The State of Connecticut

Department of Housing (DOH)

Community Development Block Grant Disaster Recovery Program (CDBG-DR)

Owner Occupied Rehabilitation and Rebuilding Program (OORR)

BID PACKAGE

For

HAZARDOUS MATERIAL ABATEMENT

NEW FOUNDATIONS

ELEVATE EXISTING RESIDENCE

MINOR INTERIOR ALTERATIONS

For

ROBERT BISHOP

250 COSEY BEACH AVENUE

EAST HAVEN, CONNECTICUT 06512

Lothrop Associates LLP Architects
100 Pearl Street – 14th Floor
Hartford, Connecticut 06103
860-249-7251

Issue Date: December 1, 2015

Application No. 1121

LAA Project No. 1524-45

EQUAL HOUSING OPPORTUNITY

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Section 1 **ADVERTISEMENT FOR BIDS**

Project # 1121

The State of Connecticut Department of Housing (DOH) is seeking bids through a Invitation for Bids (IFP) process for the rehabilitation, reconstruction and/or mitigation of residential structures damaged by Superstorm Sandy in compliance with all applicable local, federal, and state statutory requirements with special attention paid to requirements for Community Development Block Grants under the United States Department of Housing and Urban Development ("HUD") Disaster Recovery grant program.

Separate sealed bids for: **Hazardous material Abatement, Construction of New Foundation and Raising Existing Residence for Robert Bishop, 250 Cosey Beach Avenue , East Haven, Ct. 06512,** will be received by **Lothrop Associates LLP Architects, 100 Pearl Street,14th Floor, Hartford Ct. 06103,** until **4 o'clock PM on December 22, 2015,** and then at said office publicly opened and read aloud.

The Information to Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Form of Bid Bond, Performance and Payment Bond, and other contract documents may be examined on the Department of Housing Hurricane Sandy Recover website at **www.ct.gov/doh/** and click on the "Hurricane Sandy" link.

DOH reserves the right to waive any informalities or to reject any or all bids.

Each bidder must deposit with his bid, security in the amount, form and subject to the conditions provided in the Information to Bidders.

Attention to bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wages rates to be paid under the contract (if applicable), Section 3, Segregated Facilites, Section 109 and E. O. 11246.

No bidder may withdraw his bid within 30 calendar days after the actual date of the bid opening thereof.

INFORMATION FOR BIDDERS

Receipt and Opening of Bids:

The State of Connecticut Department of Housing (herein called the "DOH"), invites bids on the form attached hereto, all blanks of which must be appropriately filled. Bids will be received by DOH at the office of **Lothrop Associates LLP Architects, 100 Pearl Street, 14th Floor, Hartford, Ct. 06103**, until **4 o'clock PM on December 22, 2015** and then at said office publicly opened and read aloud.

The envelopes containing the bids must be sealed, addressed to **Lothrop Associates LLP Architects at** 100 Pearl St., 14the floor, Hartford, Ct. 06103 and designated as bid for:

Hazardous Materials Abatement, Construction of New Foundation and Raising of Existing Residence for the Robert Bishop Residence at 250 Cosey Beach Avenue, East Haven, CT. 06512.

DOH may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement there considered. NO bidder may withdraw a bid within 30 days after the actual date of the opening thereof.

Mandatory Walk Through: All bidders must attend a mandatory walk through of the property designated above. The date and time of the walk through is set for **10:30 o'clock AM on December 10, 2015.**

Preparation of Bids:

Each bid must be submitted on the prescribed form and accompanied by Certification by Bidder Regarding Equal Employment Opportunity, Form HUD-950.1, and Certification of Bidder Regarding Section 3 and Segregated Facilities. All blank spaces for bid process must be filled in, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his/her address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid form.

Subcontracts: The bidder is specifically advised that any person, for, or other party to whom it is proposed to award a subcontract under this contract:

1. Must be acceptable to the DOH after verification by the State of the current eligibility status; and,
2. Must submit Form HUD-950.2, Certification by Proposed Subcontractor Regarding Equal Employment Opportunity and Certification of Proposed Subcontractor Regarding Section 3 and Segregated Facilities. Approval of the proposed subcontractor award cannot be given by the DOH unless and until the proposed subcontractor has submitted the Certifications and/or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject. Although the bidder is not required to attach such Certifications by proposed subcontractors to his/her bid, the bidder is here advised of this requirement so that appropriate action can be taken to prevent subsequent delay in subcontract awards.

Method of Bidding: DOH invites the following bid(s):

Qualifications of Bidder: The DOH may make such investigations as he/she deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the DOH all such information and date for this purpose as the DOH may request. The DOH reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the DOH that such bidder is property qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted. The State's set Contractor Prequalifications are listed in Exhibit G and also are available at the Department of Housing's Hurricane Sandy Recovers website www.ct.gov/doh/ and click on the "Hurricane Sandy" link.

Bid Security: Each bid must be accompanied by an irrevocable letter of credit from the bank, certified check, or bank cashier's check in the amount not less than five percent (5%) of the bid. Bid bonds may be accepted as bid security. Such checks will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, or checks will be returned promptly after DOH and the accepted bidder have executed the contract, or opening of bids, upon demand or the bidder at any time thereafter, so long as he/she has been notified of the acceptance of his/her bid.

Conditions of Work: Each bidder must inform him/herself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all material and labor necessary to carry out the provision of his/her contract. Insofar as possible the contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

Addenda and Interpretations: No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation should be in writing addressed to: **Vincent Lisanti, AIA at 100 Pearl Street, 14th Floor, Hartford, Ct. 06103 (e mail-vlisanti@lothropassociates.com)**, and to be given consideration must be received at least seven days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instruction will be in the form of written addenda to the specifications which, if issued, will be forwarded by electronic mail and posted on DOH's Hurricane Sandy website to all prospective bidders (at the respective email addresses furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents.

Security for Faithful Performance: Simultaneously with his/her delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the DOH.

Performance and Payment Bonds: A performance and payment bond will be required of the successful bidder (contractor) for 100 percent of the contract price on contracts over $100,000.

Contract Progress Schedule: Each bid shall be accompanied by a Contract Progress Schedule. Such Schedule shall list the bidder's timetable for completion of the contract.

Power of Attorney: Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

Notice of Special Conditions: Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

1. Inspection and testing of materials
2. Insurance requirements
3. Wage rates (if applicable)
4. State allowances

Laws and Regulations: The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

Method of Award-Lowest Qualified Bidder: If at the time this contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the DOH as available to finance the contract; the contract will be awarded on the base bid only. If such bid exceeds such amount, the DOH may reject all bids or may award the contract on the base bid combined with such deductible alternatives applied in numerical order in which they are listed in the Form of Bids, as produces a net amount which is within the available funds.

If the homeowner wishes to select a prequalified bidding contractor other than the lowest and most responsible bidder, said owner is responsible for paying the difference between the lowest bidder and their chosen bidder from their own financing.

Obligation of Bidder: At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to his/her bid.

Safety Standards and Accident Prevention: With respect to all work performed under this contract, the contractor shall:

1. Comply with the safety standards provision of applicable laws, building and construction codes and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register," Volume 36, No 75, Saturday, April 17, 1971.
2. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) who may be injured on the job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

BID FORM

The undersigned, being familiarized with the local conditions affecting the cost of the work and with the Drawings, Specifications, Invitation to Bidders, Instructions to Bidders, General Conditions, Bid Form, Form of Contract and Form of Bonds for Project No. **1121** and Addenda No. _____ and _____ thereto, as prepared by **Lothrop Associates^{LLP} Architects**, Harford, Connecticut, and on file in the office of DOH, hereby proposes to furnish all permits, labor, materials, tools, equipment, and related items required for the demolition, abatement and construction including general construction, site improvements, plumbing, heating, electrical, and finish items for said Project No.**1121** located at **The Robert Bishop Residence, 250 Cosey Beach Avenue, in East Haven, State of Connecticut**, all in accordance with the Drawings and Specifications, for the sum of:
_____Dollars ($)

BREAKDOWN OF COSTS FOR LUMP SUM BASE BID
The following is a Breakdown of Costs by Major Division used by the Bidder in assembling this bid:

GENERAL CONDITIONS, OVERHEAD AND PROFIT,

DIVISION 01 GENERAL REQUIREMENTS	$_____
DIVISION 02 SELECTIVE DEMOLITION	$_____
HOUSE RAISING	$_____
DIVISION 03 CAST IN PLACE CONCRETE	$_____
DIVISION 05 STRUCTURAL STEEL	$_____
DIVISION 06 WOOD AND PLASTICS	$_____
DIVISION 07 THERMAL AND MOISTURE PROTECTION	$_____
DIVISION 08 OPENINGS	$_____
DIVISION 09 FINISHES	$_____
DIVISION 22 PLUMBING- MECHANICAL	$_____
DIVISION 26 ELECTRICAL (Exclusive Of Allowances)	$_____
DIVISION 31 EARTHWORK	$_____
ALLOWANCE #1- MAW	$5,000.00
ALLOWANCE #2 – TESTS AND INSPECTIONS	$3,000.00
ALLOWANCE #3 - LIGHT FIXTURES (_____Fixtures @ $80. ea.)	$_____

ALTERNATE PROPOSALS

The undersigned bidder further proposes and agrees that should any or all of the following Alternates be accepted and included in the Contract, the amount of the Base Bid, as heretofore stated, shall be adjusted by the amount stated for each Alternate. All materials and workmanship shall be in strict accordance with the Drawings and Specifications and shall be in-place prices.

ALTERNATES:

Not Applicable

UNIT PRICES

Base bid amount shall include all pile and concrete foundation work. Unit prices are to be used for the purpose specified in Section 010400.

The undersigned bidder proposes and agrees to bid the following unit prices:

Helical Piles-installed complete with grout column $_____ per linear foot
(In accordance with Specifications on the drawings)

Reinforced concrete foundations, including pile caps $_____ per cubic yard
(In accordance with Specification Section 033000)

ALLOWANCES

The undersigned bidder further proposes and agrees to include in the Base Bid, any and all Allowances specified in the Contract.

The undersigned agrees to commence the work on a date to be specified in the contract and to complete such work within **120** consecutive calendar days.

The undersigned agrees that if within the period of thirty (30) calendar days after the opening of bids, or when extended to the next work day immediately following said period, notice of the acceptance of this bid shall be mailed, or delivered to him/her at the business address given below, or at any time thereafter before this bid is withdrawn, the undersigned will within fifteen (15) calendar days thereafter deliver to DOH, where directed, a contract properly executed in such number of counterparts as may be required by said DOH, on the forms annexed, with such changes therein as shall have been made by the DOH, prior to the time named for delivery of this proposal, together with a 100% Performance Bond of a Surety Company, which Surety must be authorized to transact business in the State of Connecticut, and duly qualified therefore, and in the form constituting part of the Specification and a letter indicating those Small/Minority Business Enterprises that will perform work and/or provide materials, equipment or services as part of the contract.

In submitting this bid, it is understood that the right is reserved by the abovementioned DOH to reject any and all bids; and it is agreed that this bid may not be withdrawn for a period of thirty calendar (30) days from the date of bid opening or until the next work day immediately following said period if such period ends on weekend or a State holiday.

Security in the sum of _____ Dollars ($_____)

in the form of _____is submitted herewith in accordance with the Specifications.

The undersigned bidder agrees to comply with the Section 3 plan included herein and all Federal requirements pertaining to conditions of employment to be observed and minimum wage rates to be paid under the contract, Segregated Facilities, Section 109 and Executive Order 11246.

Attached hereto is an affidavit, in proof that the undersigned has not entered into any collusion with any person in respect to this proposal, or any other proposal, or the submitting of proposals for the above Project. Also attached is a statement of contractor's qualifications, Certification of Bidder Regarding Equal Employment Opportunity, Certification of Bidder Regarding Section 3 and Segregated Facilities.

_____

Date

_____

Firm Name

_____

Address

By: _____

Title: _____

(Bank Letterhead)

BID SECURITY

IRREVOCABLE LETTER OF CREDIT

Dear _____:

We hereby authorize you to draw on us to the aggregate amount of $_____ (five percent of the amount of the bid) in the event _____ withdraws its bid within the bid holding period, or upon being awarded a contract, fails to provide adequate performance and payment security as required by the Contract documents.

Such drafts must be accompanied by the following document:

A written certification by you that the proceeds of any draft drawn on this Letter of Credit will be used solely to indemnify the DOH against loss or damage suffered by it resulting from any act or omission described in the above paragraph.

We warrant to you that all drafts drawn in compliance with the terms of this Letter of Credit will be unconditionally and duly honored upon delivery of the documentation specified and presented to this office.

This Letter of Credit is irrevocable and shall be in full force and effect until notification in writing is received from you that a contract for Project_____ has been awarded and executed, whereupon this Letter of Credit shall automatically be canceled.

This Letter of Credit shall not be modified or amended except upon the written agreement of this Bank and the DOH.

Sincerely yours,

President

FORM OF NON-COLLUSIVE AFFIDAVIT

AFFIDAVIT

State of _____)

County of _____)

_____, being first duly sworn, deposes and says:

That he/she is,_____ the party making the foregoing proposal for bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not, in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against DOH or any person interested in the proposed contract, and that all statements in said proposal for bid are true.

Project No._____

Location _____

_____

Signature

_____

Name and Title

_____

Date

(Signature should be notarized.)

BIDDER'S CERTIFICATION OF ELIGIBILITY

By the submission of this bid, the bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the bidder's firm, nor any of the bidder's subcontractors, is ineligible to:

(1) Be awarded contracts by any agency of the United States Government or HUD; or,

(2) Participate in HUD programs pursuant to 24 CFR part 24.

_____

(Name of Bidder)

_____

(Address)

BY: _____

Title: _____

NOTE: This certification is a material representation of fact upon which reliance is placed when making award. If it is later determined that the bidder knowingly rendered an erroneous certification, the contract may be terminated for default, and the bidder may be debarred or suspended from participation in HUD programs and other Federal programs.

CERTIFICATION OF GENERAL BIDDERS ON CDBG-DR CONSTRUCTION PROJECTS

I. CERTIFICATION REGARDING HEALTH AND SAFETY

The undersigned hereby certifies that he/she is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

II. CERTIFICATION REGARDING NON-COLLUSION AND DEBARMENT

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies that neither he/she nor any firm, corporation, partnership or association in which he/she has a substantial interest is designated as an ineligible contractor by the Comptroller General of the United States pursuant to Section 5.6 (b) of the Regulations of the Secretary of Labor, Part 5 (29 CFR, Part 5), or pursuant to Section 3 (a) of the Davis-Bacon Act, as amended (40 USC 276a). The undersigned further certifies that said undersigned is not presently debarred from doing public construction work in the State of Connecticut.

Date: _____

_____

Name of General Bidder

By _____

Signature

_____

Print name and Title

_____

Business Address

_____

Street Address City and State

OSHA-10 OSHA-10

CERTIFICATION OF SUB- BIDDERS (IF ANY) ON CDBG-DR CONSTRUCTION PROJECTS

I. CERTIFICATION REGARDING HEALTH AND SAFETY

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupation Safety and Health Administration that is at least ten hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F.

II. CERTIFICATION REGARDING NON-COLLUSION AND DEBARMENT

The undersigned further certifies under penalties of perjury that this subbid is in all responses bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies that neither he/she nor any firm, corporation, partnership or association in which he/she has a substantial interest is designated as an ineligible contractor by the Comptroller General of the United States pursuant to Section 5.6 (b) of the Regulations of the Secretary of Labor, Part 5 (29 CFR, Part 5), or pursuant to Section 3 (a) of the Davis-Bacon Act, as amended (40 USC 276a). The undersigned further certifies that said undersigned is not presently debarred from doing public construction work in the State of Connecticut.

Date _____

_____

Name of Sub-bidder

By _____

Signature

_____

Print Name and Title

_____

Business Name

_____

Street Address, City and State

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,
_____ _____as Principal,
and _____Surety, are hereby held and firmly bound unto
_____ as DOH in the penal sum of
_____ , for the payment of which, well and truly be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns. Signed this _____ day of _____, 2014.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted to
_____ a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the _____

_____

NOW, THEREFORE,

1. If said Bid shall be rejected, or in the alternate,
2. If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with the Bid) and shall furnish a bond for this faithful performance of said contract, and for the payment of all person performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any or all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time which the DOH may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____ (L.S)
Principal

_____
Surety

SEAL By: _____

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: THAT we,
_____, as

PRINCIPAL, and_____ , as SURETY,

are held firmly bound unto_____

_____hereinafter called the DOH, in the penal sum of_____

_____ ($_____), for the payment

of which sum we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally.

WHEREAS, Principal has entered into a certain Contract with DOH, dated _____, a copy of which is hereto attached and made a part hereof.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall in all respects fully perform the Contract and all duly authorized modifications thereof, during its original term and any extensions thereof that may be granted and during any guaranty period for which the Contract provides, and if the Principal shall fully satisfy all claims arising out of the prosecution of the work under the Contract and shall fully indemnify DOH for all expenses which it may incur by reason of such claims, including its attorney's fees and court costs, and if the Principal shall make full payment to all persons supplying labor, services, materials, or equipment in the prosecution of the work under the Contract, in default of which such persons shall have a direct right of action hereupon; and if the Principal shall pay or cause to be paid all sales and use taxes payable as a result of the performance of the Contract as well as payment of gasoline and special motor fuel taxes in the performance of the Contract and all motor vehicle fees required for commercial motor vehicles used in connection with the performance of the Contract, then this obligation shall be void; otherwise, it shall remain in full force and effect. No modification of the Contract or extension of the term thereof, nor any forbearance on the part of DOH shall in any way release the Principal or the Surety from liability hereunder. Notice to the Surety of any such modification, extension, or forbearance is hereby waived.

IN WITNESS WHEREOF, the aforesaid Principal and Surety have executed this instrument and affixed their seals hereto, this _____ day of _____.

_____ _____

Principal Surety

_____ _____

Name and Title

(Signatures must be notarized.)

(Power-of-Attorney for person signing for Surety Company must be attached to bond.)

The rate of premium on this bond is $_____ per thousand.

The total amount of premium charge is $_____.

(The above is to be filled in by Surety Company.)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the

_____ Secretary of the corporation

named as Principal in the foregoing bond; that _____, who signed the bond on behalf of the Principal, was then _____ of said corporation; that I know his/her signature thereto is genuine; and that said bond was fully signed, sealed, and attested for and in behalf of said corporation by authority of its governing body.

SUBCONTRACTOR IDENTIFICATION

(Provide additional forms for more subcontractors, as needed prior to execution.)

This form is a part of your bid package and must be submitted along with the itemized and formal bid forms at the time of the bid opening. Failure to submit a completed document could result in the disqualification of your bid.

Name of Subcontractor: _____

Address: _____
Trade: _____
Hourly Wage: _$_____ Full Contract Price: _$_____
Federal Tax# or SSN #: _____
Male Owned Business _____ Female Owned Business_____
Is he/she of Hispanic or Latino ethnicity? Yes_____ No_____
Race: (Please check one)
____White ____American Indian/Alaskan Native
____Black/African American ____Hasidic Jew
____Asian/Pacific American

Name of Subcontractor: _____
Address: _____
Trade: _____
Hourly Wage: _$_____ Full Contract Price: _$_____
Federal Tax# or SSN #: _____
Male Owned Business _____ Female Owned Business_____
Is he/she of Hispanic or Latino ethnicity? Yes_____ No_____
Race: (Please check one)
____White ____American Indian/Alaskan Native
____Black/African American ____Hasidic Jew
____Asian/Pacific American

Name of Subcontractor: _____
Address: _____
Trade: _____
Hourly Wage: _$_____ Full Contract Price: _$_____
Federal Tax# or SSN #: _____
Male Owned Business _____ Female Owned Business_____
Is he/she of Hispanic or Latino ethnicity? Yes_____ No_____
Race: (Please check one)
____White ____American Indian/Alaskan Native
____Black/African American ____Hasidic Jew
____Asian/Pacific American

_____ _____
Contractor's Signature Date

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246 (30 F R 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven calendar days after bid opening. No contract shall be awarded unless such report is submitted.

CERTIFICATION OF BIDDER

Name and address of Bidder (include zip code)

---

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
   ( ) YES ( ) NO

2. Compliance reports were required to be filed in connection with such contract or subcontract.
   ( ) YES ( ) NO

3. Bidder has filed all compliance reports due under applicable instructions, including SF.100.
   ( ) YES ( ) NO ( ) NOT REQUIRED

4. Have you ever seen or are you being considered for sanction due to violation of Executive Order 11246, as amended?
   ( ) YES ( ) NO

NAME AND TITLE OF SIGNER (Please type.)

_____ _____

SIGNATURE DATE

CERTIFICATION OF BIDDERS REGARDING SECTION 3 AND SEGREGATED FACILITIES

Project Name:

Project No:

Name of Prime Contractor:

The undersigned hereby certifies that:

1. Section 3 provisions are included in the Contract
2. A written Section 3 plan was prepared and submitted as part of the bid proceedings (if bid equals or exceeds $100,000.00)
3. No segregated facilities will be maintained.

_____

Name and Title of Signer (Print or Type)

_____ _____

Signature Date

CONTRACTOR

Section 3 Plan Format

_____ agrees to implement the following specific affirmative action steps directed at increasing the utilization of lower income residents and business within the _____.

A. To ascertain from the DOH the exact boundaries of the Section 3 covered project area and where advantageous, seek the assistance of local officials in preparing and implementing the affirmative action plans.
B. To attempt to recruit from within the city the necessary number of lower income residents through: local advertising media, signs placed at the proposed site for the project, and community organizations and public or private institutions operating within or serving the project area such as Service Employment and Redevelopment (SER), Opportunities Industrialization Center (OIC), Urban League, Concentrated Employment Program, Hometown Plan, or the U. S. Employment Service.
C. To maintain a list of all lower income residents who have applied either on their own or on referral from any source, and to employ such persons, if otherwise eligible and if a vacancy exists.
D. To insert this Section 3 plan in all bid documents, and to require all bidders on subcontracts to submit a Section 3 Affirmative Action Plan including utilization goals and the specific steps planned to accomplish these goals.
E. To insure that contracts which are typically let on a negotiated rather than a bid basis in areas other than Section 3 covered project areas, are also let on a negotiated basis, wherever feasible, when let in a Section 3 covered project area.
F. To formally contact unions, subcontractors and trade associations to secure their cooperation for this program.
G. To insure that all appropriated project area business concerns are notified or pending subcontractural opportunities
H. To maintain records, including copies of correspondence, memoranda, etc., that document all above affirmative action steps have been taken.
I. To appoint or recruit an executive official of the company or agency as Equal Opportunity Officer to coordinate the implementation of the Section 3 plan.
J. To list on Table A, information related to subcontracts to be awarded.
K. To list on Table B, all projected workforce needs for all phases of this project by occupation, trade, skill level and number of positions.

As officers and representatives of _____

We, the undersigned, have read and fully agree to this Affirmative Action Plan, and become a party to the full implementation of this program.

_____	_____	_____
Signature	Title	Date

Loans, grants, contracts and subsidies for less than $100,000.00 will be exempt.

Table A

Proposed Subcontracts Breakdown

For Period Covering _____, 20____ Through _____, 20____
(Duration of CDBG-DR OORR Assisted Project)

Column 1	*Column 2*	*Column3*	*Column 4*	*Column 5*
Type of Contract (Business of Profession)	Total Number of Contracts	Total Approximate Dollar Amount	Estimated Number of Contracts to Project Area Businesses*	Estimated Dollar Amount to Project Area Businesses*

*The Project Area is defined as the Town/City boundaries in which the assisted project resides.

_____
Company

_____ _____
Project Name/Residence Project Number

_____ _____
EEO Officer or Designee's Signature Date

Table B

Estimated Project Workforce Breakdown

Column 1	*Column 2*	*Column 3*	*Column 4*	*Column 5*
Job Category	Total Estimated Population	No. Positions Currently Occupied by Permanent Employees	No. Positions Not Currently Occupied	No. Positions to be filled with LIPAR*
Officers/Supervisors				
Professionals				
Technicians				
Housing Sales/Rental Management				
Office Clerical				
Service Workers				
Others				
TRADE:				
Journeymen				
Helpers				
Apprentices				
Maximum No. of Trainees				
Others				
TRADE:				
Journeymen				
Helpers				
Apprentices				
Maximum No. of Trainees				
Others				
TRADE:				
Journeymen				
Helpers				
Apprentices				
Maximum No. of Trainees				
Others				
Total				

**Lower Income Project Area Residents. Individuals residing within the project area whose family income does not exceed 80% of the area median income in the SMSA.*

_____

Company

Green Building Standards Checklist

HUD CPD Green Building Retrofit Checklist

The CPD Green Retrofit Checklist promotes energy efficiency and green building practices for residential retrofit projects. Grantees must follow the checklist in its entirety and apply all measures within the Checklist to the extent applicable to the particular building type being retrofitted. The phrase "when replacing" in the Checklist refers to the mandatory replacement with specified green improvements, products, and fixtures only when replacing those systems during the normal course of the retrofit.

WATER AND ENERGY CONSERVATION MEASURES

☐ **Water-Conserving Fixtures**
Install or retrofit water conserving fixtures in any unit and common facility, use the following specifications: Toilets-- 1.28 gpf; Urinals-- 0.5 gpf; Showerheads-- 2.0 gpm; Kitchen faucets-- 2.0 gpm; and Bathroom faucets-- 1.5gpm. [gpf = gallons per flush; gpm = gallons per minute]

☐ **ENERGY STAR Appliances**
Install ENERGY STAR-labeled clothes washers, dishwashers, and refrigerators, if these appliance categories are provided in units or common areas.

☐ **Air Sealing: Building Envelope**
Seal all accessible gaps and penetrations in the building envelope. If applicable, use low VOC caulk or foam.

☐ **Insulation: Attic** (if applicable to building type)
For attics with closed floor cavities directly above the conditioned space, blow in insulation per manufacturer's specifications to a minimum density of 3.5 Lbs. per cubic foot (CF). For attics with open floor cavities directly above the conditioned space, install insulation to meet or exceed IECC levels.

☐ **Insulation: Flooring** (if applicable to building type)
Install ≥ R-19 insulation in contact with the subfloor in buildings with floor systems over vented crawl spaces. Install a 6-mil vapor barrier in contact with 100% of the floor of the crawl space (the ground), overlapping seams and piers at least 6 inches.

☐ **Duct Sealing** (if applicable to building type)
In buildings with ducted forced-air heating and cooling systems, seal all penetrations of the air distribution system to reduce leakage in order to meet or exceed ENERGY STAR for Homes' duct leakage standard.

☐ **Air Barrier System**
Ensure continuous unbroken air barrier surrounding all conditioned space and dwelling units. Align insulation completely and continuously with the air barrier.

☐ **Radiant Barriers: Roofing**
When replacing or making a substantial repair to the roof, use radiant barrier sheathing or other radiant barrier material; if economically feasible, also use cool roofing materials.

☐ **Windows**

When replacing windows, install geographically appropriate ENERGY STAR rated windows.

☐ **Sizing of Heating and Cooling Equipment**
When replacing, size heating and cooling equipment in accordance with the Air Conditioning Contractors of America (ACCA) Manuals, Parts J and S, or 2012 ASHRAE Handbook--HVAC Systems and Equipment or most recent edition.

☐ **Domestic Hot Water Systems**
When replacing domestic water heating system(s), ensure the system(s) meet or exceed the efficiency requirements of ENERGY STAR for Homes' Reference Design. Insulate pipes by at least R-4.

☐ **Efficient Lighting: Interior Units**
Follow the guidance appropriate for the project type: install the ENERGY STAR Advanced Lighting Package (ALP); ***OR*** follow the ENERGY STAR MFHR program guidelines, which require that 80% of installed lighting fixtures within units must be ENERGY STAR-qualified or have ENERGY STAR-qualified lamps installed; ***OR*** when replacing, new fixtures and ceiling fans must meet or exceed ENERGY STAR efficiency levels.

☐ **Efficient Lighting: Common Areas and Emergency Lighting** (if applicable to building type)
Follow the guidance appropriate for the project type: use ENERGY STAR-labeled fixtures or any equivalent high-performance lighting fixtures and bulbs in all common areas; ***OR*** when replacing, new common space and emergency lighting fixtures must meet or exceed ENERGY STAR efficiency levels. For emergency lighting, if installing new or replacing, all exist signs shall meet or exceed LED efficiency levels and conform to local building codes.

☐ **Efficient Lighting: Exterior**
Follow the guidance appropriate for the project type: install ENERGY STAR-qualified fixtures or LEDs with a minimum efficacy of 45 lumens/watt; ***OR*** follow the ENERGY STAR MFHR program guidelines, which require that 80% of outdoor lighting fixtures must be ENERGY STAR-qualified or have ENERGY STAR-qualified lamps installed; ***OR*** when replacing, install ENERGY STAR compact fluorescents or LEDs with a minimum efficacy of 45 lumens/watt.

INDOOR AIR QUALITY

☐ **Air Ventilation: Single Family and Multifamily** (three stories or fewer)
Install an in-unit ventilation system capable of providing adequate fresh air per ASHRAE 62.2 requirements.

☐ **Air Ventilation: Multifamily** (four stories or more)
Install apartment ventilation systems that satisfy ASHRAE 62.2 for all dwelling units and common area ventilation systems that satisfy ASHRAE 62.1 requirements. If economically feasible, consider heat/energy recovery for 100% of corridor air supply.

☐ **Composite Wood Products that Emit Low/No Formaldehyde**
Composite wood products must be certified compliant with California 93120. If using a composite wood product that does not comply with California 93120, all exposed edges and sides must be sealed with low-VOC sealants.

☐ **Environmentally Preferable Flooring**
When replacing flooring, use environmentally preferable flooring, including the FloorScore certification. Any carpet products used must meet the Carpet and Rug Institute's Green Label or Green Label Plus certification for carpet, pad, and carpet adhesives.

☐ **Low/No VOC Paints and Primers**
All interior paints and primers must be less than or equal to the following VOC levels: Flats--50 g/L; Non-flats--50 g/L; Floor--100 g/L. [g/L = grams per liter; levels are based on a combination of the Master Painters Institute (MPI) and GreenSeal standards.]

☐ **Low/No VOC Adhesives and Sealants**
All adhesives must comply with Rule 1168 of the South Coast Air Quality Management District. All caulks and sealants must comply with regulation 8, rule 51, of the Bay Area Air Quality Management District.

☐ **Clothes Dryer Exhaust**
Vent clothes dryers directly to the outdoors using rigid-type duct work.

☐ **Mold Inspection and Remediation**
Inspect the interior and exterior of the building for evidence of moisture problems. Document the extent and location of the problems, and implement the proposed repairs according to the Moisture section of the EPA Healthy Indoor Environment Protocols for Home Energy Upgrades.

☐ **Combustion Equipment**
When installing new space and water-heating equipment, specify power-vented or direct vent combustion equipment.

☐ **Mold Prevention: Water Heaters**
Provide adequate drainage for water heaters that includes drains or catch pans with drains piped to the exterior of the dwelling.

☐ **Mold Prevention: Surfaces**
When replacing or repairing bathrooms, kitchens, and laundry rooms, use materials that have durable, cleanable surfaces.

☐ **Mold Prevention: Tub and Shower Enclosures**
When replacing or repairing tub and/or shower enclosures, use non-paper-faced backing materials such as cement board, fiber cement board, or equivalent in bathrooms.

☐ **Integrated Pest Management**
Seal all wall, floor, and joint penetrations with low-VOC caulking or other appropriate sealing methods to prevent pest entry. [If applicable, provide training to multifamily buildings staff.]

☐ **Lead-Safe Work Practices**
For properties built before 1978, if the project will involve disturbing painted surfaces or cleaning up lead contaminated dust or soil, use certified renovation or lead abatement contractors and workers using lead-safe work practices and clearance examinations consistent with the more stringent of EPA's Renovation, Repair, and Painting Rule and HUD's Lead Safe Housing Rule.

☐ **Radon Testing and Mitigation** (if applicable based on building location)

For buildings in EPA Radon Zone 1 or 2, test for radon using the current edition of American Association of Radon Scientists and Technologists (AARST)'s Protocols for Radon Measurement in Homes Standard for Single-Family Housing or Duplexes, or AARST's Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings. To install radon mitigation systems in buildings with radon level of 4 pCi/L or more, use ASTM E 2121 for single-family housing or duplexes, or AARST's Radon Mitigation Standards for Multifamily Buildings. For new construction, use AARST's Reducing Radon in New Construction of 1 & 2 Family Dwellings and Townhouses, or ASTM E 1465.

Section 2: General Conditions for Construction Contracts Based on HUD form 5370

Applicability. This form is applicable to any construction/development contract greater than $100,000.

This form includes those clauses required by OMB's common rule on grantee procurement, implemented at HUD in 24 CFR 85.36, and those requirements set forth in Section 3 of the Housing and Urban Development Act of 1968 and its amendment by the Housing and Community Development Act of 1992, implemented by HUD at 24 CFR Part 135.

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1. Definitions

(a) "Architect" means the person or other entity engaged by DOH to perform architectural, engineering, design, and other services related to the work as provided for in the contract. When DOH uses an engineer to act in this capacity, the terms "architect" and "engineer" shall be synonymous. The Architect shall serve as a technical representative of the Contracting Officer. The Architect's authority is as set forth elsewhere in this contract.

(b) "Contract" means the contract entered into between DOH and the Contractor. It includes the forms of Bid, the Bid Bond, the Performance and Payment Bond or Bonds or other assurance of completion, the Certifications, Representations, and Other Statements of Bidders (form HUD-5370), these General Conditions of the Contract for Construction (form HUD-5370), the applicable wage rate determinations from the U.S. Department of Labor (when applicable), any special conditions included elsewhere in the contract, the specifications, and drawings. It includes all formal changes to any of those documents by addendum, change order, or other modification.

(c) "Contracting Officer" means the person delegated the au- thority by DOH to enter into, administer, and/or terminate this contract and designated as such in writing to the Contractor. The term includes any successor Contracting Officer and any duly authorized representative of the Contracting Officer also designated in writing. The Contracting Officer shall be deemed the authorized agent of DOH in all dealings with the Contractor.

(d) "Contractor" means the person or other entity entering into the contract with DOH to perform all of the work required under the contract.

(e) "Drawings" means the drawings enumerated in the schedule of drawings contained in the Specifications and as described in the contract clause entitled Specifications and Drawings for Construction herein.

(f) "DOH" means the State Department of Housing including the Commissioner, or any other person designated to act on its behalf.

(g) "HUD" means the United States of America acting through the Department of Housing and Urban Development including the Secretary, or any other person designated to act on its behalf. HUD has agreed, subject to the provisions of an Annual Contributions Contract (ACC), to provide financial assistance to DOH, which includes assistance in financing the work to be performed under this contract. As defined elsewhere in these General Conditions or the contract documents, the determination of HUD may be required to authorize changes in the work or for release of funds to DOH for payment to the Contractor. Notwithstanding HUD's role, nothing in this contract shall be construed to create any contractual relationship between the Contractor and HUD.

(h) "Grantee" means the State of Connecticut Department of Housing (DOH).

(i) "Homeowner" means the owner(s) of the real property for which project is taking place and is a party to the contract.

(j) "Project" means the entire project, whether construction or rehabilitation, the work for which is provided for in whole or in part under this contract.

(k) "Specifications" means the written description of the technical requirements for construction and includes the criteria and tests for determining whether the requirements are met.

(l) "Work" means materials, workmanship, and manufacture and fabrication of components.

2. Contractor's Responsibility for Work

(a) The Contractor shall furnish all necessary labor, materials, tools, equipment, and transportation necessary for performance of the work. The Contractor shall also furnish all necessary water, heat, light, and power not made available to the Contractor by the Homeowner pursuant to the clause entitled Access to the Premises Section 5.3 of Homeowner Rehabilitation Agreement herein.

(b) The Contractor shall perform on the site, and with its own organization, work equivalent to at least 15 percent of the total amount of work to be performed under the order. This percentage may be reduced by a supplemental agreement to this order if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of DOH.

(c) At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the work site a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.

(d) The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall hold and save DOH, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.

(e) The Contractor shall lay out the work from base lines and bench marks indicated on the drawings and be responsible for all lines, levels, and measurements of all work executed under the contract. The Contractor shall verify the figures before laying out the work and will be held responsible for any error resulting from its failure to do so.

(f) The Contractor shall confine all operations (including storage of materials) on Homeowner premises to areas authorized or approved by the Contracting Officer.

(g) The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. After completing the work and before final inspection, the Contractor shall (1) remove from the premises all scaffolding, equipment, tools, and materials (including rejected materials) that are not the property of the Homeowner and all rubbish caused by its work; (2) leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer; (3) perform all specified tests; and, (4) deliver the installation in complete and operating condition.

(h) The Contractor's responsibility will terminate when all work has been completed, the final inspection made, and the work accepted by the Contracting Officer. The Contractor will then be released from further obligation except as required by the warranties specified elsewhere in the contract.

3. Architect's Duties, Responsibilities, and Authority

(a) The Architect for this contract, and any successor, shall be designated in writing by the Contracting Officer.

(b) The Architect shall serve as the Contracting Officer's technical representative with respect to architectural, engineering, and design matters related to the work performed under the contract. The Architect may provide direction on contract performance. Such direction shall be within the scope of the contract and may not be of a nature which: (1) institutes additional work outside the scope of the contract; (2) constitutes a change as defined in the Changes clause herein; (3) causes an increase or decrease in the cost of the contract; (4) alters the Construction Progress Schedule; or (5) changes any of the other express terms or conditions of the contract.

(c) The Architect's duties and responsibilities may include but shall not be limited to:

(1) Making periodic visits to the work site, and on the basis of his/her on-site inspections, issuing written reports to DOH which shall include all observed deficiencies. The Architect shall file a copy of the report with the Contractor's designated representative at the site;

(2) Making modifications in drawings and technical specifications and assisting the Contracting Officer in the preparation of change orders and other contract modifications for issuance by the Contracting Officer;

(3) Reviewing and making recommendations with respect to - (i) the Contractor's construction progress schedules; (ii) the Contractor's shop and detailed drawings; (iii) the machinery, mechanical and other equipment and materials or other articles proposed for use by the Contractor; and, (iv) the Contractor's price breakdown and progress payment estimates; and,

(4) Assisting in inspections, signing Certificates of Completion, and making recommendations with respect to acceptance of work completed under the contract.

4. Other Contracts

DOH may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully

cooperate with the other contractors and with DOH employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by DOH employees

Construction Requirements

5. Pre-construction Conference and Notice to Proceed

(a) Upon scheduling of the contract execution, and prior to the commencement of work, the Contractor shall attend a preconstruction conference with representatives of DOH, its Architect, and other interested parties convened by DOH. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract. DOH or its Architect will provide the Contractor with the date, time, and place of the conference.

(b) The contractor shall begin work upon receipt of a written Notice to Proceed from the Contracting Officer or designee. The Contractor shall not begin work prior to receiving such notice. Such notice shall not be prior to the homeowners three (3) day Notice of Cancellation period.

6. Site Investigation and Conditions Affecting the Work

(a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to, (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads;(3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself 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, including all exploratory work done by DOH, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to DOH.

(b) DOH assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by DOH. Nor does DOH assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in the contract.

7. Differing Site Conditions

(a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

(b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, the Contractor shall file a claim in writing to DOH within ten days after receipt of such instructions and, in any event, before proceeding with the work. An equitable adjustment in the contract price, the delivery schedule, or both shall be made under this clause and the contract modified in writing accordingly.

(c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the

written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.

(d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

8. Specifications and Drawings for Construction

(a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

(b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.

(c) Where "as shown", "as indicated", "as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place" that is "furnished and installed".

(d) "Shop drawings" means drawings, submitted to DOH by the Contractor, subcontractor, or any lower tier subcontractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials of equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. DOH may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate DOH's reasons therefore. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.

(f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Architect approves any such variation and the Contracting Officer concurs, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.

(g) It shall be the responsibility of the Contractor to make timely requests of DOH for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which shall be required in the planning and production of the work. Such requests may be submitted as the need arises, but each such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

(h) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by DOH and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this contract, shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.

(i) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by subcontractors are submitted to the Contracting Officer.

9. Material and Workmanship

(a) All equipment, material, and articles furnished under this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the contract to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of, and as approved by the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.

(b) Approval of equipment and materials.

(1) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the machinery and mechanical and other equipment. When required by this contract or by the Contracting Officer, the Contractor shall also obtain the Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the Contractor shall provide full information concerning the material or articles. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

(2) When required by the specifications or the Contracting Officer, the Contractor shall submit appropriately marked samples (and

certificates related to them) for approval at the Contractor's expense, with all shipping charges prepaid. The Contractor shall label, or otherwise properly mark on the container, the material or product represented, its place of origin, the name of the producer, the Contractor's name, and the identification of the construction project for which the material or product is intended to be used.

(3) Certificates shall be submitted in triplicate, describing each sample submitted for approval and certifying that the material, equipment or accessory complies with contract requirements. The certificates shall include the name and brand of the product, name of manufacturer, and the location where produced.

(4) Approval of a sample shall not constitute a waiver of DOH right to demand full compliance with contract requirements. Materials, equipment and accessories may be rejected for cause even though samples have been approved.

(5) Wherever materials are required to comply with recognized standards or specifications, such specifications shall be accepted as establishing the technical qualities and testing methods, but shall not govern the number of tests required to be made nor modify other contract requirements. The Contracting Officer may require laboratory test reports on items submitted for approval or may approve materials on the basis of data submitted in certificates with samples. Check tests will be made on materials delivered for use only as frequently as the Contracting Officer determines necessary to insure compliance of materials with the specifications. The Contractor will assume all costs of retesting materials which fail to meet contract requirements and/or testing materials offered in substitution for those found deficient.

(6) After approval, samples will be kept in the Project office until completion of work. They may be built into the work after a substantial quantity of the materials they represent has been built in and accepted.

(c) Requirements concerning lead-based paint. The Contractor shall comply with the requirements concerning lead-based paint contained in the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846) as implemented by 24 CFR Part 35, HUD's Lead Safe Housing Rule and EPA's Repair Renovation, and Painting Rule at 40 CFR.80 Subpart E.

10. Permits and Codes

The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. Notwithstanding the requirement of the Contractor to comply with the drawings and specifications in the contract, all work installed shall comply with all applicable codes and regulations as amended by any waivers. Before installing the work, the Contractor shall examine the drawings and the specifications for compliance with applicable codes and regulations bearing on the work and shall immediately report any discrepancy it may discover to the Contracting Officer. Where the requirements of the drawings and specifications fail to comply with the applicable code or regulation, the Contracting Officer shall modify the contract by change order pursuant to the clause entitled Changes herein to conform to the code or regulation.

(a) The Contractor shall secure and pay for all permits, fees, and licenses necessary for the proper execution and completion of the work. Where DOH can arrange for the issuance of all or part of these permits, fees and licenses, without cost to the Contractor, the contract amount shall be reduced accordingly.

11. Health, Safety, and Accident Prevention

(a) In performing this contract, the Contractor shall:

(1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;

(2) Protect the lives, health, and safety of other persons;

(3) Prevent damage to property, materials, supplies, and equipment; and,

(4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:

(1) Comply with regulations and standards issued by the Secretary of Labor at 29 CFR Part 1926. Failure to comply may result in imposition of

sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96), 40 U.S.C. 3701 et seq.; and

(2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.

(c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 CFR Part 1904.

(d) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.

(e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as DOH, the Secretary of Housing and Urban Development, or the Secretary of Labor shall direct as a means of enforcing such provisions.

12. Temporary Heating

The Contractor shall provide and pay for temporary heating, covering, and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work, and to facilitate the completion of the work. Any permanent heating equipment used shall be turned over to the Homeowner in the condition and at the time required by the specifications.

13. Availability and Use of Utility Services

(a) The Homeowner shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The Contractor shall carefully conserve any utilities furnished without charge.

(b) The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines. Before final acceptance of the work by DOH, the Contractor

shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

14. Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements

(a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract, and which do not unreasonably interfere with the work required under this contract.

(b) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this contract, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

(c) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.

(d) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.

(e) Any equipment temporarily removed as a result of work under this contract shall be protected, cleaned, and replaced in the same condition as at the time of award of this contract.

(f) New work which connects to existing work shall correspond in all respects with that to which it connects and/or be similar to existing work unless otherwise required by the specifications.

(g) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the plans or specifications.

(h) If the removal of the existing work exposes discolored or unfinished surfaces, or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels when brought together by the removal of intervening work, unless such refinishing or reconstruction is specified in the plans or specifications.

(i) The Contractor shall give all required notices to any adjoining or adjacent property owner or other party before the commencement of any work.

(j) The Contractor shall indemnify and save harmless DOH from any damages on account of settlement or the loss of lateral support of adjoining property, any damages from changes in topography affecting drainage, and from all loss or expense and all damages for which DOH may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

(k) The Contractor shall repair any damage to vegetation, structures, equipment, utilities, or improvements, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

15. Temporary Buildings and Transportation of Materials

(a) Temporary buildings (e.g., storage sheds, shops, offices, sanitary facilities) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to DOH. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting

Officer, the buildings and utilities may be abandoned and need not be removed.

(b) The Contractor shall, as directed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

16. Clean Air and Water

The contactor shall comply with the Clean Air Act, as amended, 42 USC 7401 et seq., the Federal Water Pollution Control Water Act, as amended, 33 U.S.C. 1251 et seq., and standards issued pursuant thereto in the facilities in which this contract is to be performed.

17. Energy Efficiency

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163) for the State in which the work under the contract is performed.

18. Green Building Standards

DOH will require that all replacement of residential properties, including reconstruction and new construction of substantially damaged properties meet the Enterprise Green Communities Standard.

For those buildings that are non-substantially damaged, DOH will require that they be rehabilitated following the HUD CPD Green Buildings Retrofit Checklist. The requirement for rehabilitation is that to the extent possible strive to meet the checklist standard where there are Energy Star, Water Sense and Federal Management Program-designed products available.

DOH strongly encourages the use of green infrastructure techniques to mitigate against storm water run-off and flooding and incorporate EPA's Green Infrastructure resources to the extent feasible.

19. Inspection and Acceptance of Construction

(a) Definitions. As used in this clause -

(1) "Acceptance" means the act of an authorized representative of DOH by which DOH approves of the work performed under this contract. Acceptance may be partial or complete.

"Inspection" means examining and testing the work performed under the contract (including, when appropriate, raw materials, equipment, components, and intermediate assemblies) to determine whether it conforms to contract requirements.

(1) "Testing" means that element of inspection that determines the properties or elements, including functional operation of materials, equipment, or their components, by the application of established scientific principles and procedures.

(b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. All work is subject to DOH inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.

(c) DOH inspections and tests are for the sole benefit of DOH and do not: (1) relieve the Contractor of responsibility for providing adequate quality control measures; (2) relieve the Contractor of responsibility for loss or damage of the material before acceptance; (3) constitute or imply acceptance; or, (4) affect the continuing rights of DOH after acceptance of the completed work under paragraph (j) below.

(d) The presence or absence of DOH inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specifications without the Contracting Officer's written authorization. All instructions and approvals with respect to the work shall be given to the Contractor by the Contracting Officer.

(e) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. DOH may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. DOH shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

(f) DOH may conduct routine inspections of the construction site on a daily basis.

(g) The Contractor shall, without charge, replace or correct work found by DOH not to conform to contract requirements, unless DOH decides that it is in its interest to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(h) If the Contractor does not promptly replace or correct rejected work, DOH may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor, or (2) terminate for default the Contractor's right to proceed.

(i) If any work requiring inspection is covered up without ap- proval of DOH, it must, if requested by the Contracting Officer, be uncovered at the expense of the Contractor. If at any time before final acceptance of the entire work, DOH considers it necessary or advisable, to examine work already completed by removing or tearing it out, the Contractor, shall on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray all the expenses of the examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the Contracting Officer shall make an equitable adjustment to cover the cost of the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.

(j) The Contractor shall notify the Contracting Officer, in writing, as to the date when in its opinion all or a designated portion of the work will be substantially completed and ready for inspection. If the Architect determines that the state of preparedness is as represented, DOH will promptly arrange for the inspection. Unless otherwise specified in the contract, DOH shall accept, as soon as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines and designates can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or DOH's right under any warranty or guarantee.

20. Use and Possession Prior to Completion

(a) If applicable, the Homeowner may have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the Homeowner intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The Homeowner's possession or use shall not be deemed an acceptance of any work under the contract.

(b) While the Homeowner has such possession or use, the Contractor shall be relieved of the responsibility for (1) the loss of or damage to the work resulting from the Homeowner's possession or use, notwithstanding the terms of the clause entitled Permits and Codes herein; (2) all maintenance costs on the areas occupied; and, (3) furnishing heat, light, power, and water used in the areas occupied without proper renuneration therefore. If prior possession or use by the Homeowner delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

21. Warranty of Title

The Contractor warrants good title to all materials, supplies, and equipment incorporated in the work and agrees to deliver the premises together with all improvements thereon free from any claims, liens or charges, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien upon the premises or anything appurtenant thereto.

22. Warranty of Construction

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (j) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of **one year** from the date of final acceptance of the work. If the Homeowner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of (one year unless otherwise indicated) from the date that the Homeowner takes possession.

(b) The Contractor shall remedy, at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to Homeowner-owned or controlled real or personal property when the damage is the result of—

(1) The Contractor's failure to conform to contract require- ments; or

(2) Any defects of equipment, material, workmanship or design furnished by the Contractor.

(c) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for (one year unless otherwise indicated) from the date of repair or replacement.

(d) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect or damage.

(e) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, DOH shall have the right to replace, repair or otherwise remedy the failure, defect, or damage at the Contractor's expense.

(f) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:

(1) Obtain all warranties that would be given in normal commercial practice;

(2) Require all warranties to be executed in writing, for the benefit of the homeowner; and,

(3) Enforce all warranties for the benefit of the homeowner.

(g) In the event the Contractor's warranty under paragraph(a) of this clause has expired, the homeowner may bring suit at its own expense to enforce a subcontractor's, manufacturer's or supplier's warranty.

(h) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defect of material or design furnished by the homeowner nor for the repair of any damage that results from any defect in DOH furnished material or design.

(i) Notwithstanding any provisions herein to the contrary, the establishment of the time periods in paragraphs (a) and (c) above relate only to the specific obligation of the Contractor to correct the work, and have no relationship to the time within which its obligation to comply with the contract may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to its obligation other than specifically to correct the work.

(j) This warranty shall not limit DOH's/Homeowner's rights under the Inspection and Acceptance of Construction clause of this contract with respect to latent defects, gross mistakes or fraud.

Administrative Requirements

23. Contract Period

The Contractor shall complete all work required under this contract within **120** calendar days of the effective date of the contract, or within the time schedule established in the notice to proceed issued by the Contracting Officer.

24. Order of Provisions

In the event of a conflict between these General Conditions and the Specifications, the General Conditions shall prevail. In the event of a conflict between the contract and any applicable state or local law or regulation, the state or local law or regulation shall prevail; provided that such state or local law or regulation does not conflict with, or is less restrictive than applicable federal law, regulation, or Executive Order. In the event of such a conflict, applicable federal law, regulation, and Executive Order shall prevail.

25. Payments

(a) DOH/Homeowner shall pay the Contractor the price as provided in this contract.

(b) DOH shall make progress payments approximately every 30 days as the work proceeds, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer. DOH may, subject to written determination and approval of the Contracting Officer, make more frequent payments to contractors which are qualified small businesses.

(c) Before the first progress payment under this contract, the Contractor shall furnish, in such detail as requested by the Contracting Officer, a breakdown of the total contract price showing the amount included therein for each principal category of the work, which shall substantiate the payment amount requested in order to provide a basis for determining progress payments. The breakdown shall be approved by the Contracting Officer and must be acceptable to DOH. The values and quantities employed in making up this breakdown are for determining the amount of progress payments and shall not be construed as a basis for additions to or deductions from the contract price. The Contractor shall prorate its overhead and profit over the construction period of the contract.

(d) The Contractor shall submit, on AIA forms provided by DOH, periodic estimates showing the value of the work performed during each period based upon the approved breakdown of the contract price. Such estimates shall be submitted not later than **14** days in advance of the date set for payment and are subject to correction and revision as required. The estimates must be approved by the Contracting Officer with the concurrence of the Architect prior to payment. If the contract covers more than one project, the Contractor shall furnish a separate progress payment estimate for each.

(e) Along with each request for progress payments and the required estimates, the Contractor shall furnish lien waivers and labor releases as good and sufficient evidence that the premises are free from all liens, damages, and anything chargeable to said contractor.

(f) Except as otherwise provided in State law, DOH shall retain five (5) percent of the amount of progress payments until completion and acceptance of all work under the contract; except, that if upon completion of 50 percent of the work, the Contracting Officer, after consulting with the Architect, determines that the Contractor's performance and progress are satisfactory, DOH may make the remaining payments in full for the work subsequently completed. If the Contracting Officer subsequently determines that the Contractor's performance and progress are unsatisfactory, DOH shall reinstate the five (5) percent retainage until such time as the Contracting Officer determines that performance and progress are satisfactory. Retainage will be released 90 days after project completion.

(g) The Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration when computing progress payments. Material delivered to the Contractor at locations other than the site may also be taken into consideration if the Contractor furnishes satisfactory evidence that (1) it has acquired title to such material; (2) the material is properly stored in a bonded warehouse, storage yard, or similar suitable place as may be approved by the Contracting Officer; (3) the material is insured to cover its full value; and (4) the material will be used to perform this contract. Before any progress payment which includes delivered material is made, the Contractor shall furnish such documentation as the Contracting Officer may require to assure the protection of DOH's/Homeowner's interest in such materials. The Contractor shall remain responsible for such

stored material notwithstanding the transfer of title to the Homeowner.

(h) All material and work covered by progress payments made shall, at the time of payment become the sole property of the Homeowner, but this shall not be construed as (1) relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or, (2) waiving the right of DOH/Homeowner to require the fulfillment of all of the terms of the contract. In the event the work of the Contractor has been damaged by other contractors or persons other than employees of DOH in the course of their employment, the Contractor shall restore such damaged work without cost to DOH/Homeowner and to seek redress for its damage only from those who directly caused it.

(i) DOH shall make the final payment due the Contractor under this contract after (1) completion and final acceptance of all work; and (2) presentation of release of all claims against DOH/Homeowner arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. Each such exception shall embrace no more than one claim, the basis and scope of which shall be clearly defined. The amounts for such excepted claims shall not be included in the request for final payment. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned.

(j) Prior to making any payment, the Contracting Officer may require the Contractor to furnish receipts or other evidence of payment from all persons performing work and supplying material to the Contractor, if the Contracting Officer determines such evidence is necessary to substantiate claimed costs.

(k) DOH shall not; (1) determine or adjust any claims for payment or disputes arising there under between the Contractor and its subcontractors or material suppliers; or, (2) withhold any moneys for the protection of the subcontractors or material suppliers. The failure or refusal of DOH to withhold moneys from the Contractor shall in nowise impair the obligations of any surety or sureties under any bonds furnished under this contract.

26. Contract Modifications

(a) Only the Contracting Officer has authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.

(b) The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative matters which do not change the rights or responsibilities of the parties (e.g., change in DOH/homeowner's address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.

(c) When a proposed modification requires the approval of DOH prior to its issuance (e.g., a change order that exceeds DOH's approved threshold), such modification shall not be effective until the required approval is received by DOH.

27. Changes

(a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:

(1) In the specifications (including drawings and designs);

(2) In the method or manner of performance of the work;

(3) Directing the acceleration in the performance of the work.

(b) Any other written order or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances and source of the order and (2) that the Contractor regards the order as a change order.

(c) Except as provided in this clause, no order,

statement or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for a adjustment based on defective specifications, no proposal for any change under paragraph (b) above shall be allowed for any costs incurred more than 20 days (5 days for oral orders) before the Contractor gives written notice as required. In the case of defective specifications for which DOH is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.

(e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause, or (2) the furnishing of a written notice under paragraph(b) of this clause, by submitting a written statement describing the general nature and the amount of the proposal. If the facts justify it, the Contracting Officer may extend the period for submission. The proposal may be included in the notice required under paragraph (b) above. No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

(f) The Contractor's written proposal for equitable adjustment shall be submitted in the form of a lump sum proposal supported with an itemized breakdown of all increases and decreases in the contract in at least the following details:

(1) Direct Costs. Materials (list individual items, the quantity and unit cost of each, and the aggregate cost); Transportation and delivery costs associated with materials; Labor breakdowns by hours or unit costs (identified with specific work to be performed); Construction equipment exclusively necessary for the change; Costs of preparation and/ or revision to shop drawings resulting from the change; Worker's Compensation and Public Liability Insurance; Employment taxes under FICA and FUTA; and, Bond Costs when size of change warrants revision.

(2) Indirect Costs. Indirect costs may include overhead, general and administrative expenses, and fringe benefits not normally treated as direct costs.

(3) Profit. The amount of profit shall be negotiated and may vary according to the nature, extent, and complexity of the work required by the change.

The allowability of the direct and indirect costs shall be determined in accordance with the Contract Cost Principles and Procedures for Commercial Firms in Part 31 of the Federal Acquisition Regulation (48 CFR 1-31), as implemented by HUD Handbook 2210.18, in effect on the date of this contract. The Contractor shall not be allowed a profit on the profit received by any subcontractor. Equitable adjustments for deleted work shall include a credit for profit and may include a credit for indirect costs. On proposals covering both increases and decreases in the amount of the contract, the application of indirect costs and profit shall be on the net- change in direct costs for the Contractor or subcontractor performing the work

(g) The Contractor shall include in the proposal its request for time extension (if any), and shall include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the contract in its entirety.

(h) The Contracting Officer shall act on proposals within 30 days after their receipt, or notify the Contractor of the date when such action will be taken.

(i) Failure to reach an agreement on any proposal shall be a dispute under the clause entitled Disputes herein. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.

(j) Except in an emergency endangering life or property, no change shall be made by the Contractor without a prior order from the Contracting Officer.

28. Suspension of Work

(a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work of this contract for the period of

time that the Contracting Officer determines appropriate for the convenience of DOH/Homeowner.

If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified (or within a reasonable time if not specified) in this contract an adjustment may be made for any increase in the cost of performance of the contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor or for which any equitable adjustment is provided for or excluded under any other provision of this contract.

(b) A claim under this clause shall not be allowed without prior written approval of the Contracting Officer.

29. Disputes

(a) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the contract, unlike a claim relating to the contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.

(b) Except for disputes arising under the clauses entitled Labor Standards - Davis Bacon and Related Acts, herein, all disputes arising under or relating to this contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this clause.

(c) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision.

(d) A claim by the Homeowner against the Contractor shall be subject to a written decision by the Contracting Officer.

(e) The Contracting Officer shall, within 60 (unless otherwise indicated) days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.

(f) The Contracting Officer's decision shall be final unless the Contractor (1) appeals in writing to a higher level in DOH in accordance with DOH's policy and procedures, (2) refers the appeal to an independent mediator or arbitrator, or (3) files suit in a court of competent jurisdiction. Such appeal must be made within (30 unless otherwise indicated) days after receipt of the Contracting Officer's decision.

(g) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

30. Default

(a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with the diligence that will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within this time, the Contracting Officer may, by written notice to the Contractor, terminate the right to proceed with the work (or separable part of the work) that has been delayed. In this event, DOH may take over the work and complete it, by contract or otherwise, and may take possession of and use any materials, equipment, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to DOH/Homeowner resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased

costs incurred by DOH/Homeowner in completing the work.

(b) The Contractor's right to proceed shall not be terminated or the Contractor charged with damages under this clause if—

(1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (i) acts of God, or of the public enemy, (ii) acts of DOH or other governmental entity in either its sovereign or contractual capacity, (iii) acts of another contractor in the performance of a contract with DOH, (iv) fires, (v) floods, (vi) epidemics, (vii) quarantine restrictions, (viii) strikes,

(ix) freight embargoes, (x) unusually severe weather, or (xi) delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and

(2) The Contractor, within days (5 days unless otherwise indicated) from the beginning of such delay (unless extended by the Contracting Officer) notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, time for completing the work shall be extended by written modification to the contract. The findings of the Contracting Officer shall be reduced to a written decision which shall be subject to the provisions of the Disputes clause of this contract.

(b) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been for convenience of DOH.

31. Liquidated Damages

(a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, as specified in the clause entitled Default of this contract, the Contractor may pay to DOH as liquidated damages, the sum of $100.00 for each day of delay. If different completion dates are specified in the contract for separate parts or stages of the work, the amount of liquidated damages shall be assessed on those parts or stages which are delayed. To the extent that the Contractor's delay or nonperformance is excused under another clause in this contract, liquidated damages shall not be due DOH. The Contractor remains liable for damages caused other than by delay.

(b) If DOH terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned DOH in completing the work.

(c) If DOH does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

32. Termination for Convenience

(a) The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of DOH/Homeowner. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective.

(b) If the performance of the work is terminated, either in whole or in part, DOH/Homeowner shall be liable to the Contractor for reasonable and proper costs resulting from such termination upon the receipt by DOH of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor; (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by DOH to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and protecting the work already performed until DOH or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of legal and accounting services reasonably necessary to prepare and present the termination claim to DOH/Homeowner; and (5) an amount constituting a reasonable profit on the value of the work performed by the Contractor.

(c) The Contracting Officer will act on the Contractor's claim within days (60 days unless otherwise indicated) of receipt of the Contractor's claim.

(d) Any disputes with regard to this clause are expressly made subject to the provisions of the Disputes clause of this contract.

33. Assignment of Contract

The Contractor shall not assign or transfer any interest in this contract; except that claims for monies due or to become due from DOH/Homeowner under the contract may be assigned to a bank, trust company, or other financial institution. Such assignments of claims shall only be made with the written concurrence of the Contracting Officer. If the Contractor is a partnership, this contract shall inure to the benefit of the surviving or remaining member(s) of such partnership as approved by the Contracting Officer.

34. Insurance

(a) Before commencing work, the Contractor and each subcontractor shall furnish DOH with certificates of insurance listing DOH and the Homeowner as additionally insured A.T.I.M.A. showing the following insurance is in force and will insure all operations under the Contract:

(1) Workers' Compensation, in accordance with state or Territorial Workers' Compensation laws.

(2) Commercial General Liability with a combined single limit for bodily injury and property damage of not less than $1,000,000 per occurrence to protect the Contractor and each subcontractor against claims for bodily injury or death and damage to the property of others. This shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under (3) below. If the Contractor has a "claims- made" policy, then the following additional requirements apply: the policy must provide a "retroactive date" which must be on or before the execution date of the Contract; and the extended reporting period may not be less than five years following the completion date of the Contract.

(3) Automobile Liability on owned and non - owned motor vehicles used on the site(s) or in connection therewith for a combined single limit for bodily injury and property damage of not less than $1,000,000 per occurrence.

(4) Cargo Insurance in the amount of $250,000 is required when the project involves raising the structure above the Base Flood Elevation.

(b) Before commencing work, the Contractor shall furnish DOH with a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) Insurance on all work in place and/or materials stored at the building site(s), including foundations and building equipment, is in force. The Builder's Risk Insurance shall be for the benefit of the Contractor, the Homeowner and DOH as their interests may appear and each shall be named in the policy or policies as an insured. The Contractor in installing equipment supplied by DOH shall carry insurance on such equipment from the time the Contractor takes possession thereof until the Contract work is accepted by DOH. The Builder's Risk Insurance need not be carried on excavations, piers, footings, or foundations until such time as work on the superstructure is started. It need not be carried on landscape work. Policies shall furnish coverage at all times for the full cash value of all completed construction, as well as materials in place and/or stored at the site(s), whether or not partial payment has been made by DOH. The Contractor may terminate this insurance on buildings as of the date taken over for occupancy by the Homeowner. The Contractor is not required to carry Builder's Risk Insurance for modernization work which does not involve structural alterations or additions and where the Homeowner's existing fire and extended coverage policy can be endorsed to include such work.

(c) All insurance shall be carried with companies which are financially responsible and admitted to do business in the State in which the project is located with a minimum Best rating of A-. If any such insurance is due to expire during the construction period, the Contractor (including subcontractors, as applicable) shall not permit the coverage to lapse and shall furnish evidence of coverage to the Contracting Officer. All certificates of insurance, as evidence of coverage, shall provide that no coverage may be canceled or non- renewed by the insurance company until at least 30 days prior written notice has been given to the Contracting Officer.

35. Subcontracts

(a) Definitions. As used in this contract -

(1) "Subcontract" means any contract, purchase order, or other purchase agreement, including modifications and change orders to the foregoing, entered into by a subcontractor to furnish supplies, materials, equipment, and services for the performance of the prime contract or a subcontract.

(2) "Subcontractor" means any supplier, vendor, or firm that furnishes supplies, materials, equipment, or services to or for the Contractor or another subcontractor.

(b) The Contractor shall not enter into any subcontract with any subcontractor who has been temporarily denied participation in a HUD program or who has been suspended or debarred from participating in contracting programs by any agency of the United States Government or of the state in which the work under this contract is to be performed.

(c) The Contractor shall be as fully responsible for the acts or omissions of its subcontractors, and of persons either directly or indirectly employed by them as for the acts or omissions of persons directly employed by the Contractor.

(d) The Contractor shall insert appropriate clauses in all subcontracts to bind subcontractors to the terms and conditions of this contract insofar as they are applicable to the work of subcontractors.

(e) Nothing contained in this contract shall create any contractual relationship between any subcontractor and DOH or between the subcontractor and HUD.

36. Subcontracting with Small and Minority Firms, Women's Business Enterprise, and Labor Surplus Area Firms

The Contractor shall take the following steps to ensure that, whenever possible, subcontracts are awarded to small business firms, minority firms, women's business enterprises, and labor surplus area firms:

(a) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(b) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;

(c) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;

(d) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises; and

(e) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies.

37. Equal Employment Opportunity

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or handicap.

(b) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, or handicap. Such action shall include, but not be limited to, (1) employment, (2) upgrading, (3) demotion, (4) transfer, (5) recruitment or recruitment advertising, (6) layoff or termination, (7) rates of pay or other forms of compensation, and (8) selection for training, including apprenticeship.

(c) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

(d) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or handicap.

(e) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(f) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(g) The Contractor shall furnish all information and reports required by Executive Order 11246, as amended, Section 503 of the Rehabilitation Act of 1973, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto. The Contractor shall permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(h) In the event of a determination that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts, or Federally assisted construction contracts under the procedures authorized in Executive Order 11246, as amended. In addition,

sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.

(i) The Contractor shall include the terms and conditions of this clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as the Secretary of Housing and Urban Development or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

(j) Compliance with the requirements of this clause shall be to the maximum extent consistent with, but not in derogation of, compliance with section 7(b) of the Indian Self-Determination and Education Assistance Act and the Indian Preference clause of this contract.

38. Employment, Training, and Contracting Opportunities for Low-Income Persons, Section 3 of the Housing and Urban Development Act of 1968.

(a) The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

(b) The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the Part 135 regulations.

(c) The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

(d) The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

(e) The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.

(f) Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

(g) With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of

contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of Section 3 and Section 7(b)agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

39. Interest of Members of Congress

No member of or delegate to the Congress of the United States of America shall be admitted to any share or part of this contract or to any benefit that may arise therefrom.

40. Interest of Members, Officers, or Employees and Former Members, Officers, or Employees

No member, officer, or employee of DOH, no member of the governing body of the locality in which the project is situated, no member of the governing body of the locality in which DOH was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the project, shall, during his or her tenure, or for one year thereafter, have any interest, direct or indirect, in this contract or the proceeds thereof.

41. Limitations on Payments made to Influence Certain Federal Financial Transactions

(a) The Contractor agrees to comply with Section 1352 of Title 31, United States Code which prohibits the use of Federal appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(b) The Contractor further agrees to comply with the requirement of the Act to furnish a disclosure (OMB Standard Form LLL, Disclosure of Lobbying Activities) if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

42. Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringement of any patent rights and shall save DOH/Homeowner harmless from loss on account thereof; except that DOH shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified and the Contractor has no reason to believe that the specified design, process, or product is an infringement. If, however, the Contractor has reason to believe that any design, process or product specified is an infringement of a patent, the Contractor shall promptly notify the Contracting Officer. Failure to give such notice shall make the Contractor responsible for resultant loss.

43. Examination and Retention of Contractor's Records

(a) DOH, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until 3 years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

(b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders not exceeding $10,000.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the Disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which DOH, HUD, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

44. Labor Standards - Davis-Bacon and Related Acts

Except for housing rehabilitation/reconstruction projects designed to contain fewer than eight (8) units, if the total amount of this contract exceeds

$2,000, the Federal labor standards set forth in the clause below shall apply to the development or construction work to be performed under the contract.

(a) Minimum Wages.

(1) All laborers and mechanics employed under this contract in the development or construction of the project(s) involved will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof (if applicable), regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the regular weekly period, are deemed to be constructively made or incurred during such weekly period. If applicable, such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers (if applicable).

(2) (i) Any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when all the following criteria have been met: (A) The work to be performed by the classification requested is not performed by a classification in the wage determination; and (B) The classification is utilized in the area by the construction industry; and (C) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employee Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.

(iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.

(iv) The wage rate (including fringe benefits

where appropriate) determined pursuant to subparagraphs (a)(2)(ii) or (iii) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in classification.

(3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(b) Withholding of funds. HUD or its designee shall, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working in the construction or development of the project, all or part of the wages required by the contract, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due.

(c) Payrolls and basic records.

(1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working in the construction or development of the project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(2) (i) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer for transmission to HUD

or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under subparagraph (c)(1) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The Contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1214-0149.)

(ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(A) That the payroll for the payroll period contains the information required to be maintained under paragraph (c) (1) of this clause and that such information is correct and complete;

(B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3; and

(C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirements for submission of the "Statement of Compliance" required by subparagraph (c)(2)(ii) of this clause.

(iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(3) The Contractor or subcontractor shall make the records required under subparagraph (c)(1) available for inspection, copying, or transcription by authorized representatives of HUD or its designee, the Contracting Officer, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(d) (1) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship and Training, Employer and Labor Services (OATELS), or with a State Apprenticeship Agency recognized by OATELS, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by OATELS or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage rate on the

wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event OATELS, or a State Apprenticeship Agency recognized by OATELS, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted underthe plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(3) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

(e) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.

(f) Contract termination; debarment. A breach of this contract clause may be grounds for termination of the contract and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.

(g) Compliance with Davis-Bacon and related Act requirements. All rulings and interpretations of the Davis- Bacon and related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by

reference in this contract.

(h) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this clause shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and DOH, HUD, the U.S.

Department of Labor, or the employees or their representatives.

(i) Certification of eligibility.

(1) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a United States Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(3) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

(j) Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics, including watchmen and guards, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in subparagraph (j)(1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic (including watchmen and guards) employed in violation of the provisions set forth in subparagraph (j)(1) of this clause, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in subparagraph (j)(1) of this clause.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in subparagraph (j)(2) of this clause.

(k) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts all the provisions contained in this clause, and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all these provisions

45. . Non-Federal Prevailing Wage Rates

(a) Any prevailing wage rate (including basic hourly rate and any fringe benefits), determined under State or tribal law to be prevailing, with respect to any employee in any trade or position employed under the contract, is inapplicable to the contract and shall not be enforced against the Contractor or any subcontractor, with respect to employees engaged under the contract whenever such non-

Federal prevailing wage rate exceeds:

(1) The applicable wage rate determined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 U.S.C. 3141 et seq.) to be prevailing in the locality with respect to such trade;

(b) An applicable apprentice wage rate based thereon specified in an apprenticeship program registered with the U.S. Department of Labor (DOL) or a DOL- recognized State Apprenticeship Agency; or

(c) An applicable trainee wage rate based thereon specified in a DOL-certified trainee program.

46. Procurement of Recovered Materials.

(a) In accordance with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, the Contractor shall procure items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contains the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition. The contractor shall procure items designated in the EPA guidelines that contain the highest percentage of recovered materials practicable unless the Contractor determines that such items: (1) are not reasonably available in a reasonable period of time: (2) fail to meet reasonable performance standards, which shall be determined on the basis of the guidelines of the National Institute of Standards and Technology, if applicable to the item; or (3) are only available at an unreasonable price.

(b) Paragraph (a) of this clause shall apply to items purchased under this contract where: (1) the Contractor purchases in excess of $10,000 of the item under this contract; or (2) during the preceding Federal fiscal year, the Contractor: (i) purchased any amount of the items for use under a contract that was funded with Federal appropriations and was within a Federal agency or a State agency of a political subdivision of a State; and (ii) purchased a total of in excess of $10,000 of the item both under and outside that contract.

Section 3:

Scope of Work and Specifications

Refer to pages following.

SECTION 3

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END OF SECTION 000100

SECTION 000200 LIST OF DRAWINGS

The List of Drawings dated December 1, 2015 indicated below contain, in addition to the work outlined in the Specifications Sections of the Project Manual, information required to perform the work of the contract.

LIST OF DRAWINGS:

ARCHITECTURAL

G-001 Cover Sheet
G-002 Site Plan, Zoning Data and Notes
AD-101 Foundation and First Floor Demolition Plan
AD-102 Demolition Elevations-I
AD-103 Demolition Elevations-II
A-101 Architectural Foundation Plan
A-102 First Floor Plan
A-103 Second Floor Plan
A-201 West Elevation
A-202 South and North Elevations
A-203 East Elevation Metal rail Enlarged Elevation and Section
A-301 Deck Sections
A-302 Details
A-303 Building Section

HAZARDOUS MATERIALS

HM-101 Hazardous Materials Abatement Plan-First and Second Floor

STRUCTURAL

S-101 Foundation and First Floor Framing Plan
S-102 Existing Second Floor and Low Roof Framing Plans
S-103 Structural Sections
S-104 Structural Notes and Soil Boring Logs

END OF SECTION 000200

SECTION 010100 – SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work under separate contracts.
4. Access to site.
5. Coordination with occupants.
6. Work restrictions.
7. Specification and drawing conventions.
8. Miscellaneous provisions.

1.2 PROJECT INFORMATION

A. Project Identification: **DOH Application No.1121, LAA Project No. 1524-45**

1. Project Location:250 Cosey Beach Avenue, East Haven, CT, United States
   Project sponsor: State of Connecticut Department of CDBG-Community Block Grant Program

B. Architect: Lothrop Associates LLP, 100 Pearl Street, Hartford CT 06103

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Limited sitework, utility connections, new foundations ,raise existing residence, construct new exterior deck and stairs, all related plumbing, mechanical and electrical work.

B. Type of Contract.

1. Project will be constructed under a single prime contract.

1.4 ACCESS TO SITE

A. General: Contractor shall have full use of Project site except as noted below, for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Condition of Existing Site: Maintain portions of existing site affected by construction operations in good condition throughout construction period. Repair damage caused by construction operations.

1.5 COORDINATION WITH OCCUPANTS

A. Owner Occupancy: Owner will not occupy site during the construction period.

1.6 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.

C. Noise, Vibration, and Odors: Minimize operations that may result in high levels of noise and vibration, odors, or other disruptions.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Section 3 Specifications.

C. Section 2 General Conditions: Requirements of Section 2 General Conditions shall apply to the Work of all Sections in the Section 3 Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 010100

SECTION 010200 ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for allowances.

B. Itemized records and receipts for allowance items shall be presented to the Architect and Owner for audit. Unused funds shall be credited to the Owner.

1.2 ALLOWANCES

A. Per Conditions of the Contract, the following Allowances shall be included in the Contract Sum, unless modified by the signed Agreement.

1. MAW (Miscellaneous Additional Work)- Include a cash allowance of $5,000.00 for Miscellaneous Additional Work as directed by the Architect.

2. Tests and Inspections - Include an allowance sum of $3,000.00 in the Base Bid for concrete and reinforcing Tests and Inspections as directed by the Architect.

3. Division 26–Electrical- Section 265100 "Light Fixtures": Include an allowance sum of $80 per fixture in the Base Bid to provide lighting fixtures. Installation and electrical roughing shall be included in the base bid.

END OF SECTION 010200

SECTION 010400 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

1.2 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

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

C. List of Unit Prices: A schedule of unit prices is included in the bid form specified elsewhere. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

D. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Refer to unit price schedule on the bid form, specified elsewhere.

END OF SECTION 010400

SECTION 010450 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions apply to this Section.

B. Refer to other Sections of these Specifications, for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.2 DESCRIPTION OF WORK

A. All cutting required for the installation of building systems, such as for Electrical work and other trades, shall be performed by the parties requiring same for the installation of their work, unless otherwise specifically indicated or noted to be performed otherwise.

B. The Construction Contract includes all patching of building materials and surfaces affected by the cutting and removals for all trades and subcontracts, except for special patching which must be performed by mechanical and electrical trades, such as patching of ductwork, piping and other mechanical and electrical systems.

1.3 CUTTING OF FINISH MATERIALS

A. When it is necessary to have finish materials cut, drawings shall be submitted by the Contractor showing the proposed changes and indicating the finished conditions. The cutting shall not be done until the Architect has approved the drawings.

B. Structural Work: Do not cut and patch structural elements in a manner that would reduce the load-carrying capacity or load deflection ratio. Obtain approval of the cutting and patching proposal before cutting and patching structural elements.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

D. Materials: Use materials identical to existing materials.

E. Inspection: Before cutting, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

F. Temporary Support: Provide temporary support of Work to be cut.

G. Protection: Protect construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions that might be exposed during cutting and patching operations.

H. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

1.4 PERFORMANCE

A. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

B. Cut existing construction to provide for the installation of other components or the performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

C. Cutting: Cut using methods least likely to damage elements to be retained or adjoining construction. Where possible review procedures with the original installer; comply with the original installer's recommendations.

D. Where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

E. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

F. Comply with requirements of applicable sections of Division 31 where cutting and patching requires excavating and backfilling.

1.5 PATCHING

A. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

B. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

C. Restore exposed finishes of patched areas and extend finish into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

D. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken plane containing the patch, after the patched area has received primer and second coat.

E. Cleaning: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove paint, mortar, oils, putty and similar items. Thoroughly clean piping, conduit and similar features before painting or finishing is applied.

PART 2 - PRODUCTS Not Applicable

PART 3 - EXECUTION Not Applicable

END OF SECTION 010450

SECTION 011530 - CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Changes in the Work, in the Contract Sum, in the Contract Time of Completion, or any combination thereof, as described in written Change Orders signed by the Owner, Architect and Contractor and issued after execution of the Contract, in accordance with the provisions of this Section.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, and Sections in Division 01 of these Specifications.

1.2 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Change Order data.
B. Change Order Form: AIA Document G-701 shall be used for all change orders.

1.3 SUBMITTALS

A. Make submittals directly to the Architect at the address shown on the Project Directory in the Project Manual.

B. Submit the number of copies called for under the various items listed in the Section.

1.4 PRODUCT HANDLING

A. Maintain a "Register of Bulletins and Change Orders" at the job site, accurately reflecting current status of all pertinent data.

B. Make the Register available to the Architect for review at his request.

1.5 PROCESSING CHANGES INITIATED BY THE OWNER

A. Should the Owner contemplate making a change in the Work or a change in the Contract Time of Completion, the Architect will issue a Directive to the Contractor.

1. Directives shall be dated and numbered in sequence.
2. Directives shall describe the contemplated changes, and carry one of the following instructions to the Contractor:

a. Make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion.
b. Make the described change in the Work, credit or cost for which will be approved by the Owner and/or Architect.
c. Promptly advise the Architect as to credit or cost proposed for the described change. This is not an authorization to proceed with the change.

B. If the Contractor has been directed by the Architect to make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion, but the Contractor wishes to make a claim for one or both of such change, the Contractor shall proceed with the change and shall notify the Architect.

C. If the Contractor has been directed by the Architect to make the described change subject to later determination of cost or credit, the Contractor shall:

1. Take such measures as needed to make the change.
2. Consult with the Architect and reach agreement on the most appropriate method for determining credit or cost for the change.

D. If the Contractor has been directed by the Architect to promptly advise him as to credit or cost proposed for the described change, the Contractor shall:

1. Analyze the described change and its impact on costs and time
2. Secure the required information and forward it to the Architect for review.
3. Meet with the Architect as required to explain costs and when appropriate, determine other acceptable ways to achieve the desired objective.
4. Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the Owner's cost for making the change, advising the Architect in writing when such avoidance no longer is practicable.

1.6 PROCESSING CHANGES INITIATED BY THE CONTRACTOR

A. Should the Contractor required further information or explanation to interpret Contract Documents as to Architect's intent, he shall request such clarification. The Contractor's failure to do so, and subsequent work performed and rejected as a result of his misinterpretation of the Contract Documents will not be cause for a change in the Contract Sum.

B. Should the Contractor discover a discrepancy among the Contract Documents, a concealed condition or other cause for suggesting a change in the Work, a change in the Contract Sum, or a change in the Contract Time of Completion, he shall notify the Architect as required by pertinent provisions of the Contract Documents.

C. Upon agreement by the Architect that there is reasonable cause to consider the Contractor's proposed change, the Architect will issue a Directive in accordance with the provisions described in Article 1.05 above.

1.7 PROCESSING DIRECTIVE

A. Make written reply to the Architect in response to each Directive.

1. State proposed change in the Contract Sum, if any.
2. State proposed change in the Contract Time of Completion if any.
3. Clearly describe other changes in the Work required by the proposed change, or desirable therewith, if any.
4. Include full backup data such as subcontractor's letter or proposal or similar information.
5. Submit this response in single copy.

B. When cost or credit for the change has been agreed upon the Owner and the Contractor, the Architect will issue a "Change Order" to the Contractor.

1.8 PROCESSING CHANGE ORDERS

A. Change Orders shall be dated and numbered in sequence, and prepared on the forms specified.

B. Each Change Order shall describe the change or changes, refer to the Directive or Directives involved, and shall be signed by the Owner and the Architect.

C. The Architect will issue four copies of each Change Order to the Contractor.

1. The Contractor shall sign all four copies and return three copies to the Architect.
2. The Architect will retain one signed copy and forward two signed copies to the Owner.

D. Should the Contractor disagree with the stipulated change in Contract Sum or change in Contract Time of Completion, or both:

1. The Contractor promptly shall return three copies of the Change Order, unsigned by him, to the Architect with a letter signed by the Contractor and stating the reason or reasons for the Contractor's disagreement.
2. The Contractor's disagreement with the Change Order shall not in any way relieve the Contractor of his responsibility to proceed with the change as ordered and to seek settlement of the dispute under applicable provisions of the Contract Documents.

PART 2- PRODUCTS - Not Used

PART 3- EXECUTION - Not Used

END OF SECTION 011530

SECTION 012000 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: To enable orderly review during progress of the Work, and to provide for systematic discussions of issues, the Architect will conduct project meetings throughout the construction period.

1.2 AUTHORITY

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority committing the Contractor to solutions agreed upon in the project meetings

1.3 AGENDA

A. Agenda items: To the maximum extent practicable, advise the Architect at least 24 hours in advance of project meetings regarding items to be added to the agenda.

B. MEETING REPORT

1. The Architect will prepare written reports of each project meeting, and will furnish three copies to the Contractor and State of Connecticut Department of Housing.
2. Recipients of copies may make and distribute copies as necessary.

1.4 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings shall be held monthly.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

1.5 MEETING LOCATION

A. Unless otherwise required or mutually agreed by all parties, meetings shall be held at the job site.

1.6 PRECONSTRUCTION MEETING

A. Preconstruction Meeting shall be scheduled within ten (10) working days after the Owner has issued the Notice to Proceed.

1. Provide attendance by authorized representatives of the Contractor and major subcontractors.
2. The Architect will advise other interested parties, including the Owner, State of Connecticut Department of Housing., and request their attendance.

B. Minimum Agenda: Data will be distributed and discussed on at least the following items:

1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and Architect.
2. Channels and procedures for communications.
3. Construction schedule, including sequence of critical work.
4. Contract documents, including distribution of required copies of original Documents and revisions.
5. Processing of Shop Drawings and other data submitted to the Architect for review.
6. Processing of Bulletins, Field Decisions, and Change Orders.
7. Rules and regulations governing performance of the Work.
8. Procedures for security, quality control, housekeeping, and related matters.

1.7 PROJECT MEETINGS

A. Attendance:

1. To the maximum extent possible, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
2. Subcontractors, material suppliers, and others may be invited to attend those project meetings when their interests are involved.

B. Minimum Agenda:

1. Review, revise as necessary, and approve minutes of previous meetings.
2. Review progress of the Work since last meeting, including status of submittals for approval.
3. Identify problems, which impede planned progress.
4. Develop corrective measures and procedures to regain planned schedule.
5. Complete other current business.

C. Revisions to Minutes:

1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.

1.8 PROJECT CORRESPONDENCE

A. All correspondence concerning the project, which is being submitted to the Owner or Architect, shall clearly be identified meeting the following requirements:

1. Clients Name
2. CIP Year
3. Project Site Name
4. Architects Project Title
5. Architects Project # _____
6. DOH Application # _____

B. All correspondence not conforming to the above requirements will be discarded.

PART 2- PRODUCTS - Not Applicable

PART 3- EXECUTION - Not Applicable.

END OF SECTION 012000

SECTION 013000 SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies requirements for handling Submittals. Refer to related provisions of the General and Supplementary Conditions.

B. General Procedures: Coordinate submittal preparation with performance of construction activities, and with purchasing or fabrication, delivery, and other submittals and related activities. Transmit in advance of performance of related activities to avoid delays.

1. Coordinate transmittal of different submittals for related elements so processing will not be delayed by the need to review concurrently for coordination. The Architect reserves the right to withhold action on a submittal requiring coordination until related submittals are received.

2. Processing: Allow two weeks for initial review. Allow more time if processing must be delayed for coordination with other submittals. The Architect will advise the Contractor when a submittal must be delayed for coordination. Allow two weeks for reprocessing each submittal.

   a. No extension of time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

3. Submittal Preparation: Place a label or title block on each submittal for identification. Provide a 4” x 10” space on the label or beside the title block on Shop Drawings to record Contractor’s review and approval markings and action taken. Include the following information on the label for processing and recording action taken.

   a. Project name.
   b. Date.
   c. Name and address of Architect.
   d. Name and address of Contractor.
   e. Name and address of subcontractor.
   f. Name and address of supplier.
   g. Name of manufacturer.
   h. Submission number.

C. Contractor’s Review: The Contractor will examine the submission and indicate the results of his review with a stamp with his approval representing that he has checked and verified the submission with the requirements of the work and the Contract Documents on the submission made to the Architect. He will retain one copy of all submissions for his review, and will forward the remaining copies of each shop drawing and catalog cuts, manufacturer’s specifications, etc., to the Architect for review, with a copy of the transmittal to the Owner’s representative. Submittals which do not bear the Contractor’s re-

view stamp will be returned with no action taken.
Submittal Transmittal: Package submittals appropriately for transmittal and handling.
Transmit with a transmittal form. Submittals received from other than the Contractor will be returned without action. Record requests for data and deviations from Contract Documents. Include Contractor's certification that information complies with Contract Documents.

D. Contractor's Construction Schedule: Submit a fully developed, bar-chart type construction schedule, within 20 days of the date established for Commencement of the Work. Provide a separate bar for each construction activity and a vertical line to identify the first working day of each week. Use the breakdown of units of Work as indicated in the "Schedule of Values".

1. Prepare the schedule on reproducible media, of sufficient width to show data for the entire construction period.
2. Secure commitments for performing critical construction operations from parties involved. Coordinate each activity with other activities and show in proper sequence; include minor elements involved in the construction sequence. Indicate sequences necessary for completion of related portions.
3 Coordinate the Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests and other schedules.
4. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the Schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

E. Phasing and Area Separations: If applicable, provide a separate time bar to identify each construction phase or area for each major part of the Work. Indicate where each element must be sequenced with other activities.

F. Submittal Schedule: Submit the Submittal Schedule within 10 days of the Construction Schedule. Coordinate the Schedule with the list of subcontracts, Schedule of Values and list of products as well as the Construction Schedule.

1. Prepare the Schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:

a. Scheduled date for the first submittal.
b. Related Section number.
c. Name of subcontractor.
d. Description of the construction element covered.
e. Scheduled date of the Architect's final release.

G. Distribution of Schedules: Distribute copies of the Construction and Submittal Schedules to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the temporary field office. When revisions are made, distribute to the same parties and post in the same locations.

1. Updating: Revise and issue each Schedule after each meeting or activity, where revisions have been made.

H. Shop Drawings: Submit new information, drawn to accurate scale. Indicate deviations from Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Fax copies are unacceptable as shop drawings. Include the following information:

1. Dimensions.
2. Identification of products, materials and finishes included.
3. Notation of coordination requirements.
4. Notation of dimensions established by field measurement.
5. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2” x 11” but no larger than 30” x 42”.
6. Submittal: Submit six correctable copies for review; five copies will be returned.
7. Do not use Shop Drawings without a final stamp indicating action taken in connection with construction.

I. Product Data: Collect Product Data into a single submittal for each element or system. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Fax copies are unacceptable.

1. Include the following information:

a. Manufacturer’s printed recommendations.
b. Compliance with recognized 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.

J. Submittals:

1. Submit one copy in PDF format to the Architect, and one copy of the transmittal to the Owner. The Architect will return one PDF file to the Contractor, and a copy to the Owner, marked with action taken and corrections or modifications required unless instructed otherwise by the Owner’s representative.
2. Distribution: Furnish copies of final submittal to the Owner, installers, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of Product Data is in the installer’s possession.
3. Do not permit use of unmarked copies of Product Data in connection with construction.
4. Fax copies are unacceptable.

K. Samples: Submit 4 full-size Samples to the Architect, cured and finished as specified and identical to the product proposed. Mount, display, or package Samples to facilitate review. Prepare Samples to match the Architect’s Sample.

1. Include the following information tagged on one face, with the other face reserved for Architect's action stamp.

    a. Project name.
    b. Date.
    c. Architect's name.
    d. Contractor's name.
    e. Generic description.
    f. Source.
    g. Product name or name of manufacturer.
    h. Compliance with recognized standards.
    i. Availability and delivery time.

2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics, and a comparison of these characteristics between the final submittal and the component as delivered and installed. Where variations are inherent in the product, submit multiple units that show limits of the variations.
3. Preliminary submittals: Where Samples are for selection of characteristics from a range of choices, submit a full set of choices for the product. Preliminary submittals will be reviewed and returned indicating selection and other action.
4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 4 sets; two will be returned marked with the action taken. Maintain one Sample set at the Project site, for quality comparisons.

    a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
    b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

5. Distribution: Prepare additional sets for Owner, subcontractors, manufacturers, fabricators, installers, and others as required for performance. Show distribution on transmittal forms.

L. Architect's Action: Except for submittals for record, information or similar purposes, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return.

1. The Architect will indicate the results of his review of the Contractor's shop drawings/catalog cuts by marking them as follows:

    NO EXCEPTIONS TAKEN: Submittal may be released for fabrication, erection, construction and incorporation in the work without further checking, approval or submission of shop drawings, catalog cuts, etc.

    MAKE CORRECTIONS NOTED: Submittal may be released for fabrication, erection, construction and incorporation in the work subject to notes, corrections shown thereon which have been made by the Architect or his Consultants.

AMEND AND RESUBMIT: Shop drawings, catalog cuts, etc., so marked must be corrected or changed, and copies sent to the Architect for record purposes, in the number and forms required by him.

REJECTED-SEE REMARKS: The items shown in the submittal are rejected for fabrication and their incorporation into the work is not permitted. Submittals so marked will be returned to the Contractor for corrections and/or the addition of more details, and resubmission will be required.

2. The Architect's review and action taken of a separate item shall not indicate he has reviewed and acted upon the assembly in which the item functions. The Architect's review and action does not relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.
3. In the event of returns for correction and re-submissions, all alterations, changes and additions of new information beyond the scope of the Architect's corrective notations, shall be suitably marked on the shop drawing or drawings and noted in the accompanying transmittal or resubmission.
4. Record Submittals: See other sections for requirements, if any, to submit complete set of shop drawings, product data and samples of in-place work for Owner's records.

M. Electronic Submittals: Shop drawings may be submitted in electronic format, subject to all requirements of this section. Procedures for electronic submittals shall be established with the Owner and Architect prior to commencement of construction.

N. Electronic Copies of Construction Documents: The Contractor may request from the Architect electronic files (CAD files) for use in preparing shop drawings. The Contractor shall make requests in writing together with a specific list of drawings and shall execute a release form provided by the Architect.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013000

SECTION 013700 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: When requested by Architect, provide a detailed breakdown of the agreed Contract Sum showing values allocated to each of the various parts of the Work, as specified herein and in other provisions of the Contract Documents.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, and Sections in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE

A. Use required means to assure arithmetical accuracy of the sums described.

B. When so required by the Architect, provide copies of the subcontracts or other data acceptable to the Architect, substantiating the sums described.

C. When requested by the Architect, provide a list of sub contractors to be used on the project.

1.03 SUBMITTALS

A. Prior to the first application for payment, submit a proposed Schedule of Values to the Architect.

1. Meet with the Architect and determine additional data, if any, required to be submitted.

2. Secure the Architect's approval of the Schedule of Values prior to submitting first Application for Partial Payment.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013700

SECTION 014210 REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 SUMMARY

1.2 Section includes administrative and procedural requirements for Reference Standards and Definitions.

A. Definitions: Basic contract definitions are included in the Conditions of the Contract.

1. "Indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.
2. "Directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
3. "Approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
4. "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
5. "Furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
6. "Install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
7. "Provide" means to furnish and install, complete and ready for the intended use.
8. "Installer" is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
9. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
10. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter.

11. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
12. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT

A. These Specifications are organized into Divisions and Sections based on the multiple division format and CSI/CSC's "Master Format" 2013 version numbering system.

1.4 SPECIFICATION CONTENT

A. These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

B. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.

C. Streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Section Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

D. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

E. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

F. Publication Dates: Comply with standards in effect as of the date of the Contract Documents.

G. Copies of Standards: Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

H. Abbreviations and Names: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade associa-

tion, standards-producing organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.

1.5 PERMITS, LICENSES, AND CERTIFICATES

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Provide temporary facilities needed for the Work including but not necessarily limited to:

1. Temporary utilities such as heat, water, electricity, telephone and emergency power.
2. Field Office.
3. Fire Protection
4. Sanitary facilities.
5. Enclosures such as tarpaulins, barricades, platforms, walking surfaces, and other items required to maintain access to site and construction areas.
6. Waste disposal facilities.
7. Temporary fencing.
8. Temporary erosion and sedimentation control.
9. On-site storage facilities.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, and Sections in Division 01 of these Specifications.
2. Equipment furnished by subcontractors shall comply with requirements of applicable safety regulations. Equipment normally furnished by the individual trades for execution of their own portions of the Work are not part of this Section.

1.2 PRODUCT HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

PART 2 – PRODUCTS - Not Applicable.

PART 3- EXECUTION

3.1 UTILITIES

A. Water:

1. Provide all necessary temporary piping and hoses. Upon completion of the Work, remove temporary water facilities.
   Contractor shall make arrangements with the local Utility Co. for temporary water facilities.

B. Electricity:

1. Provide all necessary temporary wiring. Upon completion of the Work, remove temporary electrical facilities.
2. Provide area distribution/outlet boxes so located that the individual trades may furnish and use 100 ft. maximum length extension cords safely to obtain power.
3. Contractor shall make arrangements with the local Utility Co. for temporary power and pay all costs associated with temporary power.

C. Heating: Provide and maintain heat necessary for proper conduct of operations and protection of the Work. The Contractor is advised that if portions of the work are scheduled to be performed during winter months, temporary heat shall be provided by the Contractor.

D. Telephone and Data:

1. Make necessary arrangements and pay costs for installation and operation of telephone and data service to the Contractor's location at the site.

E. Lighting:

1. The Contractor shall install and maintain temporary lighting of 1/2 foot candles of illumination in the temporary facilities during entire duration of construction.

   a. When disrupting existing site lighting, maintain temporary light of 1/2 foot candles of illumination during entire duration of disruption.

3.2 FIELD OFFICE

A. The Contractor shall provide a temporary field office as necessary for its construction operations.

3.3 FIRE PROTECTION

A. Provide and maintain fire extinguishers in sufficient sizes and quantities as required by project size and authorities having jurisdiction.

3.4 SANITARY FACILITIES:

A. Provide temporary sanitary facilities in the quantity required for use by all Contractor and subcontractor personnel.

B. Maintain in a sanitary condition at all times.

C. Contractor shall provide portable toilet facilities for use during construction period.

3.4 ENCLOSURES

A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, and other temporary construction necessary for proper completion of the Work in compliance with pertinent safety and other regulations.

3.5 WASTE DISPOSAL FACILITIES

A. Comply with requirements specified in Section 017419 “Construction Waste Management and Disposal”.

3.6 TEMPORARY FENCING

A. Provide and maintain for the duration of construction a temporary fence and/or barricade of design and type needed to prevent entry onto the Work by the public.

1. Provide a 6 foot high temporary chain link fence to enclose the entire property during the construction period. Provide locked access gates at the street for construction access.
2. Remove the temporary fence in its entirety at the conclusion of the construction period, or when directed by the Architect.

3.7 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Comply with requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 311000 "Site Clearing."

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

3.8 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect.

C. Repair or replace existing site elements (lawns, landscaping, shrubbery, paving, etc.) damaged by the work of this section at no additional cost to the Owner.

D. Repair or replace existing building elements (exterior walls, walks, steps, etc.) damaged by the work of this section at no additional cost to the Owner.

END OF SECTION 015000

SECTION 016000 - MATERIALS, WORKMANSHIP AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Administrative and procedural requirements governing the Contractor's selection of products for use in the Project and of workmanship.

B. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock.

C. "Named Products" are items identified by manufacturer's product name, including make or model designation indicated in the manufacturer's product literature.

D. "Materials" are products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

E. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

F. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1. When the Contractor has the option of selecting between two or more products, the product selected shall be compatible with products previously selected. The Contractor is responsible for providing products and construction methods that are compatible with products and construction methods of all trades.

G. Nameplates: Except for required labels and operating data, do not attach manufacturer's nameplates or trademarks on surfaces exposed to view in occupied spaces or on the exterior.

1. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an inconspicuous accessible surface. The nameplate shall contain the following information and essential operating data relative to its characteristics and maintenance.

H. Product Delivery, Storage, and Handling: Deliver, store and handle products in accordance with manufacturer's recommendations, using methods that will prevent damage, deterioration and loss.

1. Schedule delivery to minimize long-term storage and prevent overcrowding construction spaces. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
2. Deliver products in manufacturer's original sealed container or packaging sys-

tem, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

3. Inspect products on delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.
4. Store products to facilitate inspection and measurement of quantity or counting of units. Store heavy materials away from the structure in a manner that will not endanger supporting construction.
5. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

I. Product Selection: Provide products that comply with the Contract Documents, are undamaged and unused at installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Non-Proprietary Specifications: When Specifications list products or manufacturers that are available and may be used, but do not restrict the Contractor to use of these products only, the Contractor may propose any product that complies with Contract requirements. Comply with provisions for "substitutions" to obtain approval for use of an unnamed product.

J. "Or Equal": When required by statute, any reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, such reference shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may use any article, device, product, material, fixture, form or type of construction which in the judgment of the Westchester Medical Center and Architect, expressed in writing, is equal to that specified. The Architect shall be the sole and conclusive judge as to the quality of such substitution. Comply with provisions for "substitutions" to obtain approval for use of an unnamed product.

K. Descriptive Specification Requirements: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that provides the characteristics and otherwise complies with requirements.

1. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply and are recommended for the application. Manufacturer's recommendations may be contained in product literature, or by certification of performance.
2. Compliance with Standards: Where Specifications require compliance with a standard, select a product that complies with the standard specified.
3. Visual Matching: Where Specifications require matching a Sample, the Architect's decision on whether a proposed product matches is final. Where no product matches and complies with other requirements, comply with provisions for

"substitutions" for selection of a matching product in another category.

4. Visual Selection: Where requirements include the phrase "...as select a product that complies with other requirements. The Architect will select color, pattern and texture from the product line selected.

L. Should the Federal Government, because of Declaration of an Emergency, or other cause, establish controls over the use of certain construction materials, then each Contractor, immediately after signing Contract, or immediately after such Declaration of an Emergency, shall furnish the Architect with an itemized list of all critical materials required for use on the Project. For each item, the quantity and approximate date on which delivery will be required shall be indicated.

M. Installation of Products: Comply with manufacturer's instructions and recommendations for installation of products. Anchor each product securely in place, accurately located and aligned with other Work. Clean exposed surfaces and protect to ensure freedom from damage and deterioration at time of Substantial Completion.

N. Workmanship:

1. Work shall be performed by persons who are skilled and experienced in their respective trades. All installations shall operate properly and in a first class manner.
2. Workmanship shall conform to best trade practices. Finished surfaces shall be plumb and level straight and free from imperfections, set firmly to accurate measurements.
3. Surfaces that will be covered shall be cleaned of foreign matter and loose material. Surfaces shall be clean and free from imperfections and defects that would affect the covering material. Surface defects shall be repaired before applying the covering material.
4. Material shall be applied and/or installed under proper climatic conditions when they may be affected by temperature, moisture, humidity or dust.
5. Before any operation is started, adjoining or backup work shall be examined with care to ascertain its fitness to receive the work about to be started. All unsatisfactory conditions shall be corrected. If such unsatisfactory conditions are caused by the work of a separate contractor they shall be directed to the Architect's attention for his decision. Starting the operation shall constitute tacit assurance that previously installed work is correct and shall be considered a waiver of any claim based upon unsuitable conditions.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not used

END OF SECTION 016000

SECTION 016310 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

1.2 SUBSTITUTIONS

A. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Owner or Architect.
2. Specified options of products and construction methods included in Contract Documents.
3. Compliance with governing regulations and orders issued by governing authorities.

B. Submittal: Requests for substitution will be considered if received within 30 days after commencement of the Work. Requests received more than 30 days after commencement of the Work may be considered or rejected at the discretion of the Architect.

1. Submit 3 copies of each request for substitution in the form and in accordance with procedures for Change Order proposals.
2. Identify the product, or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Document compliance with requirements for substitutions, and the following information, as appropriate:

a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
b. Samples, where applicable or requested.
c. A comparison of significant qualities of the proposed substitution with those specified.
d. A list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and any separate Contractors, that will be necessary to accommodate the proposed substitution.
e. A statement indicating the substitution's effect on the Construction Schedule compared to the Schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

f. Cost information, including a proposal of the net change, if any in the Contract Sum.
g. Certification by the Contractor that the substitution is equal to or better in every respect to that required by Contract Documents, and that it will perform ad-

equately in application indicated. Include Contractor's waiver of rights to additional payment or time, that may be necessary because of the substitution's failure to perform adequately.

3. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information necessary for evaluation. Within 2 weeks of receipt of the request, or one week of receipt of additional information, which ever is later, the Architect will notify the Contractor of acceptance or rejection. If a decision on use of a substitute cannot be made within the time allocated, use the product specified. Acceptance will be in the form of a Change Order for substitutions changing the Contract Time or Contract Sum.

C. Substitutions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate contractors, and similar considerations.
8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

D. Where a proposed substitution involves more than one prime Contractor, each Contractor shall cooperate with the other Contractors involved to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.

E. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or

Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 016310

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Starting and adjusting.
5. Protection of installed construction.

1.2 INFORMATIONAL SUBMITTALS

A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

B. Final Property Survey: Submit in accordance with Section 017839 “Project Record Documents”

1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control

of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

D. Final Property Survey: Provide in accordance with Section 017839 “Project Record documents”.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Recycling nonhazardous demolition and construction waste.
2. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of **75** percent by weight of total non-hazardous solid waste generated by the Work. Facilitate recycling and salvage of materials**.**

1.4 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for the Notice to Proceed.

1.5 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste recycled, both estimated and actual in tons.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Qualification Data: For waste management coordinator.

1.6 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: LEED-Accredited Professional, certified by USGBC.

1.7 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste**.** Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
3. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Owner.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

   a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.3 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.

B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

1. Pulverize concrete to maximum 1-1/2-inch size.

C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Pulverize masonry to maximum 3/4-inch size.
2. Clean and stack undamaged, whole masonry units on wood pallets.

D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

E. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

F. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

G. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

H. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

I. Conduit: Reduce conduit to straight lengths and store by type and size.

3.4 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.5 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.

D. Disposal: Remove waste materials and dispose of at designated spoil areas on Owner's property.

E. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

1.2 SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Divisions 02 through 31 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Divisions 02 through 31 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect’s signature for receipt of submittals.

5. Submit test/adjust/balance records.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Owner of changeover in heat and other utilities.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor

of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Submit list of incomplete items in the following format:

    a. PDF electronic file. Architect will return annotated copy.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark 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 Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Wipe surfaces of mechanical and electrical equipment**,** elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
p. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare written report.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Final Property Survey.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit two set(s) of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints and one set of file prints.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:
1) Submit PDF electronic files of scanned record prints and three sets of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy of Project's Specifications, including addenda and contract modifications.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Record data as soon as possible after obtaining it.
    c. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as paper copy.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.

2.5 FINAL PROPERTY SURVEY

A. Final Property Survey: Engage a licensed land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey. Show on the final survey all new work, improvements, modifications, utilities, final grades and final floor elevations.

1. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

2. Submit 5 signed and sealed copies and 1 PDF electronic file showing the Work performed and record survey data.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Raising and lowering of existing building.

1.2 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 INFORMATIONAL SUBMITTALS

A. Engineering Survey: Submit engineering survey of condition of building.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection. Indicate proposed locations and construction of barriers.

C. Schedule of selective demolition activities with starting and ending dates for each activity.

D. Predemolition photographs or video.

E. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

F. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

G. Hazardous Materials: It is expected that hazardous materials will be encountered in the Work.

1. Hazardous materials shall be removed/ abated as part of this contract, specified elsewhere.

H. Storage or sale of removed items or materials on-site is not permitted.

I. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

J. Arrange selective demolition schedule so as not to interfere with Owner's operations.

K. Existing building raising and lowering sequence prepared by Contractor performing the work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Building raising and lowering by a qualified Contractor with not less than ten years experience in building moving and lifting.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off utilities with utility companies.

2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove, plumbing, electrical, communications, and HVAC systems, equipment, and components indicated on Drawings to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    f. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
4. Maintain fire watch during and for at least 2 hours after flame-cutting operations.

5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
6. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

D. Raise and lower existing building according to a procedure established by the Contractor. Provide all necessary equipment, shoring, bracing, labor required for a safe and complete operation. Arrange temporary supports so as not to interfere with new construction, excavation and foundations.

3.5 CLEANING

A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 02 82 13 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Limited Hazardous Materials Inspection Report (May 2015).

B. Hazardous Materials Abatement Drawing HM101.

1.2 CONSULTANT

A. The Architect shall retain a Consultant for the purposes of project management and monitoring during Asbestos Abatement. At the discretion of the Architect, the Consultant will represent the Owner in all phases of the abatement project. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly, but not limited to:

1. Work area approval.
2. Monitoring results review.
3. Various segments of work completion.
4. Abatement final completion.
5. Data submission review
6. Daily field punch list items.

B. The State of Connecticut licensed Asbestos Consultant – Project Designer for this project is Mr. Kevin J. McCarthy (License # 000274).

1.3 SCOPE OF WORK

A. Work outlined in this Section includes all work necessary for the removal and disposal of ACM impacted during renovations (the “Work”) at 250 Cosey Beach Avenue, in East Haven, Connecticut (the “Site”).

B. This shall include all necessary demolition to access the ACM for abatement.

1.4 USE OF THE CONTRACT DOCUMENTS

A. It shall be incumbent upon the Contractor to visit the Site and determine existing conditions, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the Site and understand the existing conditions.

B. All work shall comply with the Contract Documents and with applicable codes, laws, regulations, and ordinances, wherever applicable. The most stringent of all the foregoing shall govern.

C. It is not intended that these Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all materials and labor necessary for the completion of the Work in accordance with the intent of these Specifications.

D. In case of ambiguity among the Contract Documents, the more stringent requirement as determined by the Consultant shall prevail.

E. The Work of this Contract includes making modifications as necessary, subject to approval by Owner in consultation with the Consultant, to correct any conflicts between contract documents.

F. All items, not specifically mentioned in these Specifications, but implied by trade practices to complete the Work, shall be included.

1.5 SITE EXAMINATION

A. It is understood that the Contractor has examined the Site and made their own estimates of the facilities and difficulties attending the execution of the Work, and has based their bid price thereon.

B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional costs due to the existing Site conditions.

1.6 CONTRACTOR QUALIFICATIONS

A. All bidders shall submit a record of prior experience in asbestos abatement projects, listing no less than three completed projects in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project supervisor and all on-site personnel. The information to be included is as follows:

1. Project Name and Address
2. Owner's Name and Address
3. Architect/Consultant
4. Contract Amount
5. Date of Completion
6. Extras and Changes

B. The selected Contractor must appear on the approved list of Asbestos Abatement Contractors on file at the State of Connecticut Department of Public Health (CTDPH) and hold a valid asbestos abatement contractor license within the State of Connecticut.

C. Submit a written, notarized statement regarding whether the Contractor has ever received a federal, state or local citation for non-compliance with the asbestos and/or lead regulations pertaining to worker protection, removal, transport, or waste disposal.

1.7 CONSTRUCTION PROGRESS SCHEDULE

A. To assure adequate planning and execution of the Work, and to assist the Consultant in reviewing the justification for the Contractor's applications for payment, the Contractor shall prepare and maintain a detailed Progress Schedule.

B. Schedule of work of this Contract shall include the notification requirements to regulatory agencies for the work.

C. The Contractor shall supervise and direct all work of theirs and other trades using their best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract.

D. Due to the nature of this construction work, the scheduling or phasing of work under this Contract may be adjusted by the Owner. As long as the Scope of Work is not altered, adjustments to the project phasing shall have no effect on the contract price.

E. The Contractor shall attend a pre-construction meeting and any Subcontractors. The assigned Supervisor must attend this meeting.

1.8 TESTING LABORATORY SERVICES

A. The Contractor shall submit to the Consultant the name; address, accreditations, and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this section.

1.9 ADDITIONAL GENERAL REQUIREMENTS

A. The Contractor shall employ a competent Supervisor with at least three years of experience on projects of similar scope and magnitude, who shall be responsible for all work involving asbestos abatement, as described in the specifications and defined in applicable regulations, and have full-time daily supervision of the same. The Supervisor shall be the competent person as defined by Occupational Safety and Health Administration (OSHA) regulations.

B. If requested or required by local, state, federal, and any other authorities having jurisdiction over such work, the Contractor shall allow the Work of this Contract to be inspected. The Contractor shall immediately notify the Owner, the Architect, and the Consultant and shall maintain written evidence of such inspection for review by the Owner, the Architect, and the Consultant.

C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance, as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.

D. The Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

1.10 PROJECT DESCRIPTION

A. This section includes ACM removal and disposal as identified herein and on the Hazardous Materials Abatement Drawing HM-101, and coordination of the Work on the Architectural and Structural drawings and specifications that will impact ACM, conducted by workers meeting the requirements of OSHA Title 29 CFR, Part 1926.1101 for Class 1 and 2 work. The quantities listed herein are estimates only, and should be verified on-site by the Contractor.

B. The following ACM is included in this Project:

LOCATION	MATERIAL TYPE	ESTIMATED QUANTITY
First Floor – Living Room & Second Floor Bedroom Coordinate Required Abatement Work with Architectural & Structural Drawings & Specifications	White Top Coat & Beige Bottom Coat Chimney Plaster	200 SF
Exterior Roof at Chimney Coordinate Required Abatement Work with Architectural & Structural Drawings & Specifications	Exterior Roofing & Flashing	10 SF Includes Quantity of Material Necessary to Facilitate Demolition of Chimney

LF = Linear Feet; SF = Square Feet

C. Some of the Work will be performed conjunction with other trades (i.e., other trades work, demolition work, etc.).

D. Safety Data Sheets (SDS) for chemicals to be used during the project must be submitted to the Consultant prior to site delivery.

E. Encapsulants applied to any surface that will receive a new finish that requires an adhesive must be compatible with the application of the new finish.

F. The Contractor shall be responsible for providing temporary water, power, and heat as needed at the Site. Temporary lighting within the work areas must be connected to Ground Fault Circuit Interrupter (GFCI) power panels, installed by a State of Connecticut-licensed electrician, and located outside of the work areas.

1.11 DEFINITIONS

A. The following definitions relative to asbestos abatement shall apply:

1. Abatement - Procedures to control fiber release from ACM; includes removal, encapsulation, and enclosure.
2. Air Monitoring - The process of measuring the fiber concentration of an area or of a person.
3. Amended Water - Water to which a surfactant has been added.
4. Architect – Lothrop Associates, LLP
5. Asbestos - The name given to a number of naturally occurring fibrous silicates. This includes the serpentine forms and the amphiboles and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically altered.
6. Asbestos Felt - A product made by saturating felted asbestos with asphalt or other suitable bindery, such as a synthetic elastomer.
7. Asbestos Fibers - Those particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.
8. Asbestos Work Area - A regulated area as defined by OSHA Title 29 CFR, Part 1926.1101 where asbestos abatement operations are performed, which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area shall comply with requirements of regulated area for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.
9. Caulking - Resilient mastic compound often having a silicone bituminous or rubber base; used to seal cracks, fill joints, and prevent leakage. Typical applications: around windows, and doors. Caulking is at joints between two dissimilar materials. (i.e., masonry to wood, masonry to steel, etc.)
10. Clean Room - An uncontaminated area or room, which is a part of the worker decontamination system with provisions for storage of worker street clothes and protective equipment.
11. Competent Person - As defined by OSHA Title 29 CFR, Part 1926.1101, a representative of the Abatement Contractor who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure & who has authority to take prompt corrective measures to eliminate such hazards during asbestos removal. Competent person shall be properly trained in accordance with United States Environmental Protection Agency‘s (EPA) Model Accreditation Plan (MAP).
12. Consultant – Fuss & O’Neill EnviroScience, LLC
13. Curtained Doorway - A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two curtained doorways spaced a minimum of six feet apart can form an airlock.
14. Damproofing - Application of a water impervious material to surface such as wall to prevent penetration of moisture, typically at foundation or below grade surface.
15. Decontamination System - A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.
16. Encapsulant - A liquid material which can be applied to ACM, which controls the possible release of asbestos fibers from the materials either by creating a membrane over the surface (bridging encapsulant), or penetrating the material and binding its components together (penetrating encapsulant).

17. Equipment Room - Any contaminated area or a room that is part of the worker decontamination system with provisions for storage of contaminated clothing and equipment.
18. Friable Asbestos Materials - Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.
19. GFCI – Ground Fault Circuit Interrupter
20. Glazing Compound - Any compound used to hold window glass in place, also referred to as putty, or glazier's putty. It is not field-applied; usually installed during manufacture of windows.
21. HEPA - High Efficiency Particulate Air (HEPA) filtering system capable of filtering out particles of 0.3 microns diameter from a body of air at 99.97% efficiency or greater.
22. HEPA Filter - HEPA filter in compliance with ANSI Z9.2 1979.
23. HEPA Vacuum Equipment - Vacuum equipment equipped with a HEPA filter system for filtering the effluent air from the unit.
24. Moveable Object - Unit of equipment of furniture in the work area that can be removed from the work area.
25. Negative Air Pressure Equipment - A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.
26. NESHAPs - National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.
27. Owner – Mr. Robert Bishop
28. Permissible Exposure Limit (PEL) - The maximum airborne concentration of airborne asbestos fibers to which an employee is allowed to be exposed. The new limit established by OSHA Title 29 CFR, Part 1926.1101 is 0.1 fibers per cubic centimeter (fibers/cc) of air as an eight-hour time weighted average (TWA) and 1.0 fibers /cc averaged over a sampling period of 30 minutes as an Excursion Limit. The Contractor is responsible for maintaining work areas in a manner that this standard is not exceeded.
29. Project Monitor - A professional capable of conducting air monitoring and analysis of schemes. This individual should be an industrial hygienist, an environmental scientist, or an engineer with experience in asbestos air monitoring and worker protection equipment and procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.
30. Regulated Area - An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area within which airborne concentrations of asbestos exceed or there is a reasonable possibility that they may exceed the PEL.
31. Shower Room - A room between the clean room and the equipment room in the work decontamination system with hot and cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.

1.12 SUBMITTALS

A. The Contractor shall submit the following to the Consultant in one complete package prior to the pre-construction meeting, and no later than 10 business days prior to the anticipated start of the Work:

1. Submit a schedule to the Architect and the Consultant that defines a timetable for executing and completing the project, including work area preparations, removal, cleanup, decontamination, and final clearance air monitoring.
2. Submit the current valid State of Connecticut Asbestos Abatement Contractor license and certificate of insurance.
3. Submit the CTDPH Asbestos Abatement Notification Form.
4. Submit the name and address of the hauling contractor and landfill to be used. Also submit current valid operating permits and certificates of insurance for the transporter and landfill.
5. Submit video documentation showing the conditions of the building prior to the start of work. The contractor will be held responsible for all damage to the building and its contents not shown on the video documentation.
6. Submit the plans and construction details for the construction of the decontamination systems and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
7. Submit the CTDPH license, training, medical, and respirator fit test record of each employee who may be on the project site.
8. Submit the qualifications of the air sampling professional that the Contractor proposed to use for this project to perform OSHA-required employee exposure monitoring.
9. Submit detailed product information on all materials and equipment proposed for asbestos abatement work on this project.
10. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project as well as a list of past projects completed.
11. Submit a chain-of-command for the project.
12. Submit a proposed site-specific Emergency Action Plan and route of egress from work areas in case of fire or injury, including the name and phone number of nearest medical assistance center. This shall be conspicuously posted at the work site.
13. Submit a written site-specific Respiratory Protection Program for employees for the Work, including make, model and National Institute of Occupational Safety and Health (NIOSH) approval numbers of respirators to be used at the Site (if applicable).
14. Written description, for the Consultant's review and acceptance, of all proposed procedures, methods, or equipment to be utilized that differ from the Contract Specifications, including manufacturers specifications on any equipment not specified for use by this Section; in all instances, the Contractor must comply with all applicable federal, state and local regulations.
15. Proposed electrical safeguards to be implemented by a qualified Electrical Contractor, including but not limited to location of transformers, GFCI outlets, lighting, and power panels necessary to safely perform the project, including a description of electrical hazards and a safety plan for common practices in the work area.
16. No work on the Site will be allowed to begin until the Architect and the Consultant as listed herein approve the Pre-Construction Submittals. Any delay caused by the Contractor’s refusal or inability to submit this documentation in a timely manner does not constitute a cause for change order or a time extension;

B. The Contractor shall submit the following to the Consultant during the Work:

1. Copies of personal air sampling results (Consultant will not review or provide any direction or advice regarding results). The Contractor shall be responsible for proper sample analytical review and personal protective equipment (PPE) selection and use. Records are retained solely for project record.
2. Copies of training, CTDPH licenses, fit test records, and medical records for new employees to start work (24-hours in advance) and prior to the new employee arriving at the Site.
3. Carbon copies from waste shipment records, waste manifest records, bill of lading or other waste tracking record for all specified materials.
4. Copies of daily log sheets, daily sign-in sheets, and containment sign-in sheets.

C. The Contractor shall submit the following to the Consultant at the completion of the Work. The Owner reserves right to retain payment(s) until all items are received in completion:

1. Original final completed copies of the waste shipment records, signed by all transporters and the designated disposal site owner/operator.
2. Original final completed copies of bill of laden, weight tickets, recycling tickets, and manifests for all specified materials.
3. Contractor's logs (daily activity logs, daily sign in sheets, containment sign-in sheets), and all worker training, CTDPH licenses, medical records and respirator fit test records.
4. Copies of all OSHA personal monitoring results.

1.13 REGULATIONS AND STANDARDS

A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos abatement. Specifically, the Contractor shall comply with the requirements of the following:

1. EPA National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Regulations (Title 40 CFR, Part 61, Subpart M);
2. OSHA Asbestos Regulations (Title 29 CFR, Parts 1910.1001 and 1926.1101);
3. Connecticut Department of Energy and Environmental Protection (DEEP) Regulations (Section 22a 209 8(i) and Section 22a 220 of the Connecticut General Statutes);
4. CTDPH Standards for Asbestos Abatement (Sections 19a-332a- 1 to 19a-332a-16);
5. CTDPH Licensing and Training Requirements for Persons Engaged in Asbestos Abatement and Asbestos Consultant Services (Sections 20-440-1 to 20-440-9 and Section 20-441);
6. DOT Hazardous Materials Regulations (Title 49 CFR, Parts 171 – 180)
7. 2003 International Building Code as adopted by the 2005 State of Connecticut Building Code including the 2009, 2011, and 2013 amendments;
8. Life Safety Code (National Fire Protection Association [NFPA]);
9. Local health and safety codes, ordinances or regulations pertaining to asbestos remediation and all national codes and standards including ASTM, ANSI, and Underwriter's Laboratories.

1.14 EXEMPTIONS

A. Any deviations from these specifications require the prior written approval and authorization from the Owner, the Architect, and the Consultant.

B. Any modifications from the standard work practices identified in the CTDPH Standards for Asbestos Abatement, Sections 19a-332a-1 to 19a-332a-16 must be requested in writing and approved in writing by the CTDPH.

1.15 FINAL RE-OCCUPANCY AIR CLEARANCE

A. Following the completion of the encapsulation phase of the Work, the Consultant shall collect final re-occupancy clearance air samples inside the work area per CTDPH Standards for Asbestos Abatement (19a-332-1 to 19a-332-16).

B. The Owner shall be responsible for payment of the sampling and analysis of the initial final air clearance samples only. The Contractor shall be responsible for payment of all costs associated with the collection and analysis of additional final clearance air samples if the first set of samples fail to satisfy the clearance criteria.

C. Contractor shall not conduct demolition or other removal activities during final re-occupancy air clearance sampling.

D. Exterior asbestos abatement work: Re-occupancy clearance air sampling is not required following removal of exterior non-friable ACM if removal does not render materials friable and negative pressure enclosures (NPEs) are not utilized. If removal renders non-friable materials friable, the Work must be performed within a NPE and final re-occupancy air clearance sampling will be conducted.

1.16 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

A. The Contractor shall make the following written notifications, and provide the submittals to the following agencies prior to the commencement of abatement if the work is going to render the ACM friable. These notifications are required 10-calendar days prior to the start of the abatement project:

1. Connecticut DEEP
   Health Services and Solid Waste Management Unit
   79 Elm St.
   Hartford, CT 06106
   (Only if asbestos waste is disposed of in Connecticut)

2. CTDPH
   410 Capital Avenue
   MS #51 AIR
   P.O. Box 340308
   Hartford, CT 06134

B. The minimum information included in the notification to these agencies includes:

1. Name and address of building Owner/Operator
2. Building location
3. Building size, age, and use
4. Amount of asbestos
5. Work schedule, including proposed start and completion date
6. Asbestos removal procedures to be used
7. Name and location of disposal site for generated asbestos waste, residue, and debris
8. If landfill opens in Connecticut to accept ACM waste, Consultant will notify DEEP prior to utilizing said landfill.

1.17 WORK SITE SAFETY PLAN

A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the Site. The safety plan should include provisions for the following:

1. Evacuation of injured workers.
2. Emergency and fire exit routes from all work areas.
3. Emergency first aid treatment.
4. Local telephone numbers for emergency services including ambulance, fire, and police.
5. A method to notify occupants of the building in the event of a fire or other emergency requiring evacuation of the building.

B. The Contractor shall be responsible for properly training all workers in these procedures.

1.18 INDEPENDENT AIR SAMPLING AND ASBESTOS ABATEMENT MONITORING

A. This Section describes independent air sampling work being performed on behalf of the Owner. This work is not in the Contract Sum. This Section describes air monitoring conducted by the Consultant to verify that the building beyond the work area and the outside environment remains uncontaminated. (Personal air monitoring required by OSHA is work shall be performed by the Contractor and is within the Contract Sum.)

B. The purpose of the Consultant's air monitoring is to detect faults in the work area isolation such as:

1. Contamination of area outside of the work area by airborne asbestos fibers

C. Should any of the above occur, the Contractor shall immediately cease all asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Consultant.

D. The Consultant may monitor total airborne fiber concentrations in the Work Area. The purpose of this air monitoring will be to detect airborne fiber concentrations, which may challenge the ability of the work area isolation procedures to protect the balance of the building or outside of the building from possible contamination by airborne fibers.

E. The Consultant may perform on-site monitoring throughout the project, as follows:

1. Prior to work on any given day, the Contractor's designated "competent person" shall discuss the day's work schedule with the Consultant to evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the building or the employees. This includes a visual inspection of the work area and the decontamination of the building or the employees. This includes a visual inspection of the work area and the decontamination systems.

1.19 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

A. The Contractor shall independently retain an air sampling professional to monitor airborne asbestos concentrations in the workers' breathing zone and to establish conditions and work procedures for maintaining compliance with OSHA Regulations Title 29 CFR, Parts 1910.1001 and 1926.1101.

B. The Contractor's air sampling professional shall document all air sampling results and provide a report to the Consultant within 48-hours after sample collection.

C. All air sampling shall be conducted in accordance with methods described in OSHA Standards Title 29 CFR, Parts 1910.1001 and 1926.1101.

1.20 PROPER WORKER PROTECTION

A. This Section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards, except for respiratory protection.

B. All workers are to be accredited as Abatement Workers as required by the EPA's AHERA regulation Title 40 CFR, Part 763 Appendix C to Subpart E, February 3, 1994.

C. The Contractor is required to be certified and accredited, as required by the CTDPH.

D. In accordance with OSHA Title 29 CFR, Part 1926, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include, but is not limited to the following:

1. Methods of recognizing asbestos
2. Health effects associated with asbestos
3. Relationship between smoking and asbestos in producing lung cancer
4. Nature of operations that could result in exposure to asbestos
5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:

    a. Engineering controls
    b. Work Practices
    c. Respirators
    d. Housekeeping procedures
    e. Hygiene facilities
    f. Protective clothing
    g. Decontamination procedures
    h. Emergency procedures

i. Waste disposal procedures

6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by OSHA Title 29 CFR, Part 1910.134
7. Appropriate work practices for the work
8. Requirements of medical surveillance program
9. Review of OSHA Title 29 CFR, Part 1926
10. Pressure Differential Systems
11. Work practices including hands on or on job training
12. Personal Decontamination procedures
13. Air monitoring, personal and area

E. The Contractor shall provide medical examinations for all workers who may encounter a total airborne fiber concentration of 0.1 fibers/cc or greater for an 8-hour TWA. In the absence of specific airborne fiber data, provide medical examinations for all workers who will enter the work area for any reason. Examination shall, at a minimum, meet OSHA requirements as set forth in Title 29 CFR, Part 1926. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

F. Submit the following to the Consultant for review. The Contractor shall not start work until these submittals are returned with Consultant action stamp indicating that they are accepted.

1. Submit copies of certificates from an EPA-approved AHERA Abatement Worker course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the EPA's AHERA Regulation Title 40 CFR, Part 763 Appendix C to Subpart E, February 3, 1994.
2. Submit evidence that the Contractor is certified to perform asbestos abatement work by the CTDPH.
3. Submit documents verifying that each worker has had a medical examination within the last 12 months, as part of compliance with OSHA medical surveillance requirements. Submit, at a minimum, for each worker the following:

   a. Name and Social Security Number
   b. Physicians Written Opinion from examining physician including at a minimum the following:

      1) Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
      2) Any recommended limitations on the worker or on the use of personal protective equipment (PPE) such as respirators.
      3) Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.

4. Copy of information that was provided to physician in compliance with OSHA Title 29 CFR, Part 1926.

5. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.
6. Submit copies of certificates for the site supervisor and the workers issued by the CTDPH.

G. Submit certification signed by an officer of the abatement-contracting firm and notarized that personal exposure measurements, medical surveillance, and worker training records are in conformance with OSHA Title 29 CFR, Part 1926.

H. The Contractor shall maintain control of and shall be responsible for access to all work areas to ensure the following requirements:

1. Non-essential personnel are prohibited from entering the area.
2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" which are posted at the entry points to the system, and shall be equipped with properly-fitted respirators and protective clothing.
3. All personnel who are exiting from the decontamination system shall be properly and thoroughly decontaminated.
4. Asbestos waste that is removed from the work area must be properly containerized and labeled in accordance with these specifications. The exterior surface of the containers shall be decontaminated. Asbestos waste must be immediately transported off site or immediately placed in locked, posted temporary storage located on site, and removed within 24-hours of project completion.
5. Any material, equipment, or supplies that are removed from the decontamination system shall be thoroughly cleaned and decontaminated by wet cleaning and/or with HEPA-filtered vacuums.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the Site. Material that becomes contaminated with asbestos shall be decontaminated or disposed as asbestos waste.

C. Polyethylene (poly) sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with a factory label indicating 4- or 6–mil thickness.

D. Poly disposable bags shall be 6-mil thickness with pertinent pre-printed label. Tie wraps for bags shall be plastic, five-inches long (minimum), pointed and looped to secure filled plastic bags.

E. Tape or spray-adhesive will be capable of sealing joints in adjacent poly sheets and for attachment of poly sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

F. Surfactant (wetting agent), shall consist of 50 percent polyoxyethylene ether and 50 percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one ounce surfactant to five-gallons of water or as directed by manufacturer.

G. Removal encapsulant shall be non-flammable factory prepared penetrating chemical encapsulant deemed acceptable to the Consultant. Usage shall be in accordance with manufacturer's printed technical data.

H. The Contractor shall have available spray equipment capable of mixing wetting agent with water, be capable of generating sufficient pressure and volume, and having sufficient hose length to reach all areas with asbestos.

I. Impermeable containers are to be used to receive and retain asbestos-containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with OSHA Title 29 CFR, Part 1926.1101. Containers must be both air and watertight.

J. OSHA-required asbestos labels, warning signs and/or warning tape shall be used.

K. Encapsulant shall be bridging or penetrating type that has been deemed acceptable to the Consultant. Usage shall be in accordance with manufacturer's printed technical data.

L. HEPA filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports where ACM may be disturbed.

2.2 TOOLS AND EQUIPMENT

A. The Contractor shall provide all tools and equipment necessary for asbestos removal, encapsulation and enclosure.

B. The Contractor's air monitoring professional shall have air-monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements.

C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, poly sheeting of proper size and thickness, tape and air filters.

D. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and electrical power sources (such as generators). Any electrical connection work affecting the building electrical power system shall be performed by a State of Connecticut-licensed electrician, permitted as required.

E. The Contractor shall have available shower stalls and plumbing to support same to include sufficient hose length and drain system or an acceptable alternate.

F. Exhaust air filtration system units shall contain HEPA filter(s) capable of sufficient air exhaust to create negative air pressure of - 0.02 inches of water column within enclosure with respect to outside area. Digital monometers shall be supplied for Class 1 work. Equipment shall be checked for proper operation

by smoke tubes or differential pressure gauge before the start of each shift and at least twice during the shift. Adequate exhaust air shall be provided for a minimum of four (4) air changes per hour within the NPE. No air movement system or air filtering equipment shall discharge unfiltered air outside.

G. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter or larger.

H. The Contractor will have reserve units so that the station system will operate continuously.

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION MEETING

A. At least one week prior to the start of work a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Sub-Contractors. The assigned Contractor Site Supervisor is also required to attend this meeting.

B. The Contractor shall present a detailed project schedule and project submittal package at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.

C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.2 WORK AREA PREPARATION FOR INTERIOR ABATEMENT

A. Where necessary, deactivate electrical power, including receptacles and light fixtures. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operating when amended water spray may contact the fixture. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a State of Connecticut-licensed electrician, permitted as required, and located outside the work areas.

B. Temporary power shall be continuous power. Portable generators for use during interior asbestos abatement are not authorized.

C. Deactivate and/or isolate heating, ventilating, and air conditioning (HVAC) air systems or zones to prevent contamination and fiber dispersal to other areas of the building or structure. During the work, vents within the work area shall be covered with two layers of 6-mil poly, and completely sealed with duct tape.

D. The Contractor shall be responsible for removing furniture, equipment and any other materials to be salvaged from the work areas. The Contractor shall pre-clean moveable objects within the proposed work areas using HEPA-filtered vacuum equipment and/or wet cleaning methods as appropriate and remove

such objects from work areas. Non-porous materials (i.e., metal) shall be cleaned, visually inspected by a project monitor prior to removal from the work areas and recycling/disposal as solid waste.

E. Completely seal all openings, including, but not limited to: windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with poly sheeting a minimum of 6-mil thick, and sealed with duct tape. This includes doorways and corridors that will not be used for passage during work areas and occupied areas.

F. Pre-clean fixed objects within the work areas, using HEPA vacuum equipment and/or wet cleaning methods as appropriate, and enclose with a minimum 6-mil poly sheeting completely sealed with duct tape.

G. Clean the proposed work areas using HEPA vacuum equipment or wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

H. After HEPA vacuum cleaning, cover fixed walls with two layers of 4-mil poly sheeting to the floor level and cover floors with two layers of 6-mil poly sheeting. Independently overlap wall and floor layers a minimum of 12”. Where fixed walls are not used, two layers of 6-mil poly sheeting will be applied to a rigid framework of wood, metal, or PVC. Overlaps shall be sealed with tape or spray adhesive.

I. Maintain emergency and fire exits from the work areas, or establish alternate exits satisfactory to fire officials.

J. Clean and remove ceiling mounted objects, such as lights and other items not sealed-off, which interfere with asbestos abatement. Use hand-held amended water spraying or HEPA-filtered vacuum equipment during fixture removal to reduce settled fiber dispersal.

K. Create pressure differential between work areas and uncontaminated areas by the use of acceptable negative air pressure equipment sufficient to provide four air changes per hour and create negative air pressure of -0.02 inches of water column within enclosure with respect to outside area as measured on a water gauge.

3.3 WORK AREA PREPARATION FOR EXTERIOR ABATEMENT

A. Following a federal court of appeals decision, OSHA has issued a final rule on June 29, 1998, removing regulation of asbestos-containing asphalt roof cements, mastics and coatings from the OSHA standards for occupational exposure to asbestos in construction and shipyard work. However, friable materials (felts, papers, etc.) are still regulated by OSHA, federal (no visible emissions), and state entities.

B. Exterior non-friable materials which are not RACM as defined by the EPA and CTDPH are not required to be removed by a CTDPH-licensed Asbestos Abatement Contractor in the State of Connecticut. This applies as long as the proposed methods of removal will not render the Category I non-friable roofing materials RACM during proposed roof removal operations.

C. Supervisors and workers are not required to be certified in the State of Connecticut unless the Category I non-friable roofing materials become RACM. Workers must be properly trained in compliance with OSHA regulations.

D. Where necessary, deactivate electrical power, including receptacles and light fixtures. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operating when amended water spray may contact the fixture. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a State of Connecticut-licensed electrician, permitted as required, and located outside the work areas.

E. Deactivate and/or isolate HVAC air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, vents within the work area shall be covered with two layers of 6-mil poly and completely sealed with duct tape.

F. Completely seal all openings, including, but not limited to: windows, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with poly sheeting a minimum of 6-mil thick, and sealed with duct tape.

G. Install ground cover consisting of one layer of six-mil poly, extending out a minimum of 15 feet from the building foundation in work. Tape and glue ground cover securely to the building foundation.

H. Install caution tape and OSHA warning signs in accordance with OSHA Title 29 CFR, Part 1926.1101 at edge of ground cover creating a regulated work area.

3.4 DECONTAMINATION SYSTEM

A. The Contractor shall establish contiguous to the work area, a decontamination system consisting of equipment room, shower room, and clean room, in series. The only access between contaminated and uncontaminated areas shall be through this decontamination enclosure. If it is not feasible to erect a contiguous decontamination system, the Contractor shall establish a remote decontamination unit in as close proximity to the work area as is feasible. For exterior work, the Contractor shall establish a remote decontamination system at the perimeter of the regulated work area.

B. Access between rooms in the decontamination system shall be through double-flap curtained openings. The clean room, shower and equipment room within the decontamination enclosure, shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.

C. Construct the decontamination enclosure system with wood or metal framing, cover both sides with a double layer of 6-mil poly sheeting, completely sealed with spray adhesive, and taped at the joints.

D. If Consultant is retained for pre-abatement services, the Contractor and the Consultant shall visually inspect barrier several times daily to assure effective seal and the Contractor shall repair defects immediately.

3.5 ASBESTOS REMOVAL PROCEDURE - GENERAL

A. The Contractor shall have a designated "competent person" on the Site at all times to ensure establishment of a proper enclosure system and proper work practices throughout project.

B. Abatement work will not commence until authorized by the Consultant if Consultant is retained for pre-abatement services.

C. The Contractor shall properly coordinate abatement work with other trades, new construction and Site use. The Contractor shall be responsible for addressing any concerns by the Owner, Architect, and/or Consultant.

D. With a fine mist, spray ACM with amended water using airless spray equipment or apply approved removal wetting agent to reduce the release of fibers during removal operation.

E. To maintain indoor asbestos concentrations to the minimum, the wet asbestos must be removed in manageable sections. Material drop shall not exceed eight feet. For heights up to 15-feet, provide inclined chutes or scaffolding to intercept drop.

F. Remove ACM as appropriate by standard methods. Fill disposal containers as removal proceeds; seal filled containers and clean containers before removal to equipment decontamination enclosure system. Wet clean each container thoroughly, double bag and apply caution label. Ensure that workers do not exit the work area thorough the equipment decontamination enclosure.

G. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped, and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are prohibited). During this work, the surfaces being cleaned shall be kept wet.

H. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris. During cleanup, utilize brooms, rubber dustpan, and rubber squeegees to minimize damage to floor covering.

I. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decontamination enclosure at an appropriate time in the cleaning sequence. All asbestos waste in 6-mil poly disposal bags shall be double-bagged in the equipment decontamination enclosure before removal from the Site.

J. At any time during asbestos removal, should the Consultant suspect contamination of areas outside the work area(s), they shall cause all abatement work to stop until the Contractor takes the necessary steps to decontaminate these areas, and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.

K. After completion of the initial final cleaning procedure including removal of the inner layers of poly sheeting, but prior to encapsulation, a pre-sealant inspection shall be conducted by the Consultant. The pre-sealant inspection shall verify that ACM and residual dust has been removed from the work area.

3.6 ASBESTOS REMOVAL PROCEDURES – EXTERIOR ROOFING AND FLASHING

A. Spray ACM with amended water using airless spray equipment or apply an approved wetting agent to reduce the release of fibers during removal operations.

B. Remove exterior assumed asbestos-containing roof flashing and roof shingles using hand tools and place directly into durable leak-tight containers or in two 6-mil poly bags and properly label.

C. Removal methods shall not make the material a Regulated Asbestos Containing Material (RACM).

D. Surrounding surfaces shall be HEPA-filtered vacuumed and wet-wiped to remove all visible dust and debris.

E. When the Consultant completes their final visual inspection in a satisfactory manner, Contractor shall remove protective poly drop cloths by rolling in all 4 corners of the poly sheets.

F. Check all ground surfaces in work areas after removal is complete, and the protective ground poly drop cloths have been removed. Remove and dispose of any suspect ACM observed on ground.

G. Unless an Approved Alternative Work Practice (AWP) is obtained, removal of roof flashing and roof shingles using mechanical equipment shall be performed within a negative pressure containment.

3.7 CONSULTANT'S RESPONSIBILITIES

A. Air sampling may be conducted by the Consultant to ascertain the integrity of engineering controls that protect the building from possible asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to ascertain the protection of employees and to comply with OSHA regulations.

B. The Consultant's project monitor may collect and analyze air samples during the following period:

1. Abatement Period. If required, or retained for this service, the Consultant's project monitor shall collect samples on a daily basis during the work period. A sufficient number of area samples shall be collected outside of the work area, at the exhaust of the negative pressure system, and outside of the building to evaluate the degree of cleanliness or contamination of the building during removal. At the discretion of the Asbestos Project Monitor, additional air samples may be collected inside the work area and decontamination enclosure system.

C. The Consultant's project monitor shall collect and analyze air samples during the following period:

1. Post-Abatement Period. If required, the Asbestos Project Monitor shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion, as established by the Asbestos Project Monitor, has been met and the work area has been

encapsulated by the Contractor. Five air samples shall be collected inside the work area utilizing aggressive methods to comply with the CTDPH Standards for Asbestos Abatement, sections 19a 332a 12.

a. Final re-occupancy air clearance sampling shall be conducted by the Consultant project monitor in accordance with the requirements of the CTDPH using the following methods:

1) Phase Contrast Microscopy (PCM) with a total airborne fiber concentration limit of less than or equal to 0.010 fibers/cc.

D. The Consultant's project monitor may provide continual evaluation of the air quality outside the building during removal, using their best professional judgment in respect to the CTDPH guideline of 0.010 fibers/cc.

E. If the Consultant's Project Monitor determines that the air quality has become contaminated from the Work, they shall immediately inform the Contractor to cease all removal operations and implement a work stoppage clean up procedure. The Contractor shall conduct a thorough cleanup of the areas designated by the Consultant. No further removal work may occur until the Project Monitor has assessed that the building air has been decontaminated.

F. Abatement air samples shall be collected as required to obtain a volume of 1,200 liters of air. Air samples shall be analyzed by PCM NIOSH Method 7400 sampling protocol.

3.8 CONSULTANT'S INSPECTION RESPONSIBILITIES

A. The Consultant may conduct inspections throughout the progress of the abatement project. Inspections shall be conducted to document the progress of the abatement work, as well as the procedures and practices employed by the Contractor.

B. The Consultant may perform the following inspections during the abatement activities:

1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the Contractor. The Consultant shall be informed 12-hours prior to the time the inspection is needed. If deficiencies are noted during the pre-commencement inspection, the Contractor shall perform the necessary adjustments to obtain compliance.
2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Consultant. During the work inspections, the Consultant shall observe the Contractor's removal procedures, verify barrier integrity, monitor negative air filtration devices, assess project progress, and if deficiencies are noted, inform the abatement Contractor of specific remedial activities.

C. The Consultant shall perform the following inspections during the abatement activities:

1. Pre-sealant Inspection. Upon the request of the Contractor, the Consultant shall conduct a pre-sealant inspection. The Consultant shall be informed 12-hours prior the time that the inspection is needed. The pre-sealant inspection shall be conducted after completion of the initial cleaning procedures, but prior to encapsulation. The pre-sealant inspection shall verify that all ACM and residual debris have been removed from the work area. If the Consultant identifies residual dust

or debris during the pre-sealant inspection, the Contractor shall comply with the request of the Consultant to render the area "dust free."

2. Final Visual Inspection. Upon request of the abatement Contractor, the Consultant shall conduct a final visual inspection. Following the removal of the inner layer of poly sheeting, but prior to final air clearance, the Consultant shall conduct a final visual inspection inside the work area. If residual dust or debris is identified during the final inspection, the Contractor shall comply with the request of the Consultant to render the area "dust free."

3.9 ASBESTOS DISPOSAL

A. ACM disposal or asbestos-contaminated material must be in compliance with requirements of and authorized by DEEP and CTDPH.

B. Disposal approvals shall be obtained before commencing asbestos abatement.

C. A copy of approved disposal authorization shall be provided to the Owner and Consultant and any required federal, state, or local agencies.

D. The Consultant will retain copies of all Waste Shipment Records as part of the project file. On receipt, the landfill operator will sign the receipts, and the quantity of asbestos debris leaving the Site and arriving at the landfill acknowledged.

E. All asbestos debris shall be transported in covered, sealed vans, boxes, or dumpsters, which are physically isolated from the driver by an airtight barrier. All vehicles must be properly licensed to meet DOT requirements.

F. Any vehicles used to store or transport ACM will either be removed from the property at night, or shall be securely locked and posted to prevent disturbance.

G. Any incident and/or accident that may result in spilling, exposure or environmental release of asbestos waste outside the work area, on and off the property, and all related issues shall be the sole responsibility of the Contractor.

END OF SECTION 028200

SECTION 028300 – LEAD ABATEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Limited Hazardous Materials Inspection Report (May 2015).

B. Hazardous Materials Abatement Drawing HM101.

1.2 CONSULTANT

A. The Architect shall retain a Consultant for the purposes of project management and monitoring during lead abatement activities. At the discretion of the Architect, the Consultant shall represent the Owner in all phases of the lead abatement project. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to:

1. Work area approval
2. Monitoring results review
3. Various segments of work completion
4. Abatement final completion
5. Data submission review
6. Daily field punch list items

1.3 PROJECT SCOPE OF WORK

A. Work outlined in this Section includes all work necessary for the abatement of Lead-Based Paint (LBP) hazards (the “Work”) at 250 Cosey Beach Avenue in East Haven, Connecticut (the “Site”). Work shall be performed in compliance with United States (US) Environmental Protection Agency (EPA) Renovation, Repair, and Painting (RRP) Rule regulations and US Housing and Urban Development (HUD) Lead Safe Work Practices. The property is considered Target Housing; however it is not currently occupied by a child under the age of six; therefore, State of Connecticut Regulations Section 19a-111 do not apply.

B. Responsibilities of Lead-Safe Renovation Contractors: The responsible party of the Lead-Safe Renovation Contractor or other entity conducting renovation work shall ensure the following:

1. All persons performing renovation work are responsible persons or employees of the Lead-Safe Renovation Contractors.
2. A person who is Certified as a Lead-Safe Renovator Supervisor or a licensed Lead Abatement Supervisor (hereinafter referred to as Supervisor) shall be assigned to the project for each contractor performing renovation work where lead paint is to be disturbed and be on-site at all times during Lead-Safe Renovation Work.
3. All workers performing Lead-Safe Renovation shall be certified as Lead-Safe Renovator Supervisors or have received requisite training as required by HUD regulations
4. Prior to the start of work the Lead-Safe Renovation Contractor shall ensure pre-renovation notification requirements for providing EPA Pamphlet are followed.
5. The Lead-Safe Renovation Contractor and Supervisor shall ensure that lead safe work practice requirements are utilized in accordance with EPA RRP Rule and HUD regulations

6. The required recordkeeping documentation of the Lead-Safe Renovation work shall be maintained as required.

C. Responsibilities of Lead-Safe Renovation Supervisors: The responsible party of the Lead-Safe Renovation Contractor shall ensure the following:

1. The Supervisor shall be assigned to the project for each contractor performing renovation work where lead paint is to be disturbed and be on site at all times during Lead-Safe Renovation Work.
2. The Lead Safe Renovation Supervisor shall oversee and ensure that lead safe work practice requirements are utilized in accordance EPA RRP Rule and HUD regulations.
3. Upon the completion of work conduct the required visual clearance inspection and cleaning verification as required by the RRP Rule.

D. The following table summarizes the interior and exterior LBP requiring LBP removal and proper disposal as hazardous lead waste:

LOCATION	ABATEMENT ITEM	SCOPE OF WORK
1st Floor Kitchen	Door	Scrape **ALL** LBP, Encapsulate Remediated Surfaces with Connecticut-Approved Encapsulant, Install Window Well Covers, & Containerize, Transport, & Dispose Waste as Hazardous Lead Waste
Exterior B-Side	2nd Siding-Bottom Layer, Upper Trim-Yellow Paint Trim-Yellow Paint	Scrape Defective **ALL** LBP, Encapsulate Remediated Surfaces with Connecticut-Approved Encapsulant, Containerize, Transport, & Dispose Waste as Hazardous Lead Waste
Exterior D-Side	Ceiling Joist-Yellow Paint	Scrape Defective **ALL** LBP, Encapsulate Remediated Surfaces with Connecticut-Approved Encapsulant, Containerize, Transport, & Dispose Waste as Hazardous Lead Waste

E. The following table summarizes the elevated concentrations of lead in dust requiring decontamination with Tri-sodium Phosphate (TSP) and High Efficiency Particulate Air (HEPA)-filtered vacuuming.

LOCATION	ABATEMENT ITEM	SCOPE OF WORK
1st Floor Living Room	Window Wells	Lead in Dust shall Be Cleaned & Well Insert Shall be Installed
1st Floor Kitchen	Floor	Lead in Dust shall Be Cleaned To Meet Clearance Standards after LBP Removal on Door Has Been Completed.

F. The Contractor is responsible for verifying the quantities of materials to be removed, and the condition of these materials.

G. Waste generated during all work activities shall be presumed hazardous waste for disposal and properly disposed.

1.4 USE OF CONTRACT DOCUMENTS

A. It shall be incumbent upon the Contractor to visit the Site and determine what is existing, its condition, and what will be required to accomplish the Work intended by the Contract Documents.

B. All work shall comply with the Contract Documents and with applicable codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern.

C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all material and labor necessary for the completion of the Work in accordance with the intent of the Specifications.

D. In case of ambiguity among the Contract Documents, the more stringent requirement as determined by the Consultant shall prevail.

E. The Work of this Contract includes making modifications as necessary, subject to approval by Owner and the Architect in consultation with the Consultant, to correct any conflicts between Contract Documents.

F. All items, not specifically mentioned in the Specifications, but implied by trade practices to complete the Work, shall be included.

1.5 SITE EXAMINATION

A. It is understood that the Contractor has examined the Site and made their own estimates of the facilities and difficulties attending the execution of the Work, and has based their price thereon.

B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the Site.

1.6 CONTRACTUAL QUALIFICATIONS

A. All bidders shall submit a record of prior experience in similar projects, listing no less than three completed projects in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:

1. Project Name and Address
2. Owner's Name and Address
3. Architect/Consultant
4. Contract Amount
5. Date of Completion
6. Extras and Changes

B. Submit a written statement regarding whether the Contractor has ever received a citation with federal or state lead regulations pertaining to worker protection, removal, transport, or disposal.

C. The Contractor shall be a US EPA-Certified Lead-Safe Renovator in accordance with the EPA RRP Rule. All workers and supervisors on this project shall have completed a minimum of 8-hours of training and received certification as lead safe renovators. This is a HUD regulatory requirement (Title 24 CFR, Part 35).

1.7 CONSTRUCTION PROGRESS SCHEDULE

A. To assure adequate planning and execution of the Work, and to assist the Consultant in appraising the reasonableness of the Contractor's applications for payment, the Contractor shall prepare and maintain a detailed Progress Schedule.

B. The Contractor shall supervise and direct all work of theirs and other trades using their best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work under this Contract.

C. Due to the nature of this construction work, the scheduling or phasing of work under this Contract may be adjusted by the Owner and the Architect. As long as the Scope of Work is not altered, adjustments to the project phasing shall have no effect on the contract price.

D. A pre-construction meeting shall be attended by the Contractor and any Subcontractors. The assigned project Supervisor must attend this meeting.

1.8 TESTING LABORATORY SERVICES

A. The Contractor shall submit to the Architect and the Consultant the name, address, and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this Section.

1.9 ADDITIONAL GENERAL REQUIREMENTS

A. The Contractor shall designate a Supervisor for the work to insure compliance with state and federal regulations. The Supervisor shall be the competent person as defined by Occupational Safety and Health Administration (OSHA) regulations.

B. The Contractor shall allow the Work of this contract to be inspected if required by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall immediately notify the Owner, the Architect, and the Consultant and shall maintain written evidence of such inspection for review by the Owner, the Architect, and the Consultant.

C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.

D. The Contractor shall immediately notify the Owner, the Architect, and the Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the Owner, the Architect, and the Consultant for verification and recording.

1.10 DEFINITIONS

A. The following definitions relative to lead abatement may apply:

1. Abatement - A measure or set of measures designed to permanently eliminate LBP hazards or LBP. Abatement strategies include the removal of LBP, enclosure, encapsulation, replacement of building components coated with LBP, removal of lead-contaminated dust, and removal of lead-contaminated soil or overlaying soil with a durable covering such as asphalt.
2. Action Level - Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter ($\mu g/m^3$) calculated as an eight-hour time weighted average (TWA).
3. Abrasive Abatement - A method of abatement that entails the removal of LBP using mechanical removal equipment fitted with a HEPA dust collection system.
4. Architect – Lothrop Associates, LLP
5. Atomic Absorption Spectrophotometer (AAS) - An instrument which measures the lead content in parts per million (ppm) using a lead source lamp and a flame capable of measuring the absorbed energy and converting it to concentration.
6. Biological Monitoring - The analysis of a person's blood to determine the level of lead contamination in the body.
7. Certified Renovator – An individual who is approved to conduct remodeling work practices described in the terms of the RRP rule issued by the EPA on April 22, 2008.
8. Chemical Removal - A method of abatement which entails LBP removal using caustic or solvent-based chemical paint strippers.
9. Child-Occupied Facility – A building or a portion of a building, constructed prior to 1978, and visited by the same child of less than six years of age on at least two different days within any week (Sunday through Saturday), provided that each day's visit lasts at least three-hours in duration, and the combined weekly visits last at least six-hours in duration, and the combined annual visits last at least 60-hours in duration. Child-Occupied Facilities may be located in target housing or in public or commercial buildings. With respect to common areas in public or commercial buildings that contain Child-Occupied Facilities, the Child-Occupied Facility encompasses only the exterior sides of the building that are immediately adjacent to the Child-Occupied Facility.
10. Cleaning Verification Card - A card developed and distributed, or otherwise approved by EPA for the purpose of determining, through comparison of wet and dry disposable cleaning cloths with the card, whether post-renovation cleaning has been adequately completed.
11. Component Person - An individual who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
12. Complete Abatement - Abatement of all LBP inside or outside a dwelling or building and reduction of any lead-contaminated dust or soil hazards. All of these strategies require preparation; cleanup; post abatement clearance testing; record keeping; and, if applicable, re-evaluation and on-going monitoring.
13. Consultant – Fuss & O'Neill EnviroScience, LLC
14. Deteriorated Paint - Paint that is peeling, flaking, chalking, scaling, or chipping; paint that is over a defective or deteriorated substrate; or paint that is damaged in any manner such that a child can access paint from the damaged area. Deteriorated paint shall be classified as either in fair or poor conditions.
15. Elevated Blood Lead Level - A blood lead concentration as defined in Regulations of the State of Connecticut. A blood lead concentration equal to or greater than 40 micrograms per deciliter (µg/dl) as defined in OSHA Standard Title 29 CFR, Part 1926.62.
16. Encapsulation - The resurfacing or covering of surfaces, and sealing or caulking with durable materials so as to prevent or control chalking or flaking of substances containing LBP.

17. Enclosure - The use of rigid, durable construction materials that are mechanically fastened to the substrate to act as a barrier between the LBP and the environment.
18. Engineering Controls - Measures implemented at the work site to contain, control, and/or otherwise reduce worker exposure to, and environmental releases of lead dust and debris.
19. Evaluation - Risk assessment, paint inspection, re-evaluation, investigation, clearance examination, or risk assessment screen.
20. Fixed Object - A unit of equipment or furniture in the work area which cannot, as determined by the State, be removed from the work area.
21. Hazardous Waste - As defined in the Resource Conservation and Recovery Act (RCRA) the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity; concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to increases in mortality, increase in serious and irreversible or incapacitating but reversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed. As defined in the regulations, solid waste is hazardous if it meets one of the following four conditions:

    a. Exhibits a characteristic of a hazardous waste (Title 40 CFR, Parts 261. 20 through Part 261.24),
    b. Has been listed as hazardous (Title 40 CFR, Parts 261.31 through Part261.33),
    c. Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste), or
    d. Is not excluded from regulation as a hazardous waste.

22. Inspection - A surface-by surface investigation to determine the presence of LBP (in some cases including dust and soil sampling) and a report of the results.
23. Inspector - An individual who meets the licensing and certification requirements of the State of Connecticut Department of Public Health (CTDPH) Sections 20-478-1 through 20-478-3 to (1) perform inspections to determine and report the presence of LBP on a surface-by-surface basis through on-site testing, (2) report the findings of such an inspection, (3) collect environmental samples for laboratory analysis, (4) perform clearance testing, and (5) document successful compliance with LBP hazard control requirements or standards.
24. Intact Surface - A defect-free surface with no loose, peeling, chipping, or flaking paint. Painted surfaces must be free from crumbling, cracking or falling plaster and must not have holes in them. Intact surfaces must not be damaged in any way.
25. Interim Controls - A set of measures designed to temporarily reduce human exposure or possible exposure to LBP hazards. Such measures include specialized cleaning, repairs, maintenance painting, temporary containment, and management and resident education programs. Interim controls also include dust removal; paint film stabilization, treatment of friction and impact surfaces, installation of soil coverings, such as grass or sod, and land-use controls.
26. Lead Abatement Plan - A written plan that identifies the location of intact and defective LBP and describes how defective lead-based surfaces will be abated and how the environment, health, and safety will be protected.
27. LBP - Paint or other surface coatings that contain lead equal to or greater than 1.0 milligram of lead per square centimeter (mg/cm^2) or greater than 0.5% by weight.
28. LBP Hazard - Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or deteriorated LBP would have an adverse effect on human health. LBP hazards

include for example, deteriorated LBP, leaded dust levels above applicable standards, and bare leaded soil above applicable standards.

29. LBP Hazard Control - Activities to control and eliminate LBP hazards, including interim controls, abatement, and complete abatement.
30. LBP Abatement Planner/Designer - An individual who meets the licensing and certification requirements of CTDPH, Sections 20-478-1 through 20-478-3 for planning and designing LBP abatement projects.
31. Lead Consultant - An individual who meets the licensing and certification requirements of the CTDPH Sections 20-478-1 through 20-478-3 to perform as an inspector, risk assessor or planner/designer.
32. Lead Control Area - An area where lead abatement operations are performed where airborne concentrations of lead dust exceed or can reasonably be expected to exceed the permissible exposure limit (PEL). The lead control area is isolated by physical boundaries from occupied areas to prevent the spread of lead dust, paint chips, debris, and unauthorized entry of personnel.
33. Lead-Free Dwelling - A lead-free dwelling contains no LBP-coated surfaces and has interior dust and exterior soil lead levels below the applicable CTDPH, HUD and EPA standards.
34. Lead Hazard Screen - A means of determining whether residences in good condition should have a full risk assessment. Also called a risk assessment screen.
35. Lead-Safe Dwelling - A lead-safe dwelling contains intact or encapsulated LBP and has interior dust and exterior soil lead levels below the applicable CTDPH, HUD and EPA standards.
36. Manifest - The shipping document (EPA Form 8700-22 or a comparable form required by the State or locality) used for identifying the quantity, composition, origin, routing, and destination of hazardous waste during its transport from the point of generation to the point of treatment, storage, or disposal.
37. Owner – Mr. Robert Bishop
38. Paint Film Stabilization - The process of wet scraping, priming, and repainting surfaces coated with deteriorated LBP; paint film stabilization includes cleanup and clearance.
39. Paint Removal - An abatement strategy that entails the removal of LBP from surfaces. For lead hazard control work, this can mean using chemicals, heat guns below 700 degrees Fahrenheit (°F), and certain contained abrasive methods. Open flame burning, open abrasive blasting, sand blasting, water blasting and extensive dry scraping are prohibited paint removal methods.
40. Permissible Exposure Limit (PEL) - 50 $\mu g/m^3$ of air averaged over an 8-hour period as determined by OSHA Title 29 CFR, Part 1926.62.
41. Personal Monitoring - Sampling of lead concentrations within the breathing zone of a worker to determine the 8-hour TWA concentration in accordance with OSHA Title 29 CFR, Part 1926.62. Samples shall be representative of the employee's work tasks.
42. Re-Evaluation - In lead hazard control work the combination of a visual assessment, and collection of environmental samples performed by a certified risk assessor to determine if a previously implemented LBP hazard control measure is still effective and if the dwelling remains lead-safe.
43. Replacement - A strategy of abatement that entails removing components such as windows, doors, and trim that have lead painted surfaces and installing new or de-leaded components free of LBP.
44. Risk Assessment - An on-site investigation of a residential dwelling to discover any LBP hazards. Risk assessments include an investigation of the age, history, management, and maintenance of the dwelling, and the number of children under age 6 and women of childbearing age who are residents, a visual assessment, limited environmental sampling (i.e., collection of dust wipe samples, soil samples, and deteriorated paint samples), and preparation of a report identifying acceptable abatement and interim control strategies based on specific conditions.
45. Risk Assessment Screen - A type of risk assessment performed only in buildings in good condition using fewer samples but more stringent evaluation criteria (standards) to determine lead hazards.

46. Risk Assessor - An individual who meets the licensing and certification requirements of the CTDPH Sections 20-478-1 through 20-478-3 to (1) perform risk assessments, (2) identify acceptable abatement and interim control strategies for reducing identified LBP hazards, (3) perform clearance testing and reevaluations, and (4) document the successful completion of LBP hazard control activities.
47. Target Housing - Any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless a child under the age of six resides or is expected to reside in such housing) and any zero-bedroom dwelling.
48. Toxicity Characteristic Leaching Procedure (TCLP) - Toxicity characteristic leaching procedure utilizing EPA Test Method SW-846, Method 1311 to determine whether waste can be classified as hazardous or construction waste for disposal purposes.
49. Visible Residue - Any paint debris, dust, or chips on surfaces within the work area where lead abatement has occurred, and which is visible to the unaided eye.
50. Wet Cleaning - The process of eliminating lead dust and chip contamination from surfaces by using cloths, mops, or other cleaning tools which have been dampened with water and disposing the cleaning items as hazardous lead waste afterwards.
51. Wipe Test - A test used to determine the concentration of lead particles; used to determine whether clearance levels for lead abatement have been achieved. A wipe test assimilates the dust from a measured surface area of about one square foot and is laboratory analyzed to determine the quantity of lead contained in that area.
52. X-Ray Fluorescence (XRF) Analyzer - An analytical instrument which measures lead concentration of dried paint on surfaces or in a laboratory sample in mg/cm^2 using a radioactive source within the instrument. There are two types of XRF-analyzers commonly available that require distinct and different testing protocols - "direct read" and "spectrum analyzer".

1.11 SUBMITTALS

A. The Contractor shall submit the following to the Architect and the Consultant in one complete package prior to the pre-construction meeting or at least 10 business days prior to the start of the Work:

1. Submit a schedule to the Owner, the Architect, and the Consultant that defines a timetable for executing and completing the project, including set-up, removal, cleanup, decontamination, disposal, and clearance sampling.
2. Submit the name and address of the hauling contractor and landfill to be used. Also submit current valid operating permits in certificates of insurance for the transporter and landfill.
3. Submit video documentation showing the conditions of the building prior to the start of the Work. The Contractor shall be held responsible for all damage to the building and its contents not shown on the video documentation.
4. Submit the plans and construction details for the construction of the decontamination system and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
5. Submit the training accreditations, medical records, and fit test records of each employee who may be on the project site and exposed to lead.
6. Submit the qualifications of the laboratory who the Contractor proposes to use to analyze personal air samples for OSHA employee exposure monitoring, if applicable.
7. Submit detailed product information on all materials and equipment proposed for lead abatement work on this project.

8. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project as well as a list of past projects completed. Submit a chain of command for the project.
9. Submit a site-specific Emergency Action Plan for the project.
10. Submit a written site-specific Respiratory Protection Program for employees for the Work, including make, model and National Institute of Occupational Safety and Health (NIOSH) approval numbers of respirators to be used at the Site.
11. No work on the Site shall be allowed to begin until the Architect and the Consultant as listed herein accept the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

B. The following shall be submitted to the Owner, the Architect, and the Consultant during the Work:

1. Results of personal air sampling
2. Training and medical records for new employees to start work (24-hours in advance)

C. The following shall be submitted to the Owner, the Architect, and the Consultant at the completion of the Work:

1. Copies of all air sampling results
2. Contractor daily site logs
3. Completed, signed copies of waste manifest records

1.12 REGULATIONS AND STANDARDS

A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to lead abatement. Specifically, the Contractor shall comply with the requirements of the following:

1. State of Connecticut, Department of Energy and Environmental Protection (CTDEEP)

   a. Section 22a-209-1 through 22a-209-16 - Solid Waste Management Regulations.
   b. Section 22a-449(c)-100 through 22a-449(c) 110 and 22a-449(c)-11 - Hazardous Waste Management Regulations.

2. Occupational Safety and Health Administration (OSHA)

   a. Title 29 CFR, Part 1910.134 - Respiratory Protection.
   b. Title 29 CFR, Part 1910.146 - Permit-Required Confined Spaces.
   c. Title 29 CFR, Part 1926.21 - Safety Training.
   d. Title 29 CFR, Part 1926.28 - Personal Protective Equipment.
   e. Title 29 CFR, Part 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists.
   f. Title 29 CFR, Part 1926.57 - Ventilation.
   g. Title 29 CFR, Part 1926.59 - Hazard Communication.
   h. Title 29 CFR, Part 1926.62 - Lead.
   i. Title 29 CFR, Part 1926.103 - Respiratory Protection.

3. Environmental Protection Agency (EPA)

   a. Title 40 CFR, Part 260 - Hazardous Waste Management Systems: General.
   b. Title 40 CFR, Part 261 - Identification and Listing of Hazardous Waste.
   c. Title 40 CFR, Part 262 - Generators of Hazardous Waste.

d. Title 40 CFR, Part 263 - Transporters of Hazardous Waste
e. Title 40 CFR, Part 264 - Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
f. Title 40 CFR, Part 265 - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
g. Title 40 CFR, Part 268 - Land Disposal Restrictions
h. Title 40 CFR, Part 745, Subpart F - Disclosure of Known LBP and/or LBP Hazards upon Sale or Lease of Residential Property.
i. Title 40 CFR, Part 745, Subpart L - LBP Activities.
j. Title 40 CFR, Part 745, Subpart Q - State and Indian Tribal Programs.
k. Title 40 CFR, Part 745.80-92 – Renovation, Repair, and Painting Rule (RRP Rule)

4. Department of Transportation (DOT)

a. Title 49 CFR, Parts 171 to 180 - Hazardous Materials Regulations

5. Department of Housing and Urban Development (HUD)

a. Title 24 CFR, Part 35, Subparts B-R – Lead Safe Housing Rule

1.13 QUALITY ASSURANCE

A. Hazard Communication Program

1. The Contractor shall establish and implement a Hazard Communication Program as required by OSHA Title 29 CFR, Part 1926.59.

B. Compliance Plan (Site-Specific)

1. The Contractor shall establish a written compliance plan that is site-specific, to include the following:

a. A description of each work activity involving lead including equipment used, material included, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.
b. Methods of engineering controls used to control lead exposure.
c. The proposed technology the Contractor will implement in meeting the PEL.
d. Air monitoring data documenting the source of lead emissions.
e. A detailed schedule for implementing the program, including documentation of appropriate supply of equipment, etc.
f. Proposed work practice that establishes proper protective work clothing, housekeeping methods, hygiene facilities, and practices.
g. Worker rotation schedule, if proposed, to reduce TWA.
h. A description of methods for informing workers of potential lead exposure.

C. Hazardous Waste Management

1. The Contractor shall establish a Hazardous Waste Management Plan, which shall comply with applicable regulations and address the following:

a. Identification of hazardous wastes
b. Estimated quantity of waste to be disposed

c. Names and qualifications of each sub-contractor that will be transporting, storing, treating, and disposing wastes
d. Disposal facility location and 24-hour point of contact
e. Establish EPA state hazardous waste and identification numbers if applicable
f. Names and qualifications (experience and training) of personnel who will be working on site with hazardous wastes
g. List of waste handling equipment to be used in performing the work to include cleaning, volume reduction, if applicable, and transport equipment
h. Qualifications of laboratory to be utilized for TCLP analysis
i. Spill prevention, Control and Countermeasure Plan (SPCC)
j. Work plan and schedule for waste containment, removal, treatment, and disposal

D. Medical Examinations

1. Before exposure to lead contaminated dust, provide workers with a comprehensive medical examination as required by OSHA Title 29 CFR, Parts 1910.1025 and 1926.62.
2. The examination shall not be required if adequate records show that employees have been examined as required by OSHA Title 29 CFR, Part 1926.62 within the last year.
3. Medical examination shall include, at a minimum, approval to wear respiratory protection and biological monitoring.

E. Training

1. The Contractor shall ensure that workers are trained to perform lead paint disturbing activities and disposal operations prior to the start of work in accordance with OSHA Title 29 CFR, Part 1926.62 regulations.
2. The Contractor shall ensure that **all** workers are trained to perform lead paint disturbing activities and disposal operations prior to the start of work in accordance with HUD Lead Safe Housing Rule Title 24 CFR, Part 35, and Subparts B-R. The following training courses meet this requirement:

   a. HUD/EPA course “Work Smart, Work Wet, and Work Clean to Work Lead Safe” (8-hours) with current RRP refresher.
   b. HUD/NARI course “The Remodeler’s and Renovator’s Lead Based Paint Training Program” (8-hours) with current RRP refresher.
   c. HUD “Lead Safe Work Practices” (8-hours) with current RRP refresher.
   d. EPA RRP Lead Safe Renovator training (8-hours)

3. The Contractor shall ensure that a “Certified Renovator” be assigned to the project as required by EPA RRP Rule Title 40 CFR, Part 745.80-92.

F. Respiratory Protection Program

1. The Contractor shall furnish each employee required to wear a negative pressure respirator with a respirator fit test at the time of initial fitting and at least once every six (6) months thereafter as required by Title 29 CFR, Part 1926.62.
2. The Contractor shall establish a Respiratory Protection Program in accordance with American National Standards Institute (ANSI) Z88.2, Title 29 CFR, Parts 1910.134 and 1926.62.

1.14 PERSONAL PROTECTION

A. Exposure Assessment

1. The Contractor shall determine if any worker will be exposed to lead at or above the action level.
2. The exposure assessment shall identify the level of exposure a worker would be subjected to without respiratory protection.
3. The exposure assessment shall be achieved by obtaining personal monitoring samples representative of a full shift at least (8-hour time TWA).
4. During the period of the exposure assessment, the Contractor shall institute the following procedures for protection of workers.

    a. Protective clothing
    b. Respiratory protection
    c. Change areas
    d. Hand washing facilities and shower
    e. Biological monitoring
    f. Training of workers

B. Respiratory Protection

1. The Contractor shall furnish appropriate respirators approved by NIOSH/Mine Safety and Health Administration (MSHA) for use in atmospheres containing lead dust.
2. Respirators shall comply with the requirements of OSHA Title 29 CFR, Part 1926.62.
3. Workers shall be instructed in all aspects of respiratory protection.
4. The Contractor shall have an adequate supply of P100 filter elements and spare parts on site for each type of respirators in use.
5. The following minimum respirator protection for use during paint removal and surfaces with lead paint shall be the half- face, air purifying respirator with dual P100 filter cartridges for exposures (not in excess of 500 $\mu g/m^3$ or 10 x PEL).

C. Protective Clothing

1. Personal protective clothing shall be provided for all workers, supervisors, and authorized visitors entering the work area.
2. Each worker shall be provided daily with a minimum of two complete disposable coverall suits.
3. Abatement workers shall not be limited to two suits, and the Contractor shall supply additional suits, as necessary.
4. Under no circumstances shall anyone entering the abatement area be allowed to re-use a contaminated disposable suit.
5. Disposable suits, such as Tyvek™ or equivalent suits, and other personal protective equipment (PPE) shall be donned prior to entering the lead control area. A change room shall be provided for workers to put on suits and other personal protective equipment with separate areas to store their street clothes.
6. Eye protection for personnel engaged in lead operations shall be furnished when the use of a full-face respirator is not required.
7. Goggles with side shields shall be worn when working with power tools or a material that may splash or fragment, or if protective eye wear is specified on the Safety Data Sheet (SDS) for a particular product to be used on the project.

1.14 PERSONAL MONITORING

A. General. The Contractor is required to perform the personal air sampling activities during lead paint disturbing work. The results of such sampling shall be posted, provided to individual workers and submitted to the Owner as described herein.

B. Sampling. Air samples shall be collected for the duration of the work shift or for eight hours, whichever is less. Personal samples need not be taken every day after the first day if working conditions remain unchanged, but must be collected each time there is a change in removal operations, either in terms of the location or the type of work. Sampling will be used to determine 8-hour TWA. The Contractor shall be responsible for personal exposure air sampling as outlined in OSHA Title 29 CFR, Parts 1910.1025 and 1926.62.

C. Sampling Results. Air sampling results shall be reported to individual workers in written form no more than 48-hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield, cassette size, and analysts' name and company, and shall include an interpretation of the results. Air sample analytical results will be reported in $\mu g/m^3$.

D. Testing Laboratory. The Contractor's testing lab shall be participating in American Industrial Hygiene Association’s (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP). The Contractor shall submit to the Consultant for review and acceptance, the name and address of the laboratory, certification(s) of AIHA participation, a listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control Program. Any deviations from these specifications require written approval from the Owner and Consultant.

2.1 GENERAL

A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Architect and the Consultant prior to use. Any requests for substitution shall be provided in writing to the Owner, the Architect, and the Consultant. The request shall clearly state the rationale for the substitution.

B. Submit to the Architect and the Consultant product data of all materials and equipment and samples of all materials to be considered as an alternate.

C. Product data shall consist of manufacturer; catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, SDS, and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products or equipment and show performance characteristics and capacities.

D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally-related parts and attachment devices.

2.2 MATERIALS AND PRODUCTS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.

C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the Work including protective clothing, respirators, filter cartridges, polyethylene (poly) sheeting of proper size and thickness, tape, cleaning chemicals, and air filters.

D. Materials

1. Poly sheeting and reinforced poly sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with factory label indicating 6-mil.
2. Reinforced poly sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with factory label indicating 6-mil.
3. Poly disposable bags shall be 6-mil. Tie wraps for bags shall be plastic, five-inches long (minimum), pointed and looped to secure filled plastic bags.
4. Tape or spray adhesive will be capable of sealing joints in adjacent poly sheets and for attachment of poly sheeting to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
5. Impermeable containers are to be used to receive and retain any lead containing or contaminated materials until disposal at an acceptable disposal site.

    a. The containers shall be labeled in accordance with EPA and DOT standards.

6. HEPA-filtered exhaust systems shall be used during powered dust generating abatement operations. The use of powered equipment without HEPA exhausts is prohibited.
7. Detergent shall be a high phosphate content lead specific cleaning agent.

    a. Chemical paint removal agents shall not contain methylene chloride. Chemical removers used on masonry surfaces shall contain anti-stain formulation that inhibits discoloration of stone, granite, or brick. Chemical removers used on wood surfaces shall not raise or discolor the surface being abated.

8. Chemical removal agent neutralizer shall be compatible with both the substrate to which they are applied to and in conjunction with the chemical stripper used.

2.3 TOOLS AND EQUIPMENT

A. Tools and equipment shall be suitable for lead removal.

B. Air monitoring equipment shall be of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.

C. Electrical equipment, protective devices and power cables shall conform to all applicable codes.

D. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. One shower stall shall be provided for each eight workers.

E. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger.

F. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.

G. For manual scraping activities, Contractor shall supply each worker with multiple newly sharpened scrapers on a daily basis.

H. Sanders, grinders, wire brushes and needle gun removal equipment shall be equipped with a HEPA-filtered vacuum dust removal system.

I. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the work area shall be provided as appropriate for the Work.

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION MEETING

A. Prior to the start of work, a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Sub-Contractors. The assigned project Contractor Supervisor must attend this meeting.

B. A detailed project schedule and project submittals shall be presented by the Contractor at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner, the Architect, and the Consultant will inform the Contractor of any scheduling adjustments for this project.

C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.2 WORKER HYGIENE PRACTICES

A. Work Area Entry. Workers shall don PPE prior to entering work area, including respiratory protection, disposable coveralls, gloves, headgear, and footwear.

B. Work Area Departure. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls and proceed to change room and remove coveralls and footwear and place in hazardous waste disposal container.

C. Wash Facilities. All workers must wash their hands and faces upon leaving the work area.

D. Equipment. All equipment used by workers inside the work area shall be wet-wiped or bagged for later decontamination before removal from the work area.

E. Prohibited Activities. Under no circumstances shall workers eat, drink, smoke, chew gum or tobacco, apply cosmetics, or remove their respirators in the work area.

F. Shock Hazards. The Contractor shall be responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground fault circuit interrupters (GFCI).

3.3 GENERAL WORK AREA PREPARATION – LEAD CONTROL AREA

A. A Competent Person shall be at the Site at all times to ensure the establishment of proper separation of the work area from occupied areas and proper work practices are followed through project completion.

B. Where necessary, deactivate electrical power. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a State of Connecticut-licensed electrician and permitted as required.

C. Deactivate and/or isolate heating, ventilating, and air conditioning (HVAC) air systems or zones to prevent contamination and lead containing dust dispersal to other areas of the structure. During the Work, vents within the work area shall be covered with one layer of 6-mil poly sheeting sealed with duct tape and glue.

3.4 WORK AREA PREPARATION FOR INTERIOR LBP REMOVAL

A. Moveable objects shall be washed with TSP and HEPA vacuumed cleaned prior to removal from work areas. Moveable objects shall be stored by the Contractor and re-installed following clearance sampling by the Consultant. The Contractor is responsible for storing the moveable objects in a clean, dry location. Any damage to moveable objects is the responsibility of the Contractor to repair and/or replace. The Contactor is responsible for documenting existing damage to moveable objects prior to removing them from the work area.

B. Non-movable objects within the work areas shall be washed with TSP, HEPA vacuumed, and covered with a single layer of 6-mil poly sheeting.

C. Seal off all openings including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with a single layer of 6-mil poly sheeting and seal with tape. Doorways which will not be used for passage during work must be sealed with barriers as required for separation of work area and occupied areas. Doorways to be utilized for entrance and exist into work areas shall be sealed with two overlapping sheets of six mil polyethylene sheeting attached at the top and one side.

D. Floors shall be covered with two layers of 6-mil poly sheeting. Drop cloths consisting of 6-mil poly sheeting shall be utilized to collect any dust and/or paint chips generated painting activities.

E. Install caution tape at boundary of the work area to demarcate the regulated area. Post warning signs meeting the requirements of OSHA Title 29 CFR, Part 1926.62 at each work area. In addition, signs shall be posted at all approaches to areas so that employees may read the sign and take the necessary protective steps before entering the area.

F. Occupied areas and/or building space not within the work areas shall be separated from lead abatement work areas by means of airtight barriers.

G. Place all required tools and equipment in the work area so that workers will not have to leave the area.

H. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to leaving the lead abatement work area.

3.5 WORK AREA PREPARATION FOR EXTERIOR LBP REMOVAL

A. Install isolation barrier on the exterior side of the window openings and door opening. Protection shall be affixed to the exterior finish surfaces to isolate window and door openings. One layer of 6-mil poly sheeting shall create the critical barrier between the exterior and interior of the building.

B. Install ground protection on the exterior of the building in area of work. Protection shall include a single layer of 6-mil poly sheeting securely fastened to foundation extending out a minimum of 10 feet in each direction. Build a small curb at perimeter of sheeting to contain any paint chips and/or dust.

C. Install caution tape at boundary of the ground protection to demarcate the regulated area. Post warning signs meeting the requirements of OSHA Title 29 CFR, Part 1926.62 at each work area. In addition, signs shall be posted at all approaches to areas so that employees may read the sign and take the necessary protective steps before entering the area.

D. Place all required tools and equipment in the work area so that workers will not have to leave the area. This will avoid stepping off the protective sheeting.

E. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to stepping off the protective sheeting.

3.6 WORK AREA PREPARATION FOR LEAD IN DUST – WINDOW WELL

A. Moveable objects within three feet of window wells shall be washed with TSP and cleaned with HEPA-filtered vacuums prior to removal from work areas. Moveable objects shall be removed from the work areas, stored, and re-installed by the Contractor following acceptable clearance sampling by the Consultant. The Contractor shall be responsible for storing the moveable objects in a clean, dry location. Any damage to moveable objects is the responsibility of the Contractor to repair and/or replace. The Contactor shall be responsible for documenting existing damage to moveable objects prior to removing them from the work area.

B. Non-movable objects within three feet of window wells shall be washed with TSP, cleaned with HEPA-filtered vacuums, and covered with a single layer of 6-mil poly sheeting.

C. Install a single layer of 6-mil poly sheeting under windows extending three feet away from the window well taped and glued to the floor.

D. Place all required tools and equipment on poly sheeting so that workers will not have to leave the area.

E. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to leaving the lead abatement work area.

3.7 WORK AREA PREPARATION FOR LEAD IN DUST - FLOORS

A. Moveable objects shall be washed with TSP and cleaned with HEPA-filtered vacuums prior to removal from work areas. Moveable objects shall be removed the work areas, stored, and re-installed by the Contractor following acceptable clearance sampling by the Consultant. The Contractor shall be responsible for storing the moveable objects in a clean, dry location. Any damage to moveable objects is the responsibility of the Contractor to repair and/or replace. The Contactor shall be responsible for documenting existing damage to moveable objects prior to removing them from the work area.

B. Non-movable objects within the work areas shall be washed with TSP, and cleaned with HEPA-filtered vacuums, and covered with a single layer of 6-mil poly sheeting.

C. Seal off all openings including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with poly sheeting and completely seal with tape. Doorways which will not be used for passage during work must be sealed with barriers as required for separation of work area and occupied areas. Doorways to be utilized for entrance and exist into work areas shall be sealed with two overlapping sheets of 6-mil poly sheeting attached at the top and one side.

D. Occupied areas and/or building space not within the work areas shall be separated from lead abatement work areas by means of airtight barriers.

E. Place all required tools and equipment in the work area so that workers will not have to leave the area.

F. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to leaving the lead abatement work area.

3.8 GENERAL WORK PROCEDURES

A. The Contractor shall have a designated "competent person" on the Site at all times to ensure proper work practices throughout the project.

B. The Contractor shall regulate the work area as required for compliance with OSHA Title 29 CFR, Part 1926.62 to prohibit non-trained workers from entering areas where LBP hazards will be disturbed.

C. The Contractor shall establish a worker hygiene facility remote from the work area.

3.9 WORK AREA PROCEDURE FOR LBP REMOVAL

A. Prior to the removal of the LBP paint, the Contractor shall ensure that work area preparation has been conducted in accordance with Sections 3.3 and 3.4 of this Specification for interior LBP removal and Sections 3.3 and 3.5 of this Specification for exterior LBP Removal.

B. Wet down paint that is to be removed to reduce the amount of dust generated during the removal process.

C. If chemical stripper is utilized to remove defective LBP, the Contractor shall ensure the following:

1. Apply chemical stripper in quantities and for duration’s specified by manufacturer.
2. Remove lead paint from surface down to bare substrate with no trace of residual pigment. Use sanding and hand scraping to supplement chemical methods as required to remove residual pigment.
3. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.
4. Protect adjacent surfaces from damage by chemical removal methods.
5. Maintain a portable eyewash station in the work area.

D. If wet scraping/wet sanding is utilized to remove defective LBP, the Contractor shall ensure the following:

1. Remove loose paint from work surfaces by first “misting” the surface and then carefully scraping any loose paint. Keep surfaces wet during the entire operation.
2. Remaining paint edges can be “feathered” by wet sanding with damp sandpaper.

E. The following paint removal methods are prohibited:

1. The use of heat guns, or any blasting media, or power tool assisted grinding, sanding, cutting, or wire brushing without the use of HEPA-filtered vacuum dust collection systems to remove LBP is prohibited.
2. Welding or torch cutting of materials painted with LBP is prohibited. Where cutting, welding, rivet busting, or torch cutting of materials is required, prior removal of the LBP shall be performed in the affected area.
3. Dry scraping.

F. Do not damage adjacent surfaces.

G. Initiate cleanup immediately after component removal has been completed. Remove any dust located behind the component removed.

H. Maintain appropriate wash station within the work area.

3.10 WORK AREA PROCEDURES FOR LEAD IN DUST

A. Prior to the cleaning of lead in dust on the floors and window wells, the Contractor shall ensure that work area preparation has been conducted in accordance with Sections 3.3 and 3.6 of this Specification for window well cleaning and Sections 3.3 and 3.7 of this Specification for floor cleaning.

B. Gross debris, paint chips, etc. should first be removed by cleaning with HEPA-filtered vacuums and wet spraying debris to be removed by hand to minimize dust generation.

C. HEPA vacuum surface thoroughly and repeatedly.

D. Wet clean surfaces. Following HEPA vacuuming. Wash the surfaces with a suitable cleaning detergent (TSP or equivalent). Cleaning the solution as it becomes dirty. Rinse all areas with a fresh cloth. Do not reuse contaminated cloths. HEPA vacuum surface again.

E. Maintain appropriate wash station within the work area.

F. Install window well inserts within window wells following cleaning.

3.11 WORK PROCEDURES – LIQUID ENCAPSULANT

A. Procedures for the application of encapsulation products shall be in accordance with CTDPH guidance document, “Information on Applying Liquid Encapsulants to Interior Surfaces for Property Owners and Lead Professionals”. Encapsulants shall be CTDPH-approved.

B. All surfaces to be encapsulated shall be free of dirt, dust, mildew, scale, rust, or other deleterious material. Properly remove all loose or peeling paint and wash down the surface with a lead abatement-specific detergent. Repair all substrate damage with an appropriate patching material to an equal or better condition.

C. Prior to application of encapsulants, preform the tape, X-cut tape, and patch tests in accordance with CTDPH guidance document “Information on Applying Liquid Encapsulants to Interior Surfaces for Property Owners and Lead Professionals” to determine if the surface is suitable for encapsulation.

D. Follow the encapsulant manufacturer-printed application instructions.

E. Do not damage adjacent surfaces.

3.12 DECONTAMINATION PROCEDURES

A. All workers must wash hands and face upon leaving the work area. Wash facilities shall be provided by the removal Contractor in compliance with OSHA Title 29 CFR, Parts 1926.51(f) and 1926.62. This worker hygiene facility will consist of, at least, running potable water, towels, soap, and a HEPA vacuum.

1. Upon leaving the work area, each worker will HEPA vacuum gross debris from work suit, remove and dispose their work suit, wash and dry face and hands, and vacuum clothes. Do not remove lead chips or dust by blowing or shaking of clothing. Wash water shall be collected, filtered, and disposed as hazardous lead waste.

B. Operational shower facilities, remote to the work area, shall be provided by the Contractor and maintained in working order such that any worker has the option of decontamination by showering. If air monitoring data by the Contractor or Consultant shows that employee exposure to airborne lead exceeds 50 $\mu g/m^3$, the following mandatory showering conditions apply:

1. Street clothes cannot be worn into the work area and shall be stored in the change room. Workers shall wear disposable suits over clothing that stays on site in the change room, or disposable suits over nylon or Tyvek™ or equivalent undergarments, or coveralls that are laundered on site.
2. Street shoes cannot be worn into the Lead Control Area and shall be stored in the change room. Dedicated shoes that do not leave the Lead Control Area may be utilized. Work shoes covered by disposable booties may be utilized if the shoes are cleaned after each use and kept in the change room.
3. Showers must be utilized.

C. Ensure proper entry and exit procedures for all persons who enter and leave the Lead Control Area. Remove and containerize all visible accumulations of paint chips and associated dust and debris daily. During clean-up, utilize rags and sponges wetted with lead abatement-specific detergent and water to minimize dust levels.

3.13 WORK AREA CLEAN UP

A. Mop heads, waste water, broom heads, rags and sponges used in the clean-up activity shall be disposed as hazardous lead-containing waste.

B. Sealed disposal containers and all equipment used in the work area shall be included in the clean-up.

C. Clean all surfaces with HEPA-filtered vacuum equipment prior to wet cleaning all surfaces within regulated area.

D. Upon completion of LBP removal, the Contractor shall begin final cleaning. The Contractor shall clean and remove any contaminated material, equipment, or debris including poly sheeting from the work area. The poly sheeting shall first be sprayed or misted with water for dust control, the resulting removal debris removed, and then the sheeting shall be folded in upon itself.

1. Large Debris. Large debris from demolition shall be wrapped in poly sheeting at least 6-mil thick, sealed with heavy duty duct tape, and transported to dumpsters.
2. Small Debris. Prior to picking up or collecting small debris, the surfaces of this debris shall be sprayed with a fine mist of water. The debris shall be picked up, collected, and placed into a single poly bag, at

least 6-mil thick. The bags shall not be overloaded, shall be securely sealed, and shall be transported to dumpster for disposal. Dry sweeping is not permitted in the work area.

3. Sheeting. Removal of ground poly sheeting and isolation barriers shall begin at the corners and be folded into the middle to contain the dust or residue. All collected poly sheeting shall be placed in 6-mil poly bags for proper disposal.
4. HEPA Vacuuming. Once the 6-mil poly sheeting is removed from the work area, cleaning shall begin with a thorough cleaning using HEPA-filtered vacuums on all surfaces, proceeding down the walls and including window and door trim and ground surfaces. The ground surfaces shall be cleaned last, beginning at the farthest corners from the entrance to the work area.
5. Hygiene, Cleaning Equipment and Supplies. Special attention shall be given to personal hygiene and the cleaning of supplies and/or equipment. All mop heads; sponges and rags shall be replaced or changed daily, at a minimum.

3.14 CONSULTANTS INSPECTION AND RE-OCCUPANCY CLEARANCE SAMPLING RESPONSIBILITIES

A. The Consultant shall conduct inspections throughout the progress of the abatement project. Inspections may be conducted to document the progress of the abatement work, as well as the procedures and practices employed by the Contractor.

B. The Consultant shall perform the following inspections during abatement activities:

1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the Contractor. The Consultant shall be informed a minimum of 12-hours prior to the time the inspection is needed. If deficiencies are noted during the pre-commencement inspection, the Contractor shall perform the necessary adjustments to obtain compliance.
2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Consultant. During the work inspections, the Consultant shall observe the Contractor's abatement procedures, verify barrier integrity, assess project progress, and inform the Contractor of specific remedial activities if deficiencies are noted.
3. Final Visual Inspection. Upon request of the Contractor, the Consultant shall conduct a final visual inspection. After final cleaning, the inspector shall perform a visual inspection to identify any remaining dust. The inspection may entail the use of a white glove.

C. The Consultant shall perform wipe sampling on the window wells on the 1st floor and all floors throughout following component removal, LBP removal, and cleaning of the lead in dust where work is performed.

D. The Consultant shall perform a confirmation of window well inserts, where applicable, on the 1st floor.

E. Re-Occupancy Clearance Sampling Criteria – The following dust wipe criteria shall be met prior to occupancy:

1. Floors – 40 $\mu g/ft^2$

1.2 WASTE DISPOSAL

A. Disposal of hazardous lead bearing material must be in compliance with the requirements of, and authorized by, the CTDEEP, Office of Solid Waste Management and with the EPA RCRA requirements.

B. The Consultant has not performed lead testing of potential waste stream. The anticipated wastes based on the proposed abatement work will be limited to LBP, cleaned dust and debris, cleaning supplies and waste

materials. Wastes resulting from the proposed abatement shall be presumed hazardous lead waste for disposal and properly containerized.

C. The following materials are likely to leach lead at hazardous levels in excess of 5 milligrams per liter (mg/L). The Contractor shall containerize and dispose the following materials as hazardous lead waste at an EPA-approved treatment, storage, and disposal facility.

1. Building components coated with LBP.
2. Paint chips.
3. Paint dust.
4. Dust from HEPA filters and from damp sweeping.
5. Rags, sponges, mops, HEPA filters, respirator cartridges, scrapers, and other materials used for testing, removal, and clean up.
6. Disposable work clothes and respirator filters.
7. Contents of HEPA vacuums used on this project.
8. The cost for the above shall be provided at no additional cost to the Owner.

D. Contractor shall wipe the following materials clean of all dust, dirt and debris and dispose the material as construction debris:

1. Poly sheeting used in removal activities other than chemical removal.

E. Contractor shall collect the wash water generated by the worker shower and wash facilities in 55-gallon drums and filter the water using a 2-stage filtration system composed of the following:

1. 5 micron porosity in-line cartridge particulate filter followed by activated carbon filter in-line cartridge

F. Hold the filtered water for testing prior to discharge to the sanitary sewer. Contractor shall test the water and verify lead levels below 0.1 ppm and pH between 6 and 8 prior to discharge. Water that fails the testing criteria shall be treated with sodium hydroxide, pH adjusted, and retested. If the second analysis does not meet the lead level discharge criteria, the Contractor shall filter waste water by reverse osmosis prior to testing and discharge to the sanitary sewer.

G. All hazardous lead waste shall be containerized in accordance with DOT Title 49 CFR, Part 178. Label and placard each container in accordance with OSHA Title 29 CFR, Part 1926.62 and DOT Title 49 CFR, Part 172 to identify the type of waste and the date the container was filled.

H. The Contractor may not store containerized hazardous lead waste on the Site in excess of 180 calendar days from the accumulation start date.

I. Contractor shall utilize a certified transporter for hazardous waste in compliance with DOT Title 49 CFR, Part 172.

J. Contractor shall submit the completed Uniform Hazardous Waste Manifest, EPA Form 8700-22 for each load of hazardous waste within 30 calendar days following the date the load leaves the Site. Copies of all landfill receipts will be retained by the Consultant as part of the project file. The receipts will be signed by the landfill operator upon delivery, and the quantity of debris leaving the Site and arriving at the landfill acknowledged.

END OF SECTION 028300

SECTION 02 85 13 – MOLD REMEDIATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Limited Hazardous Materials Inspection Report (May 2015).

B. Hazardous Materials Abatement Plan Drawing HM101.

1.2 CONSULTANT

A. The Architect shall retain a Consultant for the purposes of project management and monitoring during Mold Remediation. At the discretion of the Architect, the Consultant will represent the Owner in all phases of the mold remediation project. The Contractor shall regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly, but not limited to:

1. Work area approval
2. Monitoring results review
3. Various segments of work completion
4. Abatement final completion
5. Data submission review
6. Daily field punch list items

1.3 SCOPE OF WORK

A. Work outlined in this Section includes all work necessary for the cleaning of interior surfaces to remain, cleaning and disposal of mold-contaminated materials impacted during the Renovation Project (the "Work") at 250 Cosey Beach Avenue in East Haven, Connecticut (the "Site").

B. This shall include all necessary demolition to access the material(s) for mold abatement.

1.4 USE OF CONTRACT DOCUMENTS

A. It shall be incumbent upon the Contractor to visit the Site and determine existing conditions, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the Site and understand the existing conditions.

B. All work shall comply with the Contract Documents and with applicable codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern.

C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all material and labor necessary for the completion of the Work in accordance with the intent of the Specifications.

D. In case of ambiguity among the Contract documents, the more stringent requirement as determined by the Consultant shall prevail.

E. The Work of this Contract includes making modifications as necessary, subject to approval by Owner and the Architect in consultation with the Consultant, to correct any conflicts between the contract documents.

F. All items, not specifically mentioned in the Specifications but implied by trade practices to complete the work, shall be included.

1.5 SITE EXAMINATION

A. It is understood that the Contractor has examined the Site and made their own estimates of the facilities and difficulties attending the execution of the Work, and has based their price thereon.

B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the Site.

1.6 CONTRACTUAL QUALIFICATIONS

A. All bidders shall submit a record of prior experience in similar projects, listing no less than three completed projects in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:

1. Project Name and Address
2. Owner's Name and Address
3. Architect/Consultant
4. Contract Amount
5. Date of Completion
6. Extras and Changes

B. Submit a written and notarized statement regarding whether the Contractor has ever been cited for non-compliance with federal or state regulations pertaining to worker protection, removal, transport, or disposal of hazardous materials.

1.7 CONSTRUCTION PROGRESS SCHEDULE

A. To assure adequate planning and execution of the Work, and to assist the Consultant in appraising the reasonableness of the Contractor's applications for payment, the Contractor shall prepare and maintain a detailed Progress Schedule.

B. The Contractor shall supervise and direct all work of theirs and other trades using their best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract.

C. Due to the nature of this construction work, the scheduling or phasing of work under this Contract may be adjusted by the Owner. As long as the Scope of Work is not altered, adjustments to the project phasing shall have no effect on the contract price.

D. A pre-construction meeting shall be attended by the Contractor and any Subcontractors. The assigned Supervisor must attend this meeting.

1.8 TESTING LABORATORY SERVICES

A. The Contractor shall submit to the Consultant the name, address and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this Section.

1.9 ADDITIONAL GENERAL REQUIREMENTS

A. The Contractor shall employ a competent Supervisor with at least three years of experience on projects of similar scope and magnitude who shall be responsible for all work involving mold abatement as described in the specifications and defined in applicable regulations, and have full time daily supervision of the same. The Supervisor shall be the competent person as defined by Occupational Safety and Health Administration (OSHA) regulations.

B. The Contractor shall allow the Work of this Contract to be inspected, if requested or required by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall immediately notify the Owner, the Architect, and the Consultant and shall maintain written evidence of such inspection for review by the Owner, the Architect, and the Consultant.

C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance, as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.

D. The Contractor shall immediately notify the Owner, the Architect, and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the Owner, the Architect, and the Consultant for verification and recording.

1.10 PROJECT DESCRIPTION

A. This Section includes requirements and procedures for cleaning of interior surfaces to remain, and packaging, transporting, and disposing of waste generated during mold abatement.

B. The work specified herein shall be the minimum requirements necessary to render the building dry and all surfaces within the area cleaned.

C. The following material to remain following Mold Remediation shall be cleaned by the Contractor:

LOCATION	MATERIAL TYPE	ESTIMATED QUANTITY
2nd Floor Bathroom Ceiling	Gypsum Board	100 SF

D. Some of the Work will be performed in conjunction with other trades (i.e., other trades work, demolition work, etc.).

E. Safety Data Sheets (SDS) for chemicals to be used during the project must be submitted to the Consultant prior to site delivery.

F. The Contractor shall be responsible for work area preparations, set-up, worker protection, demolition, disposal, removal, and cleaning of identified building areas and materials, as necessary.

G. The Contractor shall be responsible for the following general requirements:

1. Obtain and pay all associated fees for all approvals and permits, and submit all notifications required.
2. Provide, erect, and maintain all containment work areas, barricades, and warning signs.
3. Unless otherwise specified, all debris resulting from mold abatement, cleaning, and necessary selective demolition shall become the property of the Contractor and shall be removed from the premises.
4. Maintain a contained work area to eliminate building occupant exposures, and the spread of contamination to the unaffected areas of the building.
5. Protect and preserve in operating condition, all utilities traversing the building and Site. Damage to any portion of the building due to work by the Contractor shall be repaired to the satisfaction of the Owner at no cost to the Owner.

1.11 DEFINITIONS

A. The following definitions relative to mold abatement may apply:

1. Accessible - A space easily accessed, and which can be entered or seen without performing demolition.
2. Architect – Lothrop Associates LLP
3. Biocide - A chemical substance or micro-organism which can deter, render harmless, or exert a controlling effect on any harmful organism by chemical or biological means.
4. Competent Person - A representative of the Contractor who is capable of identifying existing mold hazards in the workplace and selecting the appropriate control strategy for exposure. Individual who has authority to take prompt corrective measures to eliminate such hazards during removal.
5. Consultant – Fuss & O'Neill EnviroScience, LLC
6. Debris - Any solid materials, including particulate substances, on a surface not intended to be present.
7. Decontamination System - A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.

8. Demolition - The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.
9. Equilibrium Moisture Content (EMC) - A recommended moisture content of wood, which is to be matched as close as practical to the expected moisture conditions of wood in service. The EMC shall be based on average conditions for both exterior and interior applications.
10. Exposed - Open to view.
11. Fixed Object - A piece of equipment or furniture in the Work Area, which cannot be removed from the Work Area, as determined by the Owner.
12. GFCI – Ground Fault Circuit Interrupter
13. HEPA - High Efficiency Particulate Air filtering system capable of filtering out particles of 0.3 microns diameter from a body of air at 99.97% efficiency or greater.
14. HEPA Filter - HEPA filter in compliance with ANSI Z9.2 1979.
15. HEPA Vacuum Equipment - Vacuum equipment equipped with a HEPA filter system for filtering the effluent air from the unit.
16. Inaccessible - A space not accessible, and which cannot be entered or seen without performing demolition.
17. Mechanical Cleaning - Physical removal of debris and other foreign matter from building surfaces.
18. Moveable Object - A piece of equipment or furniture in the Work Area, which can be removed from the Work Area.
19. Negative Air Pressure Equipment - A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.
20. Non-Porous Surface - Any surface of the building in contact with the air stream, which cannot be penetrated by either solutions or air. This would exclude materials such as wood, fiberboard, thermal insulation, and concrete.
21. Owner – Mr. Robert Bishop
22. Project Monitor - The trained or certified individual employed by the Architect contracted or employed by the building owner, or Contractor to supervise and/or conduct air monitoring and analysis. This individual is responsible for recognition of technical deficiencies in procedures during both planning and on-site phases of the project.
23. SDS – Safety Data Sheets
24. Shower Room - A room between the clean room and the equipment room in the work decontamination system with hot and cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.
25. Visibly Clean - Determined by visual inspection, that all portions or components of the building are both 1) free of any visible mold growth, and 2) in the Contractor's professional judgment, capable meeting cleaning verification goals established herein.
26. Visual Inspection - Examination of the cleaned building components to evaluate the effectiveness of the cleaning process using the human eye or another optical instrument.
27. Work Area - Specific area or location where the actual work is being performed, or such other area of a facility, which the Project Monitor determines to befall under the control of these Specifications.

1.12 SUBMITTALS

A. The Contractor shall submit the following to the Consultant in one complete package prior to the pre-construction meeting, and no later than 10 business days prior to the anticipated start of the Work:

1. Submit a schedule to the Architect and the Consultant which defines a timetable for executing and completing the project, including work area preparations, removal, cleanup, decontamination, and final visual inspection.
2. Submit the current certificate of insurance.
3. Submit the name and address of the hauling contractor and landfill to be used. Also submit current valid operating permits in certificates of insurance for the transporter and landfill.
4. Submit video documentation showing the conditions of the building prior to the start of work. The contractor will be held responsible for all damage to the building and its contents not shown on the video documentation.
5. Submit the plans and construction details for the decontamination systems construction, and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
6. Submit the training, medical, and respirator fit test records of each employee who may be on the project site.
7. Submit detailed product information on all materials and equipment proposed for mold abatement work on this project including, but not limited, to the following:

   a. HEPA Vacuum Equipment
   b. Respirators
   c. Polyethylene (poly) Sheeting
   d. Airless Sprayers
   e. MSDS/SDS for products and materials (including biocides) to be used at the Site
   f. Specialty In-Place Drying Equipment including, but not limited to: air scrubbers, desiccant or other de-humidifying equipment, hot air drying systems, air movers/fans, etc.

8. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project, as well as a list of past projects completed.
9. Submit a chain-of-command for the project.
10. Submit a site-specific Emergency Action Plan for the project.
11. Submit a written site-specific Respiratory Protection Program for employees for the Work, including make, model and National Institute of Occupational Safety and Health (NIOSH) approval numbers of respirators to be used at the Site.
12. No work on the Site will be allowed to begin until the Architect and the Consultant as listed herein approve the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

B. The following shall be submitted to the Consultant during the Work:

1. Training and medical records for new employees to start Site work (24-hours in advance)

C. The following shall be submitted to the Consultant at the completion of the Work:

1. Contractor logs.
2. Containment sign-in/sign-out sheets.
3. Fully-completed waste disposal sheets and bill-of-ladings.

1.13 REFERENCES

A. The current issue of each document referenced below shall govern the Work. Where conflict among requirements or with these specifications or other project specifications exists, the more stringent requirements shall apply.

1. Occupational Safety and Health Administration (OSHA):

   a. Title 29 CFR, Part 1910.134 – Respiratory Protection
   b. Title 29 CFR, Part 1926.21 – Safety Training and Education
   c. Title 29 CFR, Part 1926.32 – Definitions
   d. Title 29 CFR, Part 1926.51 – Sanitation
   e. Title 29 CFR, Part 1926.59 – Hazard Communication
   f. Title 29 CFR, Part 1926.200 – Accident Prevention Signs and Tags
   g. Title 29 CFR, Part 1926.417 – Lockout and Tagging of Circuits

2. United States Environmental Protection Agency (EPA):

   a. Building Air Quality, December 1991+
   b. Guidance Document – "Mold Remediation in Schools and Commercial Buildings"
   c. The Institute of Inspection Cleaning and Restoration Certification (IICRC)
   d. Standard and Reference Guide for Professional Water Damage Restoration S500.
   e. Standard and Reference Guide for Professional Mold Remediation" S520.

3. American National Standards Institute (ANSI):

   a. ANSI Z9.2 – Fundamentals Governing the Design and Operation of Local Exhaust Systems
   b. ANSI Z88.2 – Respiratory Protection

4. American Society of Testing and Materials (ASTM):

   a. ASTM D4442 – Direct Moisture Content Measurements of Wood and Wood Based Materials
   b. ASTM E 84 – Surface Burning Characteristic of Building Materials
   c. ASTM E 119 – Fire Tests of Building and Construction Materials
   d. ASTM F 710 – "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring"

5. Underwriters Laboratories, Inc. (UL):

   a. UL 586 – High Efficiency Particulate Air Filter Units
   b. UL 181 – Factory-Made Air Ducts and Air Connectors
   c. UL 181A – Closure Systems for Use with Rigid Air Ducts and Air Connectors

PART 2 PRODUCTS

2.1 GENERAL

A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Owner, Architect, and Consultant prior to use. Any requests for substitution shall be provided in writing to the Owner, Architect, and Consultant. The request shall clearly state the rationale for the substitution.

B. Submit to the Owner, Architect, and Consultant product data of all materials and equipment and samples of all materials to be considered as an alternate.

C. Product data shall consist of manufacturer; catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, SDS, and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products or equipment and show performance characteristics and capacities.

D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

2.2 MATERIALS AND PRODUCTS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.

C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, poly sheeting of proper size and thickness, tape, cleaning chemicals, and air filters.

D. Materials

1. Poly sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with factory label indicating either 4-mil or 6-mil.
2. Poly disposable bags shall be 6-mil. Tie wraps for bags shall be plastic, five-inches long (minimum), pointed and looped to secure filled plastic bags.
3. Tape or adhesive spray will be capable of sealing joints in adjacent poly sheets and for attachment of poly sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
4. Impermeable containers are to be used to receive and retain any lead containing or contaminated materials until disposal at an acceptable disposal site.

   a. The containers shall be labeled in accordance with EPA, OSHA, and DOT standards.

5. HEPA-filtered exhaust systems shall be used during powered dust generating abatement operations. The use of powered equipment without HEPA exhausts is prohibited.
6. Cleaning disinfectant, such as product manufactured by Fiberlock Technologies, Inc., IAQ 2500, or equivalent.
7. Mold resistant coating such as Fiberlock Technologies, IAQ 6000, or equivalent.

2.3 TOOLS AND EQUIPMENT

A. Tools and equipment shall be suitable for work specified.

B. Electrical equipment, protective devices and power cables shall conform to all applicable codes.

C. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. One shower stall shall be provided for each eight workers.

D. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger.

E. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.

F. For manual scraping activities, the Contractor shall supply each worker with multiple newly-sharpened scrapers on a daily basis.

G. Sanders, grinders, wire brushes and needle gun removal equipment shall be equipped with a HEPA-filtered vacuum dust pick-up system.

H. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the work area shall be provided as appropriate for the Work.

I. Dehumidification equipment such as conventional refrigerant dehumidifiers, low grain refrigerant (LGR), or high capacity desiccant dehumidifiers as deemed necessary based on conditions necessary to achieve in-place drying as determined by Contractor and Project Monitor.

J. Hot Air (Ventilated) Drying Systems utilized to increase temperature and ventilate space to lower relative humidity levels for enhanced drying operations as determined appropriate including for dense wood materials such as hardwoods.

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION MEETING

A. At least one week prior to the start of work a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Subcontractors. The assigned Contractor Site Supervisor is also required to attend this meeting.

B. The Contractor shall present a detailed project schedule and project submittal package at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.

C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.2 HEALTH AND SAFETY

A. Safety Standards. Remediation Contractor shall comply with all applicable federal, state, and local requirements for protecting the safety of the Contractor's employees, building occupants, and the environment. In particular, all applicable standards of the OSHA shall be followed when working in accordance with this specification.

B. Occupant Safety. No processes or materials shall be employed in such a manner that they will introduce hazards into building spaces.

C. Work Area Entry. Workers shall don personal protective equipment (PPE) within the decontamination system prior to entering work area, including respiratory protection, disposable coveralls, gloves, headgear, and footwear.

D. Work Area Departure. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls within the decontamination system and proceed to change room and remove coveralls and footwear and place in disposal container.

E. Wash Facilities. All workers must wash their hands, faces, and bodies within the decontamination system upon leaving the work area.

F. Equipment. All equipment used by workers inside the work area shall be wet-wiped or bagged for later decontamination before removal from the work area.

G. Prohibited Activities. Under no circumstances shall workers eat, drink, smoke, chew gum or tobacco, apply cosmetics, or remove their respirators in the work area.

H. Shock Hazards. The Contractor shall be responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground fault circuit interrupters (GFCI).

3.3 PERSONAL PROTECTION

A. The Contractor shall have in place a Site-Specific Safety and Health Plan (SSHP) and a written Respiratory Protection Plan in accordance with the requirements of OSHA.

B. Minimum Respirators will be equipped with appropriate dual P100 filter cartridges for mold abatement.

C. Where spray applications of products will be used, a half-face or full-face air purifying respirator (APR) equipped with a dual P100 filter cartridges shall be used. For spray applications in addition to HEPA filtration, vapors and gases cartridges should also be used in series (combination filter).

D. Workers shall be provided with appropriate personal protective disposable clothing during spray application of disinfectants. Gloves and eye protection as required by manufacturer of disinfectants shall also be utilized.

E. The Contractor shall ensure that all workers who may wear respiratory protection have undergone a medical examination and questionnaire to ensure that they can wear designated respiratory protective equipment.

3.4 WORK AREA PREPARATION

A. Where necessary, deactivate electrical power, including receptacles and light fixtures. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operating while spraying of amended water may contact the fixture. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a State of Connecticut-licensed electrician, permitted as required, and located outside the work area.

B. Deactivate and/or isolate heating, ventilating, and air conditioning (HVAC) air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the Work, vents within the work area shall be covered with one layer of 6-mil poly sheeting sealed with duct tape and glue.

C. The Contractor shall be responsible for removing moveable objects from the work area. The Contractor shall pre-clean moveable objects within the proposed work areas using HEPA filter-equipped vacuums or equipment and/or wet cleaning methods as appropriate and remove such objects from work areas to a temporary location.

D. Seal all openings, including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with 6-mil thick poly sheeting, completely sealed with duct tape. This includes doorways and corridors that will not be used for passage during work areas and occupied areas.

E. Pre-clean fixed objects within the work areas, using HEPA-filtered vacuum equipment and/or wet cleaning methods as appropriate, and enclose with a minimum 6-mil poly sheeting, completely sealed with duct tape.

F. Clean the proposed work areas using HEPA-filtered vacuum equipment or wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

G. After HEPA-filtered vacuum cleaning, cover fixed walls and floors not scheduled for remediation with one layer of 4-mil poly sheeting. Where fixed walls are not used, two layers of 4-mil poly sheeting will be applied to a rigid framework of wood, metal, or PVC. All overlaps shall be sealed with tape or spray adhesive.

H. Maintain emergency and fire exits from the work areas, or establish alternate exits satisfactory to fire officials.

I. Clean and remove ceiling-mounted objects, such as lights and other items not covered with poly sheeting that interfere with mold abatement. Use hand-held biocide spray or clean with HEPA-filtered vacuum equipment during fixture removal to reduce mold spore dispersal.

J. Create pressure differential between work areas and uncontaminated areas by the use of acceptable negative air pressure equipment sufficient to provide four air changes per hour and create negative pressure of -0.02 inches of the water column within enclosure with respect to outside area as measured on a water gauge.

3.5 DECONTAMINATION SYSTEM

A. The Contractor shall establish contiguous to the work area, a decontamination system consisting of equipment room, shower room, and clean room in series. The only access between contaminated and uncontaminated areas shall be through this decontamination system.

B. Access between rooms in the decontamination system shall be through double flap-curtained openings. The clean room, shower and equipment rooms within the decontamination system shall be completely sealed.

C. Construct the decontamination system with plastic, wood, or metal framing and cover both sides with a double layer of 6-mil poly sheeting, completely sealed with spray glue or tape at the joints.

D. The Contractor and the Consultant shall visually inspect barriers routinely to assure effective seal, and the Contractor shall repair defects immediately.

3.6 CLEANING PROCEDURES

A. Cleaning Methods:

1. The building components to remain shall be cleaned by cleaning methods designed to extract contaminants from the building components and safely remove contaminants from the facility. It is the Contractor's responsibility to select removal methods that will render the building components visibly clean and capable of passing cleaning verification methods and other specified tests, in accordance with all general requirements. No cleaning method, or combination of methods, shall be used which could potentially damage building components to remain.

   a. All methods used shall incorporate the use of vacuum collection devices that are operated continuously during cleaning. The vacuum collection device must be of sufficient power to render all areas being cleaned under negative pressure, such that containment of debris and the protection of the indoor environment are assured.
   b. All methods require wet-wiping to dislodge debris adhered to building component surfaces, such that debris may be safely conveyed to damp cloths or vacuum collection devices.

B. Mold Inhibitors and Coatings:

1. Mold Inhibitors shall be applied, and shall receive prior approval by the Owner, the Architect, and the Consultant. Mold Inhibitors will be applied only after removal of mold-contaminated gypsum board is complete. Mold Inhibitors shall be applied to the surfaces remaining after removal of mold-contaminated materials.
2. Application of Mold Inhibitors used to control the growth of fungal or bacteriological contaminants shall be performed after the removal of surface deposits and debris from surfaces.
3. Only Mold Inhibitor registered by the EPA specifically for use in buildings shall be used.
4. Mold Inhibitors shall be clear.

5. Mold Inhibitors shall be applied in strict accordance with manufacturer's instruction.
6. Mold Inhibitor coating products for both porous and non-porous surfaces shall be EPA- registered water soluble solutions with supporting efficacy data and SDS.
7. Mold Inhibitor coatings shall be applied according to manufacturer instructions. Coatings shall be sprayed directly onto surfaces, rather than "fogged" onto surfaces. A continuous film must be achieved on the surface to be treated by the coating application. Application of any Mold Inhibitor coatings shall be in strict accordance with manufacturer's minimum millage surface application rate standards for effectiveness.

3.7 MOLD-CONTAMINATED WASTE DISPOSAL

A. Properly labeled and containerized waste shall be disposed as construction and demolition debris.

B. Provide Owner and Architect will weight tickets, bill of ladings, etc. indicating proper disposal of mold-contaminated building materials.

3.8 FINAL VISUAL INSPECTION

A. A final visual inspection of the work area shall be conducted by the Consultant to determine if remediation as detailed herein is complete.

B. General. Verification of building component cleanliness will be determined after the cleaning and before the application of any treatment or introduction of any treatment-related substance to the building components, including mold inhibitors and coatings.

C. Visual Inspection. The Consultant shall inspect the various building components visually to ensure that no visible contaminants are present.

1. If visible contaminants are evident through visual inspection, the work area shall be re-cleaned and subjected to re-inspection for cleanliness.

END OF SECTION 028500

SECTION 033000 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish all labor, materials, tools, equipment, transportation and services to complete all concrete work.

1.2 SUBMITTALS

A. Concrete mix design shall be submitted for review.

B. Product Data: submit manufacturer's data with application and installation instructions for all admixtures, patching compounds, waterstops, joint systems, or any other proprietary materials or items.

C. Reinforcement shop drawings shall be submitted for review, showing fabrication, bending and placement of steel reinforcing bars. Submit four prints.

D. Submit for review a detailed description of the methods which will be used for curing concrete, for cold weather protection of concrete, and for hot weather concreting.

1.3 STANDARDS

A. Applicable portions of the following codes and standards are hereby made part of this specification in their entirety as though fully set forth herein.

B. ACI 301-10 "Standard Specification for Structural Concrete."

C. ACI 318-08 "Building Code Requirements For Reinforced Concrete" and commentary.

D. ACI 315-99 "Details and Detailing of Concrete Reinforcement."

1.4 DELIVERY, STORAGE, AND HANDLING

A. Reinforcing steel shall be stored off of the ground on wood sleepers.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete shall be in accordance with ASTM C94-07 "Standard Specification for Ready-Mixed Concrete."

B. Cement: ASTM C150 TYPE I or II. Only one brand of cement shall be used.

C. Normal weight aggregates: ASTM C33, aggregates shall be from a single source.

D. Air entraining admixtures: ASTM C260.

E. Water-reducing and retarding: ASTM C494, and containing not more than 1% chloride ions.

F. Mix water shall be clean, fresh, and potable.

G. Non-shrink grout: Five Star Grout or approved equal.

H. Curing compounds: ASTM C309.

I. Accelerating admixture: PolarSet by W.R. Grace or Accelguard 80 by Euclid Chemical Company or equivalent.

J. Premolded joint filler: ASTM D1751

K. Pumping admixture: Darex Pumping Aid by W.R. Grace or equivalent.

2.2 PROPORTIONING

A. Concrete compressive strength at 28 days: 3500 PSI for foundation walls, grade beams and pile caps, 3500 psi for slabs on grade.

B. Concrete proportions shall be selected in accordance with ACI 211.1-08.

C. All concrete shall be air-entrained except interior floor slabs which are not exposed to freezing temperatures. Total air content shall be not less than 4% and not more than 8% by volume.

D. Water-cement ratio shall not exceed 0.50.

E. Maximum slump: 4 inches for slabs, 5 inches for all other concrete.
Minimum slump: 2 inches.

F) The nominal maximum size of coarse aggregate shall be not larger than:

1. 1/5 the narrowest dimension between sides of forms

2. 1/3 the depth of slabs

3. 3/4 the minimum clear spacing between reinforcing bars.

G. Calcium chloride shall not be used.

H. All admixtures shall be approved by the Engineer.

I. Concrete proportions shall be established on the basis of previous field experience or laboratory trial batches with the same materials to be employed in the work.

J. Use accelerating admixture in all concrete placed at ambient temperatures below 40 degrees F.

2.3 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

C. Low-Alloy-Steel Reinforcing Bars: ASTM A 706, deformed.

D. Reinforcing Bars: ASTM A 615, Grade 60 ASTM A 706, deformed bars, ASTM A 775, with less than 2 percent damaged coating in each 12-inch bar length.

E. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.

F. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064, flat sheet.

G. Welded-Wire Reinforcement: ASTM A 884, Class A coated, Type 1, plain steel.

H. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

PART 3 – EXECUTION

3.1 FORMWORK

A. Forms shall result in a final structure that conforms to shapes, lines, and dimensions as required by the design drawings and specifications.

B. Forms shall be substantial and sufficiently tight to prevent leakage of mortar.

C. Forms shall be properly braced or tied together to maintain position and shape.

D. Formwork shall conform to ACI 347.

E. Wall forms shall be prefabricated panel forms with steel frames and plywood panels similar to Symons Steel-Ply forms. Unframed plywood panel forms similar to Simplex or Advance forms will not be permitted.

F. Form ties shall be type with break-off or screw-out ends and plugs which may be easily removed at least 3/4" back of surface of the concrete.

G. Before placing the reinforcing steel or the concrete, the surface of the forms shall be covered with an acceptable form release coating material that will effectively prevent absorption of moisture, prevent bond with the concrete, and not stain the concrete surfaces.

H. Excess form release coating material shall not stand in puddles in the forms nor shall come in contact with hardened concrete against which fresh concrete is to be placed or reinforcing steel.

I. Formwork for columns, walls, sides of beams, and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations.

J. Forms and shoring in the formwork used to support the weight of concrete in beams, slabs and other structural members shall remain in place until the concrete has reached the minimum strength of 80% of the specified 28 day compressive strength.

K. Install bulkheads, boxes, etc., for openings required for piping, conduits, and other equipment for other trades.

L. Clean forms prior to concrete placement. Remove all chips, wood, sawdust, dirt, rubbish, or other debris.

M Chamfer strips shall be placed in the corners of forms to produce beveled edges on surfaces exposed to view.

3.2 REINFORCEMENT

A. Reinforcing bars: ASTM A615 grade 60, Fy = 60,000 psi.

B. Reinforcement shall be maintained free from dust, mud, rust, oil, ice or debris.

C. Fabrication and placement of reinforcing steel shall be in accordance with CRSI "Manual of Standard Practice" and CRSI "Placing Reinforcing Bars".

D. Reinforcing bars shall not be welded.

E. Minimum cover on reinforcement:

1. concrete cast against earth: 3"

2. concrete exposed to earth or weather:
   #6 and larger: 2"
   #5 and smaller: 1½ "

3. interior surfaces:
   slabs, walls, joists ¾"
   beams, columns 1½"

4. slabs on grade with vapor barrier: 1"

F. Splices shall be lapped 40 bar diameters and securely tied.

G. Heat shall not be used to bend reinforcing bars.

H. Reinforcing steel shall be securely wired together at all intersections.

3.3 WELDED WIRE FABRIC

A. Welded wire fabric: ASTM A185 and A82.

B. Welded wire fabric shall be furnished in flat sheets, not rolls.

C. Welded wire fabric shall be lapped 6 inches and tied at all edges.

D. Welded wire fabric shall be fabricated and installed in accordance with "Manual of Standard Practice - Welded Wire Fabric", Wire Reinforcement Institute, Inc..

E. Welded wire fabric in slabs on grade shall be supported off of the ground.

3.4 JOINTS AND EMBEDDED ITEMS

A. Maximum length of pours between wall construction joints shall be 25 feet. Location of joints shall be approved by the Architect.

B. Wall construction joints shall have a 2x4 key and horizontal wall reinforcement shall be continued across joints.

C. Saw-cut control joints in slabs on grade and slabs on grade at 25 feet on center, maximum. Joints shall be neat and straight.

D. Slab control joints shall be cut as soon as the concrete can accept it without raveling, but in no case later than 24 hours after concrete placement.

E. Slab control joints shall be saw-cut to a depth of 1/4 the slab thickness.

F. Welded wire fabric shall be stopped 6 inches on either side of slab control joints.

G. Saw-cut control joints shall be filled with Euco 700 Epoxy Joint Filler, manufactured by The Euclid Chemical Company or equivalent. Joints shall be filled not sooner than 90 days after slab placement. Newly cut joints should be cleaned of the slurry from saw-cutting with clean water and compressed air and covered with duct tape to prevent joint from filling with debris prior to

installing joint filler.

H. V-chamfer wall construction joints where exposed to view.

I. Anchor bolts and other embedded items shall be positioned accurately and supported against displacement prior to concrete placement.

J. All sleeves, inserts, anchors, and embedded items required for adjoining work or for its support shall be placed prior to concreting.

K. All contractors whose work is related to the concrete or must be supported by it shall be given ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.

L. Conduits and pipes of aluminum shall not be embedded in concrete.

M. Separate slabs on grade from foundation walls with 1/2" premolded joint filler.

3.5 PRODUCTION OF CONCRETE

A. Concrete shall be batched, mixed and transported in accordance with ASTM C94 and ACI 304.6R-2009.

B. Batching plant equipment and facilities shall conform to "Certification of Ready Mixed Concrete Production Facilities" of the National Ready Mixed Concrete Association.

C. Admixtures shall be charged into the mixer as solutions and shall be measured by means of an acceptable mechanical dispensing device. The liquid shall be considered a part of the mixing water.

D. If more than one admixture is used in the concrete, they shall be added separately.

E. Ready-mixed concrete trucks shall not be loaded in excess of their rated capacity.

3.6 PLACING

A. Do not pour concrete until forms and subgrade have been thoroughly cleaned and are free of frost mud, ice, water or debris.

B. Convey concrete from truck to forms as rapidly as possible by methods which will prevent segregation or loss of ingredients. Place in forms as nearly as practicable to its final position.

C. When placement is started, carry on as a continuous operation until the placing of a section is complete. Cold joints are not permitted.

D. Consolidate concrete by mechanical vibration. Do not use vibrators to transport concrete in

forms.

E. No concrete shall be placed in freezing weather or when freezing weather is forecast by the Weather Bureau to occur within 36 hours, unless special measures and precautions are taken to heat the water and aggregates and to protect concrete from freezing after being placed.

1. Curing And Protection: Beginning immediately after placement, concrete shall be protected from premature drying, excessively hot or cold temperatures, and mechanical damage and shall be maintained with minimal moisture loss at a relative constant temperature for the period necessary for hydration of the cement and hardening of the concrete.

2. Concrete surfaces not covered by forms or within the inter-tidal elevations shall be protected from loss of surface moisture for not less than seven days using moisture protection as specified herein.

3. If cold-weather concreting is anticipated, a preconstruction meeting should be held to define how cold weather concreting methods will be used. When the mean daily ambient temperature is at or below 40 degrees F or 45 degrees F and falling the Contractor shall follow the requirements of ACI 306.1, “Standard Specification for Cold Weather Concreting”:

   a. Set up proper enclosure and heat to 50 degrees F for at least two (2) hours before starting any pour. Set up individual thermometers within enclosure to monitor ambient temperatures near the face of fresh concrete. Thermometers shall be placed at a maximum of 50-foot centers, at major corners or returns, and at ends of concrete sections. Monitor and record temperatures in a log at early morning, noon,and early evening.

   b. Use a water-reducing admixture with an accelerated set, but do not use or rely upon any material as an anti-freeze. Use of calcium chloride is not permitted.

   c. Use vented heaters with blowers so placed that they do not produce localized hot spots which may dry out the concrete. Exposure to exhaust gases from combustion heaters is prohibited for the first 24 hours of the curing period.

   d. Maintain the temperature of the formwork at not less than 50 degrees F. but not greater than 70 degrees F for 48 hours after completion of pour; formwork may be stripped after 72 hours after completion of pour. After 48 hours of maintaining at least 50 degrees F, the temperature may be allowed to drop gradually and shall be kept above 32 degrees F for a period of seven (7) days after completion of pour. Protection during this period may be provided by existing enclosure or by means indicated below.

   e. Protection may be provided by use of insulation methods. Adequate insulation shall consist of at least one of the following: 12" of dry earth; provide moisture cover if over slab concrete. 4"of hay under adequate moisture cover, 1" of insulation blankets with vapor barrier seal. Other insulating material acceptable to the Architect. NOTE: Extreme conditions of temperature or wind may require more protection.

f. Concrete may not be placed on frozen ground.

g. All frozen concrete shall be removed from the job and replaced at the Contractor's expense.

F. No concrete shall be placed when the temperature is greater than 90 degrees F unless special measures are taken to cool the water and aggregate and to protect the concrete from rapid drying.

G. No concrete shall be placed during rain, sleet, or snow unless protection is provided.

H. The maximum elapsed time between introduction of water and placing shall be one hour.

I. Protect adjacent finish materials against splattering or dripping of concrete during placement.

3.7 FINISHING OF FORMED SURFACES

A. Form tie holes shall be dampened and filled with mortar.

B. All formed surfaces exposed to view shall receive a grout rubbed finish to produce a smooth, dense surface, without pits or irregularities. All fins and projections shall be removed using a carborundum stone. Surfaces shall be saturated and brushed with a grout mix consisting of one part Portland cement to one part fine sand, filling all voids. Grout shall be smoothed with a sponge float. After the surface has dried thoroughly, it shall be rubbed with dry burlap to remove any dried grout. Finishing shall be performed within 24 hours of form removal.

C Top of walls shall be floated to a texture comparable to formed surfaces.

D Any honeycombed concrete shall be removed and patched to match adjacent concrete surfaces. Chip out all defective material to sound concrete. A bonding agent shall be used to bond the patch to the concrete.

3.8 SLABS

A. Exterior slabs, ramps, steps, platforms and sidewalks shall receive a coarse broom finish.

B. Finishing Tolerances: Finish floor slabs to true planes within 1/8 inch in 10 feet, as determined by a 10 foot straightedge placed anywhere on the slab in any direction.

3.9 CURING AND PROTECTION

A. Concrete shall be maintained above 50 degrees F and in a moist condition for at least the first 7 days after placement.

B. Provisions for curing of concrete shall be in accordance with ACI 308.1-11.

C. Curing compound shall be Sonneborn, Kure-N-Seal, WB or equivalent.

D. One coat of curing compound shall be applied to all slabs as soon as concrete is firm enough to walk on. The Contractor shall verify that the curing compound is compatible with the finish floor materials and where an incompatibility exists, the slab shall be moist cured.

E. In cold weather, concrete shall be protected in accordance with ACI 306R-10.

F. In hot weather, concrete shall be protected in accordance with ACI 305R-10.

3.10 TESTING AND INSPECTIONS

A. All testing and inspections shall be performed by a NVLAP accredited testing and inspection service Agency/ Laboratory under a Contract Allowance specified elsewhere. Testing Agency/ Laboratory shall be hired by the Contractor and approved by the Architect and Building Inspector.
   1. Concrete testing and sampling.
   2. Steel Reinforcing inspection.

B. The testing and inspection service Agency/Laboratory shall maintain a full time Professional Engineer on staff who shall stamp and sign all test reports.

C. A minimum of four compression test specimens shall be made for each 50 cubic yards of concrete or not less than four for each day's placement. One cylinder shall be tested at seven days and three at 28 days. If any one of the first two cylinders tested at 28 days does not achieve the specified compressive strength, the last cylinder shall be tested at 56 days. The specimens shall be carefully stored and transported so as not to damage them in any way. Records shall be kept, identifying each cylinder with the locations of placement from which test cylinders were taken. Cylinders shall be cast in accordance with ASTM C31 and tested in accordance with ASTM C39.

D. Slump tests shall be performed on every concrete truck load in accordance with ASTM C143.

E. Air content shall be tested by the pressure pot method in accordance with ASTM C231. Air content tests shall be performed when each set of test cylinders are cast.

F. If any concrete fails to develop the required 28 day strength, the Architect may order core tests at the Contractor's expense, and if the concrete in place is below strength, the Architect may order the removal and replacement of such concrete at the Contractor's expense, including the extra cost of the Architect's and Consulting Engineer's inspections and redesign.

G. Test and Inspection reports shall be submitted to the Architect, Consulting Engineer, Contractor, and Building Inspector within 10 days of the date of test. If any test fails to meet the specifications, the Engineer shall be immediately notified.

END OF SECTION 033000

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel.
2. Grout.

1.2 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC-05,AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication of structural-steel components.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1,"Structural Welding Code - Steel."

B. Comply with applicable provisions of the following specifications and documents:

1. AISC-05,AISC 303.
2. AISC-05,AISC 360.
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using schematic details indicated and AISC 360.

2.2 STRUCTURAL-STEEL MATERIALS

A. Channels, Angles, M-Shapes: ASTM A 36, Grade 36 .
1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

B. Plate and Bar: ASTM A 36, Grade 36.
1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

C. Steel Pipe: ASTM A 53, Structural Pipe, or ASTM A-501.
1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

D. Welding Electrodes: ASTM A-233, Type E70XX series for all structural connections.

2.3 BOLTS, CONNECTORS, AND ANCHORS

A. Unheaded Anchor Rods: ASTM F 1554, Grade 36, weldable.

1. Configuration: Hooked.
2. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

B. Headed Anchor Rods: ASTM F 1554, Grade 36 , weldable, straight.

1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

C. Threaded Rods: ASTM A 36, Grade B7.

1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C-827, with a minimum 2500 PSI at 28 day compressive strength factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

2.6 SHOP CONNECTIONS

A. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Baseplates, Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

3.3 FIELD CONNECTIONS

A. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

END OF SECTION 051200

SECTION 057300 - DECORATIVE METAL RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum decorative railings.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines of railings assembled from standard components.
2. Grout, anchoring cement, and paint products.

B. Shop Drawings: Include plans, elevations, sections, and attachment details.

C. Samples: For each type of exposed finish required.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

B. Preconstruction test reports.

C. Evaluation Reports: For post-installed anchors, from ICC-ES.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Aluminum Decorative Railings:

1. Superior Aluminum Products, Inc.- Series 9000

2. An approved equal.

B. Assembly Components: (Series 9000 Catalog Nos.)

1. Aluminum top rail: As indicated on drawings

2. Aluminum bottom rail: As indicated on drawings

3. Aluminum Posts: As indicated on drawings

4. Aluminum Pickets: As indicated on drawings

5. Other: All brackets, fasteners, fittings, as required for complete installation

C. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics.

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ft. applied in any direction.
b. Concentrated load of 200 lbf applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
b. Infill load and other loads need not be assumed to act concurrently.

2.3 METALS, GENERAL

A. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.

2.4 ALUMINUM

A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.

B. Extruded Bars and Shapes**,** Including Extruded Tubing: ASTM B 221, Alloy 6063-T5/T52.

C. Extruded Structural Pipe and Round Tubing: ASTM B 429/B, Alloy 6063-T6.

D. Castings: ASTM B 26/B 26M, Alloy A356.0-T6.

2.5 FASTENERS

A. Fastener Materials: Unless otherwise indicated, provide the following:

1. Aluminum Components: Type 304 stainless-steel fasteners.
2. Dissimilar Metals: Type 304 stainless-steel fasteners.

B. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.
1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593 , and nuts, ASTM F 594

2.6 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

B. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

D. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Connections: Fabricate railings with nonwelded connections unless otherwise indicated.

C. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

D. Form changes in direction with manufacturer’s standard fittings.

E. Close exposed ends of hollow railing members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.

G. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

2.8 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Set posts plumb within a tolerance of 1/16 inch in 3 feet .
2. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with non-shrink, nonmetallic grout.

E. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, nonmetallic grout.

F. Anchor posts to metal surfaces with flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members.

G. Anchor railing ends to concrete and masonry with sleeves concealed within railing ends and anchored to wall construction with anchors and bolts.

H. Attach handrails to walls with wall brackets.

1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
2. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

I. Secure wall brackets and railing end flanges to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
2. For hollow masonry anchorage, use toggle bolts.

J. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

END OF SECTION 057300

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Wood blocking and nailers.
4. Wood furring
5. Plywood backing panels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

2. Include data for fire retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Power-driven fasteners.
5. Powder-actuated fasteners.
6. Expansion anchors.
7. Metal framing anchors.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood , nailers, curbs, blocking, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Application: Treat items indicated on Drawings, and the following:

1. Attic floor
2. Exposed plywood backing panels.

2.4 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.

1. Application: All interior partitions.
2. Species:
   a. Douglas Fir-Larch (north); NLGA
   b. Eastern softwoods; NeLMA.

B. Framing Other Than Non-Load-Bearing Interior Partitions: No. 2 grade.

1. Application: Framing other than interior partitions.
2. Species:
   a. Southern pine; SPIB.
   b. Douglas fir-larch (north); NLGA.

C. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

1. Application: Exposed exterior and interior framing indicated to receive a stained or natural finish.
2. Species and Grade: As indicated above for load-bearing construction of same type.

2.5 ENGINEERED WOOD PRODUCTS

A. Engineered Wood Products, General: Products shall contain no urea formaldehyde.

B. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

1. Manufacturer: I-Level-Microlam by Weyerhauser or equivalent.
2. Flexural stress, Fb = 2,600 psi.
3. Modulus of elasticity, E = 1,900,000 psi.
4. Compression perpendicular to grain, $Fc^{\perp}$ = 750 psi
5. Compression parallel to grain, Fcll = 2,510 psi
6. Horizontal shear, Fv = 285 psi.
7. Tension Stress, Ft = 1,555 psi

C. Parallel strand lumber, PSL manufactured by Weyerhaeuser or Equivalent

PSL material shall have the following minimum allowable stresses:
1. Flexural stress, Fb = 2,900 psi.
2. Modulus of elasticity, E = 2,00,000 psi.
3. Compression perpendicular to grain, $Fc^{\perp}$ = 750 psi
4. Compression parallel to grain, Fcll = 2,900 psi
5. Horizontal shear, Fv = 290 psi.
6. Tension Stress, Ft = 2,025psi

D. P.T Parallel strand lumber, PSL shall be Wolmanized Parallam manufactured by Weyerhaeuser, service level 2 or equivalent
PSL material shall have the following minimum allowable stresses:

1. Flexural stress, Fb = 1,827 psi.
2. Modulus of elasticity, E = 1,460,000 psi.
3. Compression perpendicular to grain, $Fc^{\perp}$ = 368 psi
4. Compression parallel to grain, Fcll = 1,508 psi
5. Horizontal shear, Fv = 197 psi.
6. Tension Stress, Ft = 1,397 psi

E. Wood I-Joists: Prefabricated units, I-shaped in cross section, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Provide units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.

1. Manufacturer: Trus Joist or equivalent.

2. Web Material: Either oriented strand board or plywood, complying with DOC PS 1 or DOC PS 2, Exposure 1.
3. Structural Properties: Provide units with depths and design values not less than those indicated.
4. APA ratings referenced in subparagraph below are easy to designate structural properties required, but retaining below may reduce competition by eliminating manufacturers that do not participate in APA program. See Evaluations.
5. Provide units complying with APA PRI-400, factory marked with APA trademark indicating nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.

F. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists.

1. Material: All-veneer product or product made from any combination solid lumber, wood strands, and veneers .
2. Thickness: 1-1/4 inches.
3. Provide performance-rated product complying with APA PRR-401, rim board grade, factory marked with APA trademark indicating thickness, grade, and compliance with APA standard.

2.6 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.
4. Grounds.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of any species.

C. For concealed boards, provide lumber with **15** percent maximum moisture content and any of the following species and grades:

1. Eastern softwoods; No. 2 Common grade; NeLMA.
2. Northern species; No. 2 Common grade; NLGA.

2.7 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: DOC PS 1, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

1. Plywood 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."

2.8 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153.

B. Power-Driven Fasteners: NES NER-272.

C. Bolts: Steel bolts complying with ASTM A 307, Grade ; with ASTM A 563 hex nuts and, where indicated, flat washers.

2.9 METAL FRAMING ANCHORS

A. Metal Framing Anchors: Manufactured by Simpson Strong Tie or an approve equal.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

2.10 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch ; selected from manufacturer's standard widths to suit width of sill members indicated.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

D. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

E. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

F. Do not splice structural members between supports unless otherwise indicated.

G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

H. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," ICC's International Residential Code for One- and Two-Family Dwellings, as referenced by theState of Connecticut Building Code

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Roof sheathing.
3. Subflooring.
4. Underlayment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Preservative-treated plywood.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

2.2 WOOD PANEL PRODUCTS

A. Emissions: Products shall meet 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. Plywood: DOC PS 1.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction, Use Category UC3b for exterior construction.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.4 WALL SHEATHING

A. Plywood Wall Sheathing: APA rated, Exterior, Structural I sheathing.
   1. Span rating: 12/0, 16/0,20/0 for stud spacing 16 inches on center or less.
   2. Thickness: as indicated on the drawings.

2.5 ROOF SHEATHING

A. Plywood Roof Sheathing: APA rated, Exterior, Structural I sheathing.
   1. Thickness: as indicated on the drawings.

2.6 SUBFLOORING AND UNDERLAYMENT

A. Plywood Combination Subfloor-Underlayment: DOC PS 1, Exterior, Structural I, C-C Plugged single-floor panels.

B. Plywood Subflooring: Exterior, Structural I single-floor panels or sheathing.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

   1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153 Type 304 stainless steel.

2.8 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

   1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Service “Standard Practice for the Testing of Volatile Organic Emissions for Various Materials using Small Scale Environmental Chambers”.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."

D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Combination Subfloor-Underlayment:

   a. Glue and nail to wood framing.
   b. Space panels 1/8 inch apart at edges and ends.

2. Subflooring:

   a. Glue and nail to wood framing.
   b. Space panels 1/8 inch apart at edges and ends.

3. Wall and Roof Sheathing:

a. Nail to wood framing.
b. Space panels 1/8 inch apart at edges and ends.

4. Underlayment:

a. Nail to subflooring.
b. Space panels 1/32 inch apart at edges and ends.

END OF SECTION 061600

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Exterior stairs, railings and decks.
   2. Exterior trim.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Samples: For each type of product involving selection of colors, profiles, or textures.

1.3 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

   1. For lumber that is not marked with grade stamp.
   2. For preservative-treated wood that is not marked with treatment-quality mark.

B. Evaluation Reports: For the following, from ICC-ES:

   1. Wood-preservative-treated wood

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20.

   1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.

      a. For exposed lumber, mark grade stamp on end or back of each piece.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC3b.

1. Kiln dry lumber after treatment to a maximum moisture content of 19 and 18 percent respectively.
2. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
3. Application: All exterior lumber.

2.3 EXTERIOR TRIM

A. Lumber Trim (Deck Trim):
1. Species and Grade: Southern pine, pressure-preservative treated; B & B; SPIB.
2. Maximum Moisture Content: 19 percent.
3. Face Surface: Surfaced (smooth).

B. Cellular PVC Trim and Sheet: Extruded, expanded PVC with a small-cell microstructure, recommended by manufacturer for exterior use, made from UV- and heat-stabilized, rigid material.
1. Manufacturer: Azek, or an approved equal.
2. Density: Not less than 31 lb/cu. Ft.
3. Heat Deflection Temperature: Not less than 130 deg F, according to ASTM D 648.
4. Water Absorption: Not more than 1 percent, according to ASTM D 570.
5. Flame-Spread Index: 75 or less, according to ASTM E 84.

C. Cellular PVC Column Enclosure:
1. Manufacturer: CertainTeed-Restoration Millwork or an approved equal.
2. Size as indicated on the drawings.

2.4 EXTERIOR STAIRS AND RAILINGS

A. Stairs:

1. Treads: 1-1/4-inch thick, one piece kiln-dried, pressure-preservative-treated stepping with half-round or rounded edge nosing.

   a. Species and Grade: Douglas fir, C & Better VG Vertical Grain stepping; NLGA, WCLIB, or WWPA.

B. Railings: pressure-preservative-treated Douglas fir; railing stock of pattern indicated.

2.5 MISCELLANEOUS MATERIALS

A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate.

1. For prefinished items, provide matching prefinished aluminum fasteners where face fastening is required.
2. For all applications, provide stainless-steel fasteners.

B. Bolts: Steel bolts complying with ASTM A 307, Grade ; with ASTM A 563 hex nuts and, where indicated, flat washers.
   1. Finish: Hot dipped galvanized.

2.6 METAL FRAMING ANCHORS

A. Metal Framing Anchors: Manufactured by Simpson Strong Tie or an approve equal.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

   1. Use for wood-preservative-treated lumber and where indicated.

D. Sealants: Latex, complying with ASTM C 834 Type OP, Grade NF and with applicable requirements in Section 079200 "Joint Sealants," recommended by sealant manufacturer and manufacturer of substrates for intended application.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

   1. Scribe and cut exterior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
   2. Install stairs with no more than 1/8-inch variation between adjacent treads and risers and with no more than 1/8-inch variation between largest and smallest treads and risers within each flight.

B. Securely attach exterior finish carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

   1. NES NER-272 for power-driven fasteners.
   2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings
   3. Screw fasten all stair and deck components unless otherwise indicated.

3.2 STANDING AND RUNNING TRIM INSTALLATION

A. Install flat-grain lumber with bark side exposed to weather.

B. Install cellular PVC trim to comply with manufacturer's written instructions.

C. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long except where necessary.

1. Use scarf joints for end-to-end joints.
2. Stagger end joints in adjacent and related members.

D. Fit exterior joints to exclude water. Cope at returns and miter at corners.

END OF SECTION 062013

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Glass-fiber blanket.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Low-emitting product certification.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Research reports.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET

A. Sustainability Requirements: Provide glass-fiber blanket insulation as follows:

   1. Free of Formaldehyde: Insulation manufactured with 100 percent acrylic binders and no formaldehyde.
   2. Low Emitting: Insulation tested according to ASTM D 5116 and shown to emit less than 0.05-ppm formaldehyde.

B. Glass-Fiber Blanket, Kraft Faced: ASTM C 665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).

C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Knauf Insulation.
   2. Owens Corning.
   3. An approved equal.

D. Thickness and R Value: As indicated on the drawings.

2.2 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C 764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E 84.
2. Spray Polyurethane Foam Insulation: as specified in Section 072119 Foamed in Place Insulation.

B. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.

C. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.2 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. For wood-framed construction, install blankets according to ASTM C 1320 and as follows:

a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.

5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.

a. Exterior Walls: Set units with facing placed toward interior of construction.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft..

END OF SECTION 072100

SECTION 072119 - FOAMED-IN-PLACE INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Closed-cell spray polyurethane foam.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Research reports.

PART 2 - PRODUCTS

2.1 CLOSED-CELL SPRAY POLYURETHANE FOAM

A. Closed-Cell Spray Polyurethane Foam: ASTM C 1029, Type II, minimum density of 2.0 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.3 deg F x h x sq. ft./Btu at 75 deg F.

1. BASF Comfort Foam

2. Lappola Industries Foam-Lok 2000
3. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

   a. Flame-Spread Index: 25 or less.
   b. Smoke-Developed Index: 450 or less.

4. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 THERMAL BARRIER

A. Closed-cell spray polyurethane foam manufacturer's approved coating that provided 15 minute thermal barrier passing NFPA-286 and modified NFPA 286 per AC377 Appendix X

1. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 0 or less.
b. Smoke-Developed Index: 10 or less.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Spray insulation to envelop entire area to be insulated and fill voids.

C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.

D. Apply thermal barrier coating on surface of foam not enclosed with at least 1/2" gyp board or 1" of masonry construction.

END OF SECTION 072119

SECTION 079200 - JOINT SEALANTS

PART 1 -

PART 2 - GENERAL

2.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Latex joint sealants.

2.2 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples: For each kind and color of joint sealant required.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

D. Product test reports.

E. Warranties.

2.3 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: One year from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five (5) years from date of Substantial Completion.

PART 3 - PRODUCTS

3.1 MATERIALS, GENERAL

A. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

3.2 SILICONE JOINT SEALANTS

A. Mildew-Resistant Silicone Joint Sealant (SS) ASTM C 920.

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

   a. Dow Corning Corporation.
   b. GE Advanced Materials - Silicones.
   c. Pecora Corporation.
   d. An approved equal.

2. Type: Single component (S).
3. Grade: Nonsag (NS).
4. Class: 50.
5. Uses Related to Exposure: Nontraffic (NT).

3.3 URETHANE JOINT SEALANTS

A. Urethane Joint Sealant (US) ASTM C 920.

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

   a. Pecora Corporation.
   b. Sika Corporation; Construction Products Division.
   c. Or an approved equal.

2. Type: Single component (S).
3. Grade: Nonsag (NS).
4. Class: 50.
5. Uses Related to Exposure: Traffic (T) and Nontraffic (NT).

3.4 LATEX JOINT SEALANTS

A. Latex Joint Sealant (LS): Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

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

   a. Pecora Corporation.
   b. Tremco Incorporated.
   c. An approved equal.

3.5 JOINT SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

3.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 4 - EXECUTION

4.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

1. Remove laitance and form-release agents from concrete.
2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

4.2 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

F. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

4.3 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Isolation and contraction joints in cast-in-place concrete slabs and walks.
b. Tile control and expansion joints.
c. Joints between different materials listed above.
d. Other joints as indicated.

2. Joint Sealant: Urethane (US).
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints in unit masonry.
b. Joints between different materials listed above.
c. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
d. Other joints as indicated.

2. Joint Sealant: Silicone (SS)
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.
b. Control and expansion joints in tile flooring.
c. Other joints as indicated.

2. Joint Sealant: Urethane (US)
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Vertical joints on exposed surfaces of walls and partitions.
c. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
d. Other joints as indicated.

2. Joint Sealant: Latex (LS).
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Sealant Location:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.
c. Other joints as indicated.

2. Joint Sealant: Silicone (SS).
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes hollow-metal doors and frames.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.

C. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

PART 2 - PRODUCTS

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

1. Ceco Door Products; an Assa Abloy Group company.
2. Curries Company; an Assa Abloy Group company.
3. An approved equal.

2.2 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, where required.

2.3 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Standard-Duty Doors and Frames: SDI A250.8, Level 1.

1. Physical Performance: Level C according to SDI A250.4.
2. Doors:

   a. Type: Flush.
   b. Thickness: 1-3/4 inches.
   c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40 coating.
   d. Edge Construction: Model 1, Full Flush.
   e. Core: Manufacturer's standard insulation material.

3. Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.
4. Frames:

   a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
   b. Construction: Face welded.

5. Exposed Finish: Prime.

2.4 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch , and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.5 MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than **25** percent.

B. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B; suitable for exposed applications.

C. Hot-Rolled Steel Sheet: ASTM A 1011, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

D. Metallic-Coated Steel Sheet: ASTM A 653, Commercial Steel (CS), Type B.

E. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008 or ASTM A 1011, hot-dip galvanized according to ASTM A 153, Class B.

F. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153.

G. Power-Actuated Fasteners in Concrete: From corrosion-resistant materials.

H. Grout: ASTM C 476, except with a maximum slump of 4 inches , as measured according to ASTM C 143.

I. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing).

J. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat.

2.6 HARDWARE

A. Provide finish hardware for each door indicated.

1. 3 hinges-stainless steel, mortised, suitable for exterior. Mfgr. Stanley, or approved equal.
2. 1 lockset, storage room function, brushed chrome, suitable for exterior. Mfgr. Schlage ‘A’ Series or approved equal.
3. 1 threshold with weatherstripping, aluminum, ½-inch height, Mfgr. Zero International #566A, or approved equal.
4. Weatherstripping, full door perimeter, neoprene, Mfgr. Zero International #326AA or approved equal.

2.7 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   2. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
   3. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor.
   4. Jamb Anchors: Provide 3 anchors per jamb equally spaced.
   5. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers.
      a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

D. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
   1. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

2.8 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
   1. Shop Primer: SDI A250.10.

2.9 ACCESSORIES

A. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hollow-Metal Frames: Install hollow-metal frames for doors, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
   1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
      a. At fire-rated openings, install frames according to NFPA 80.

b. Install door silencers in frames before grouting.
c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
d. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
e. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.

a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.

4. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

a. Squareness: Plus or minus 1/16 inch , measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

B. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
c. At Bottom of Door: 5/8 inch plus or minus 1/32 inch.
d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

C. Hardware: Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work.

3.2 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081113

SECTION 089516 - WALL VENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes wall vents and cast in place bucks.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 WALL VENTS (FLOOD VENTS)

A. Vinyl Cast In Place Buck:

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Smart Vent Pour-in-Place Vinyl Buck model # 1540-810F.
   b. Approved equal

B. Stainless Steel Flood Vent:

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Smart Vent Model # 1540-510.
   b. Approved equal

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install vinyl buck in formwork plumb and level at locations indicated with reversible fasteners into wood nailing blocks as per manufacturer's instructions.

B. After removing forms install flood vent in buck as per manufacturer's instructions."

END OF SECTION 089516

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Exterior gypsum board for ceilings and soffits.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Product Data: For adhesives used to laminate gypsum board panels to substrates, documentation including printed statement of VOC content.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

2.2 INTERIOR GYPSUM BOARD

A. Gypsum Wallboard: ASTM C 1396.

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.

B. Gypsum Ceiling Board: ASTM C 1396.

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.

C. Gypsum Board, Type X: ASTM C 1396.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.
3. Long Edges: Tapered.

2.3 SPECIALTY GYPSUM BOARD

A. Glass-Mat Interior Gypsum Board: ASTM C 1658. With fiberglass mat laminated to both sides. Specifically designed for interior use.
   1. Core:1/2 inch, regular type.
   2. Long Edges: Tapered.
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS

A. Glass-Mat Gypsum Sheathing Board: ASTM C 1177, with fiberglass mat laminated to both sides and with manufacturer's standard edges.
   1. Core: 5/8 inch, Type X.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

   1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.

B. Exterior Trim: ASTM C 1047.

   1. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.

C. Aluminum Trim: ASTM B 221, Alloy 6063-T5.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape:

   1. Interior Gypsum Board: Paper.
   2. Exterior Gypsum Soffit Board: Paper.
   3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

2.7 AUXILIARY MATERIALS

A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS

A. Comply with ASTM C 840.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
1. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

E. Prefill open joints, rounded or beveled edges, and damaged surface areas.

F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
3. Level 5: At locations with interior glass mat gypsum board.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

H. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

I. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ceramic tile.
2. Stone thresholds.
3. Waterproof membrane.

1.2 ACTION SUBMITTALS

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

1. Product Data for adhesives and grouts documentation including printed statement of VOC content.
2. Product Data for tile floors, documentation from an independent testing agency indicating compliance with the FloorScore Standard.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 TILE PRODUCTS

A. ANSI Ceramic Tile Standard: Provide Standard grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.

C. Tile shall be provided as indicated on the Drawings.

D. Setting materials source limitations: Setting materials including thin set mix, grout, water proof membranes and crack isolation membranes shall be by the same manufacturer and approved by

the manufacturer in writing as being compatible for use in a complete assembly with the tile selected.

2.2 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

C. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325.

1. Thickness: 1/2 inch.

2.3 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated.

B. Fabric-Reinforced, Fluid-Applied Membrane: System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Laticrete International, Inc.; Laticrete 9235 Waterproof Membrane.
   b. MAPEI Corporation; Mapelastic HPG with MAPEI Fiberglass Mesh.
   c. Approved equal.

2.4 SETTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
   a. Laticrete International, Inc.
   b. MAPEI Corporation.
   c. Approved equal.
2. For wall applications, provide nonsagging mortar.

2.5 GROUT MATERIALS

A. Standard Cement Grout: ANSI A118.6.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
      a. Laticrete International, Inc.
      b. MAPEI Corporation.
      c. Approved equal

B. Polymer-Modified Tile Grout: ANSI A118.7.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
      a. Laticrete International, Inc.
      b. MAPEI Corporation.
      c. Approved equal

2.6 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, stainless steel, ASTM A 666, 300 Series exposed-edge material.

C. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

   1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A

C. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION

A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
   a. Tile floors in wet areas.
   b. Tile floors in laundries.
   c. Tile floors composed of tiles 8 by 8 inches or larger.
   d. Tile floors composed of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 inch.
2. Glazed Wall Tile: 1/16 inch.
3. Decorative Thin Wall Tile: 1/16 inch.

G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).

J. Metal Edge Strips: Install [at locations indicated] [where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile] [where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated].

K. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.]

L. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

M. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

3.4 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Wood Subfloor:

1. Tile Installation F144: Thin-set mortar on cementitious backer units/fiber cement underlayment; TCA F144.

   a. Locations used: locations other than bathrooms and laundry rooms.
   b. Thin-Set Mortar: Latex-portland cement mortar.
   c. Grout: Standard unsanded grout.

2. Tile Installation F144: Thin-set mortar on cementitious backer units/fiber cement underlayment; TCA F144. with waterproof membrane

   a. Locations used: bathrooms and laundry rooms.
   b. Thin-Set Mortar: Latex-portland cement mortar.
   c. Grout: Standard unsanded grout.
   d. waterproof membrane

B. Interior Wall Installations, Wood Studs or Furring:

1. Tile Installation W244: Thin-set mortar on cementitious backer units or fiber cement underlayment; TCA W244.
   a. Thin-Set Mortar: Latex-portland cement mortar.
   b. Grout: Standard unsanded cement grout

END OF SECTION 093000

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following interior substrates:
   1. Wood.
   2. Gypsum board.

1.2 DEFINITIONS

A. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

   1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

   2. Product Data For paints and coatings, documentation including printed statement of VOC content.

B. Samples: For each type of paint system and in each color and gloss of topcoat.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in the Interior Painting Schedule for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base:

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Primers, Sealers, and Undercoaters: 200 g/L.
4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
5. Pretreatment Wash Primers: 420 g/L.
6. Floor Coatings: 100 g/L.
7. Shellacs, Clear: 730 g/L.
8. Shellacs, Pigmented: 550 g/L.

D. Colors: As selected by Owner from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Wood: 15 percent.
2. Gypsum Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 INTERIOR PAINTING SCHEDULE

A. Wood Substrates: Wood trim, Architectural woodwork, Doors and Windows.

1. Latex over Latex Primer System MPI INT 6.3T:

a. Prime Coat: Primer, latex, for interior wood, MPI #39.

1) Benjamin Moore: Fresh Start High Hiding All Purpose Primer 046/K046.

2) PPG Architectural: Dulux Gripper (CA) Int/Ext Acrylic Primer/Sealer 250.

3) Sherwin Williams: PrepRite ProBlock Primer Sealer B51W99620.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54 X-Green.

1) Benjamin Moore: Aura Waterborne Semi Gloss Interior Paint

2) PPG Architectural: PPG Paints Speedhide Zero Interior Zero VOC Latex Semi Gloss Paint 6-4510XI.

3) Sherwin Williams: Emerald Interior Acrylic Latex Semi Gloss K38W00351.

B. Gypsum Board Substrates:

1. Latex over Latex Sealer System MPI INT 9.2A:

a. Prime Coat: Primer sealer, latex, interior, MPI #50 X green.

1) Benjamin Moore: Eco Spec WB Interior Latex Primer N372/F372.

2) PPG Architectural: PPG Paints Speedhide Zero Interior Zero VOC Latex Sealer.

3) Approved equal.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52 X green.

1) Benjamin Moore: Eco Spec WB Interior Latex Eggshell N374/F374.

2) PPG Architectural: PPG Paints Speedhide Zero Interior Zero VOC Interior Sating DRP34XX.

3) Approved equal.

END OF SECTION 099123

SECTION 222326 – PLUMBING-HVAC-ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL PLBG. HVAC. ELECT. REQUIREMENTS

A. Refer to Division 01 for General Requirements applicable to all work.

B. It is the intent of these specifications to specify completed work tested and ready for operation, and provide all materials, equipment and labor necessary to complete the work outlined within this document. Any apparatus, appliance, material, work or any incidental accessories necessary to make the work complete and perfect in all respects as well as ready for operation as determined by good trade practice, even if not particularly specified, shall be furnished, delivered and installed without any additional expense to the Contract.

C. The Contractor shall be responsible for arranging for inspections by authorities having jurisdiction. The Contractor shall be available and present for inspections by the authority having jurisdiction.

D. Disconnect and reconnect services to all equipment and appliances to accommodate new construction and house lifting. Provide all necessary incidental fittings, accessories, and materials to suit existing conditions.

E. The following definitions apply:

1. Furnish: The term “furnish” is used to mean, “supply and deliver to the project site ready for unloading, unpacking, assembly, installation and similar operations”.
2. Install: The term “install” is used to describe operations at a project site including the actual, “unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations”.
3. Provide: The term “provide” is used to mean, “to furnish and install completely and ready for the intended usage”.
4. Remove: The term “remove” is used to mean, “to disconnect from its present position and take away from the premises and to dispose of in a legal manner”.
5. Substitutions: The term “substitutions” is used to mean, “requests for change in products, materials, equipment and methods of construction required by contract documents proposed by the contractor after award of the contract”.

F. Provide all access doors in walls and floors at all automatic valves and other apparatus and equipment requiring periodic service and inspection. Coordinate type and location with architect for approval.

G. Provide seismic restraints for all mechanical equipment and piping specified herein in accordance with 2003 International Building Code with 2005 Connecticut Supplements and all local codes.

H. Provide shut-off duty valves at each branch connection to supply mains at supply connection, to each piece of equipment and elsewhere as indicated.

I. Provide drain valves at low points in mains, risers, branch lines and elsewhere as required for system drainage.

J. Provide pressure-reducing valves on hot water generators and elsewhere as required to regulate system pressure.

K. Furnish motor starters and disconnects for all mechanical equipment to electrician for installation and wiring as required.

1.2 SUBMITTALS

A. Provide shop drawings and product data for the following:

1. Plumbing fixtures, piping, valves and accessories.
2. Refrigerant piping.
3. Electrical equipment including service panels, wiring devices, light fixtures, fire alarm devices.
4. Certification by the contractor that any substitution of specified equipment or materials proposed is equal to or better than in every significant respect required by the contract documents and that it will perform adequately in the application intended. Include the contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of the substitution to perform adequately.

1.3 GUARANTEES

A. The Contractor shall guarantee all material and workmanship under these specifications and the contract for a period of one (1) year from the date of Substantial Completion. During this guarantee period, all defects developing through faulty equipment, materials or workmanship shall be corrected or replaced immediately by the Contractor without expense to the Owner. Such repairs or replacements shall be made to the Architect's and Engineer's satisfaction.

B. Contractor shall provide name, address and phone number of all contractors, subcontractors and associated equipment they provided.

END OF SECTION 222326

SECTION 224000 PLUMBING PERFORMANCE SPECIFICATION

1.1 DESCRIPTION OF PLUMBING SCOPE

A. Plumbing scope of work shall include the following:

1. Disconnect gas piping from existing furnaces, domestic water heater, domestic range and clothes dryer (if applicable). Cap piping for reuse.
2. Disconnect existing domestic water and sanitary waste piping below first floor from plumbing fixtures. Cap piping for reuse.
3. Existing sanitary waste, vent, and domestic water piping above first floor to remain.
4. Relocate or replace existing gas meter from current location. Coordinate location of gas meter with Utility Company. Coordinate reconnection of gas service to relocated meter with Utility Company.
5. Provide new domestic water meter in a water meter pit. Coordinate location of the meter pit, and installation details with Utility Company.
6. Provide new domestic water line from the meter pit to the existing domestic water main in the residence. Coordinate with Utility Company connection of the water main from the street to new water meter.
7. Reconnect gas piping to relocated furnace, domestic water heater, kitchen ranges and clothes dryer, all other appliances as applicable.
8. Reconnect existing domestic cold and hot water to existing first floor fixtures.
9. Reconnect sanitary main (s) from below first floor to existing below grade sanitary main.
10. At the direction of the Utility Company, scope, reline and or replace existing sanitary waste piping from the property line to the street main. Include all costs for this work. Verify condition of existing sanitary main from property line to the building.
11. Provide any new piping, fittings and insulation in accordance with the requirements of this specification.

1.2 PLUMBING SYSTEM – GENERAL REQUIREMENTS

A. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings

B. Comply with applicable codes for installation of backflow prevention devices.

C. All new work and alterations to existing plumbing systems shall be designed in accordance with the latest editions of the International Building Code, the International Plumbing Code and all local, state and federal codes and requirements.

D. All new domestic water supply piping shall be type L cooper with copper or brass fittings for all mains and risers, or shall match existing. Type K copper or AWWA approved polypropylene piping shall be used where required for underground or under slab piping.

E. All new domestic water piping shall be cleaned, sterilized and leak tested in accordance with the local health department regulations and local or state codes

F. New insulation for all domestic hot and cold water piping shall be as follows. All domestic hot and cold water piping shall be insulated with 1" thick fiberglass piping with jacket.

G. Install all piping systems in such a manner to avoid pipe freezing. Provide not only piping insulation, but building insulation between cold surfaces and piping as well. Piping shall never be installed in spaces where potential pipe freezing can occur. Contact the Architect and Engineer immediately if such condition occurs. The pipes shall always be located on the warm side of the building insulation.

I. Provide heat trace on all domestic water pipes installed in areas exposed to freezing temperatures. The heat trace to be self-regulating temperature cable system by Raychem..

K. Provide new gas piping as required. Provide gas cocks and shut- off valve at each terminal. Gas piping shall be Schedule 40 black steel and sized in accordance with the requirements of the International Mechanical Code and NFPA 54. Leak test all piping in accordance with utility requirements, local and state codes.

END OF SECTION 224000

SECTION 23000 HVAC PERFORMANCE SPECIFICATION

1.1 DESCRIPTION OF HVAC SCOPE

A. HVAC scope of work shall include the following:
   1. Disconnect refrigerant piping from condensing units.
   2. Install Owner furnished condensing units in locations shown on the architectural plan. Provide supports and vibration isolation at new location of units.
   3. Reconnect refrigerant piping to condensing units. Recharge the units with refrigerant as required.
   4. Refurbish the existing fan coil units, including cleaning inside and outside of units, insuring that all access panels are in place and secured, and any damaged insulation of the connecting ductwork is repaired or replaced.
   5. Startup and verify that HVAC equipment is operating properly.

1.2 REFRIGERANT PIPING

A. New refrigerant piping shall be ARC copper tubing. Minimize fittings. All required fittings will be soldered.

1.3 PIPING INSULATION

A. For any new piping insulation required, thickness shall be in accordance with latest edition of ASHRAE 90.2. Provide flexible elastomeric insulation, Armaflex or equal.

B. Repair or replace any damaged insulation between the air handling units and condensing units.

END OF SECTION 230000

SECTION 264000 ELECTRICAL PERFORMANCE SPECIFICATION

1.1 DESCRIPTION OF ELECTRICAL SCOPE

A. Electrical scope of work shall include the following:

1. Disconnect existing overhead electrical service from existing electrical meter.
2. Disconnect existing overhead telephone and cable TV services from existing structure.
3. Disconnect electrical connections to existing condensing units.
4. Reconnect electrical service to existing electrical meter.
5. Reconnect the telephone and cable TV services to existing structure.
6. Reconnect electrical connections to relocated condensing units.
7. Remove and make safe all electrical devices and wiring below the flood plain. Any electrical wiring located below the first floor shall be raised to above the flood plain, or rewired as required.
8. All existing CATV outlets and smoke detectors shall remain.
9. All existing power receptacles shall remain.
10. All existing lighting shall remain.

1.2 GENERAL ELECTRICAL REQUIREMENTS.

A. All electrical work shall be in complete conformance with the National Electric Code, and all local, state and utility codes, regulations and requirements.

B. Coordinate with all utility companies having jurisdiction for exact requirements.

1.3 WIRING

A. All new wiring for power distribution and general lighting throughout the building shall be in non-metallic (Type NM) cable.

B. All new exterior wiring shall be in rigid galvanized steel conduit or PVC.

1.2 ELECTRICAL DISTRIBUTION SYSTEM

A. Arc fault type circuit breakers shall be installed in all bedrooms.

B. Provide surge suppression system for the electrical service, telephone service and CATV service.

1.3 RECEPTACLES

A. In renovated areas: Provide receptacles with cover-plates according to National Electrical Code "NEC 2011" sections 210.52, including but not limited to; bed rooms, living room, family room, dining room, kitchen, exercise room including equipment, bathrooms, powder rooms, mechanical room, work shop, laundry room and equipment, garage, and at each exterior door.

B. All receptacles in bathrooms, powder rooms, and kitchen shall be GFCI protected.

C. All receptacles located on the exterior of the residence shall be weather proof listed "While-In Use" and GFCI protected.

D. Receptacles shall be Lutron "Decora" style.

1.4 FIRE ALARM SYSTEM

A. The fire alarm system shall consist of 120V smoke detectors with or without built-in strobes in each of the bedroom (strobes are not required by code "owner's option").

B. Combination smoke and CO detectors outside of each bedroom.

C. All of the smoke and heat detectors shall be interconnected therefore all devices will go into notification mode when activated.

END OF SECTION 264000

SECTION 265100 - INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps, and ballasts.

1.2 QUALITY ASSURANCE

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

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Incandescent Fixtures: Comply with UL 1598.

C. Fluorescent Fixtures: Comply with UL 1598.

D. Metal Parts: Free of burrs and sharp corners and edges.

E. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

G. Diffusers and Globes:

1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

2. Glass: Annealed crystal glass unless otherwise indicated.

2.2 BALLASTS FOR LINEAR FLUORESCENT LAMPS

A. General Requirements for Electronic Ballasts:

1. Comply with UL 935 and with ANSI C82.11.
2. Ballasts shall be designed for full light output unless another BF, dimmer, or bi-level control is indicated.

B. Ballasts for Low-Temperature Environments: Electronic or electromagnetic type rated for 0 deg F starting and operating temperature with indicated lamp types.

C. Ballasts for Residential Applications: Fixtures designated as "Residential" may use low-power-factor electronic ballasts having a Class B sound rating and total harmonic distortion of approximately 30 percent.

D. Ballasts for Dimmer-Controlled Lighting Fixtures: Electronic type.

1. Dimming Range: 100 to 5 percent of rated lamp lumens.

2.3 BALLASTS FOR COMPACT FLUORESCENT LAMPS

A. Description: Electronic-programmed rapid-start type, complying with UL 935 and with ANSI C 82.11, designed for type and quantity of lamps indicated. Ballast shall be designed for full light output unless dimmer or bi-level control is indicated:

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

B. Comply with NFPA 70 for minimum fixture supports.

C. Adjust aimable lighting fixtures to provide required light intensities.

END OF SECTION 265100

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting, capping, or sealing site utilities.
7. Temporary erosion and sedimentation control.

1.2 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site to avoid damage during construction.

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations.

3.4 EXISTING UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.

1. Arrange with utility companies to shut off indicated utilities.

B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

C. Removal of underground utilities is included in earthwork sections and in Section 024119 "Selective Demolition".

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Grind down stumps and remove roots larger than 3 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
2. Use only hand methods or air spade for grubbing within protection zones.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches , and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000

SECTION 312000- EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish all labor, materials, tools, equipment, transportation and services to complete all foundation earthwork, compaction and backfilling.

1.2 SITE CONDITIONS

A. Soil test borings: data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil bearings. It is expressly understood that the Architect and Owner will not be responsible for interpretations or conclusions drawn there from by Contractor. Data is made available for the convenience of Contractor.

B. Existing Utilities: Locate existing underground utilities and fuel storage tanks in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations. Contact "Call Before You Dig" prior to any excavation.

PART 2 – PRODUCTS

2.1 SOIL MATERIALS

A. Satisfactory soil materials are defined as those complying with ASTM D2487 soil classification Groups GW, GP, GM, SM, SW and SP.

B. Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT.

C. Bank-run gravel: well graded granular soil free of organic material and complying with the following gradation:

3 1/2" sieve	90% to 100% passing
1 1/2" sieve	55% to 95% passing
1/4" sieve	25% to 60% passing
#10 sieve	15% to 45% passing
#40 sieve	5% to 25% passing
#100 sieve	0% to 10% passing
#200 sieve	0% to 5% passing

D. Crushed stone: crushed durable stone screened to a uniform size.

E. Processed stone: crusher run stone consisting of a blend of crushed stone and stone dust with not more than 5% passing the #200 sieve.

F. Recycled aggregate: crushed concrete, brick, or bituminous pavement, free of organic material, with not more than 5% passing the #200 sieve.

2.2 MATERIALS

A. Filter fabric: Mirafi 140N non-woven fabric or equivalent.

PART 3 - EXECUTION

3.1 EXCAVATION

A. Slope sides of excavations to produce a safe and stable embankment. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. The Contractor shall be responsible for the structural adequacy of all shoring and bracing.

B. Dewatering: Prevent surface water and subsurface or ground water from flowing into excavation. Do not allow water to accumulate in excavations. Remove water to prevent disturbance of footing sub-grade. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations, in accordance with Section 312319 “Dewatering”.

C. Excavation for grade beams: conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from grade beams to permit placing and removal of concrete formwork and installation of footing drains.

D. Remove all topsoil, uncompacted fill, organic soil, or other unsuitable material from under building.

E. The Contractor shall comply with all OSHA regulations.

F. Underpin adjacent structures which may be damaged by excavation work.

3.2 GRADE BEAM SUB-GRADE PREPARATION

A. In excavating for grade beams, take care not to disturb bottom of excavation. Excavate by hand to final grade. Compact grade beam sub-grade with a vibratory tamper or a jumping soil rammer after the soil has been inspected and approved.

B. Soil adjacent to and below grade beams shall be protected from freezing at all times.

C. Where grade beams are below the groundwater elevation, place 6 inches of crushed stone under grade beams.

D. Exterior grade beams shall be not less than 3'-6 below finish grade unless otherwise protected from frost.

3.3 BACKFILLING OF FOUNDATIONS

A. Backfill for foundation walls and retaining walls shall be compacted granular soil with not more than 10% passing the #200 sieve. If on-site soil does not meet these requirements, the Contractor all furnish soil from off-site at his own expense.

B. Backfill shall be placed and compacted in 8 inch lifts. Compact to 95% of the maximum density except backfill under landscaped areas need not exceed 90% of the maximum density.

C. Where foundation walls retain soil, do not backfill walls until floor construction which provides lateral bracing to the walls is in place.

D. Where foundation walls do not retain soil, place backfill evenly on both sides of the wall.

E. Recycled aggregate may be used as a backfill material.

3.4 GRADING

A. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

3.5 SLAB SUB-BASE

A. Where the slab is within a heated space, the sub-base shall be 6 inches of bank-run gravel with a maximum size of 2 inches.

B. Where the slab is exposed to frost, the sub-base shall be 6 inches of 3/4 inch crushed stone.

END OF SECTION 312000

SECTION 312319 – DEWATERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes construction dewatering.

1.2 FIELD CONDITIONS

A. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide temporary grading to facilitate dewatering and control of surface water.

B. Protect and maintain temporary erosion and sedimentation controls, which are specified in Section 311000 "Site Clearing," during dewatering operations.

3.2 INSTALLATION

A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

1. Space well points or wells at intervals required to provide sufficient dewatering.
2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.

C. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

A. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

B. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.

1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
3. Maintain piezometric water level a minimum of 24 inches below bottom of excavation.

C. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

3.4 FIELD QUALITY CONTROL

A. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Architect if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

END OF SECTION 312319