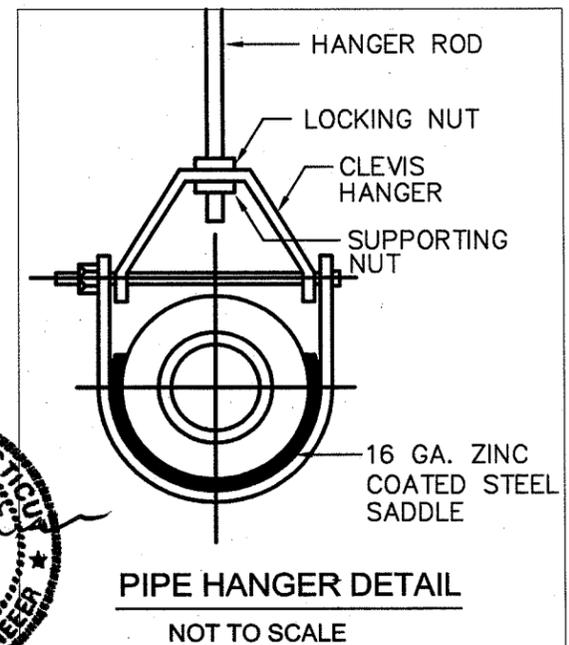
HVAC LEGEND

- RL— REFRIGERANT LIQUID PIPE
- RS— REFRIGERANT SUCTION PIPE
- ⤵ PIPE DOWN
- ⊞ SHUT OFF VALVE
- MBH THOUSAND BTU PER HOUR
- EAT ENTERING AIR TEMPERATURE
- LAT LEAVING AIR TEMPERATURE
- C.B. CIRCUIT BREAKER



EXTERIOR. WALL PIPING PENETRATION

NTS



PIPE HANGER DETAIL

NOT TO SCALE

EVAPORATOR COIL SCHEDULE

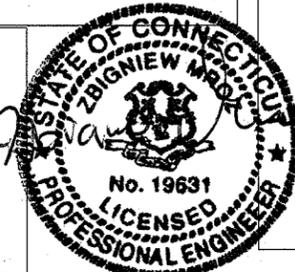
ID TAG	AHU	EXIST. AHU MODEL	EXIST. COIL TYPE	EXIST. COIL ROWS	EXIST. COIL SIZE	NEW REFRIG. TYPE	NO OF CIRCUITS	EAT (°F)	LAT (°F)	CAPACITY MBH	SUCTION TEMP (°F)
CU-1	TRANE	5 LP	F	4	36X30	R-410A	2	80/67	57/56.6	129	45

CONTRACTOR TO VERIFY AND CONFIRM THE EXISTING COIL DATA. PROVIDE MODIFICATIONS TO THE AIR HANDLING UNIT AS NECESSARY TO FACILITATE INSTALLATION OF THE NEW COIL.

AIR COOLED CONDENSING UNITS SCHEDULE

ID TAG	MFG	MODEL	AMBIENT TEMP. (°F)	CAPACITY (TONS)	REFRIG.	SUCTION TEMP (°F)	NUMBER OF REFRIGERANT CIRCUITS	NO. STEPS UNLOADING	EER	POWER			SERVES
										VOLT/PH	FLA	CB MAX	
CU-1	TRANE	TTA120E3	95	10	R-410A	44	2	1	12.2	208V/3P	21.0	45.0	AHU-1

ACCESSORIES: CRANCKCASE HEATER, LOW AMBIENT CONTROL DN TO 0 DEG F



EASTERN CONNECTICUT STATE UNIVERSITY
 Facilities Management and Planning
 83 Windham Street, Willimantic CT 06226

No.	Revision/Issue	Date

BUILDING: PLANETARIUM

PROJECT NAME:
CONDENSING UNIT REPLACEMENT

DRAWING NAME:
MECHANICAL/ ELEC. PLANS AND DETAILS AND SCHEDULES

Project No.: ECSU-2012-16

Date: 4/15/2013	Drawing No.: M-1
Scale: AS NOTED	Plot Size: 11 x 17