

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

ROOF REPLACEMENT, GENERAL REPAIRS &
HAZARDOUS MATERIAL ABATEMENT

For

THE DOUGLAS & DIANA STACK RESIDENCE

34 HOBSON STREET

EAST HAVEN, CONNECTICUT 06512

Lothrop Associates ^{LLP} Architects

100 Pearl Street – 14th Floor

Hartford, Connecticut 06103

860-249-7251

Issue Date: May 14, 2014

Application No. 1898

LAA Project No. 1524-05



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Section 1

ADVERTISEMENT FOR BIDS

Project # **1898**

The State of Connecticut Department of Housing (DOH) is seeking proposals through a Request for Proposal (RFP) 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.

Separated sealed bids for: **Roof Replacement, General Repairs & Hazardous Material Abatement for The Douglas and Diana Stack Residence, 34 Hobson St., East Haven, Ct. 06512,** will be received by **Lothrop Associates LLP, Architects 100 Pearl Street, 14th floor Hartford, CT 06103 at 10 o'clock AM on 30 May 2014.**

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

Copies of the bid documents may be obtained from: **PPR BLUEPRINTING LLC, 188 E. Main St., Elmsford, NY 10523 Phone: 914 592 5464.**

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 Facility, Section 109 and E. O. 11246.

No bidder may withdraw his bid within 30 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. Bids will be received by DOH at the office of **Lothrop Associates LLP Architects_ 100 Pearl Street, 14th floor Hartford, CT 06103 at 10 o'clock AM on 30 May 2014.**

The envelopes containing the bids must be sealed, addressed to **Lothrop Associates LLP Architects at 100 Pearl Street 14th Floor, Hartford, Connecticut 06103** and designated as bid for:

Roof Replacement, General Repairs & Hazardous Material Abatement for The Douglas and Diana Stack Residence, 34 Hobson St., 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 12 o'clock PM on Thursday, 22 May 2014.

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 data 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 properly 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 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: **Thomas Streicher, AIA at 100 Pearl Street 14th Floor, Hartford, Connecticut 06103 (e mail-tstreicher@lothropassociates.com)**, and to be given consideration must be received at least three 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 two 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.

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, if applicable:

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 of 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.

Completion Assurance Agreement: A completion assurance agreement will be required of the successful bidder (contractor) for 100 percent of the contract price on contracts less than \$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.

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. **1898** and Addenda No. _____ and _____ thereto, as prepared by **Lothrop Associates LLP**, Architects, **Hartford**, Connecticut, and on file in the office of DOH, hereby proposes to furnish all permits, labor, materials, tools and equipment required for the rehabilitation and reconstruction including general construction, site improvements, plumbing, heating and electrical work for said Project No. **1898** located at **The Douglas and Diana Stack Residence, 34 Hobson St.**, in **East Haven**, State of Connecticut, all in accordance with the Drawings and Specifications, for the sum of :

_____ Dollars (\$ _____).

Section #	Scope of Work	Subcontractor	Labor Cost	Material	Total
TOTAL COST					

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

- No. ___ N/A \$

The undersigned agrees to commence the work on a date to be specified in the contract and to complete such work within 45 consecutive calendar days.

The undersigned agrees that if within the period of sixty (60) 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, will within fifteen (15) days thereafter deliver to the 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 DOH, prior to the time named for delivery of this proposal, together with an executed Completion Assurance Agreement with a Letter of Credit in a form satisfactory to the DOH 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 sixty (60) days from the date of bid opening or until the next work day immediately following said period if such period ends on a weekend or a State holiday.

Security in the sum of _____ Dollars (\$ _____)

in the form of _____ is submitted herewith in accordance with the Specifications.

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, and Segregated Facilities.

Acknowledgement of Bidder

I, THE UNDERSIGNED AS AN AUTHORIZED OFFICER OF:

(Company Name)

(Date)

(Address)

(Telephone)

(City/State/Zip)

(Fax No.)

(FEIN)

I HEREBY SUBMIT THE FOLLOWING PRICES FOR THE PROJECT IDENTIFIED ABOVE: (Indicate in words and numerals)

BASE BID PRICE: Cost _____

AMOUNT IN WORDS: _____

(Signature)

(Date)

(Printed Name)

(Title/Position)

(Email address) _____

(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; and that he/she will comply fully with all laws and regulations applicable to awards made subject to section 44A.

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 under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

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/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; and that he/she 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 under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date _____

Name of Sub-bidder

By _____

Signature

Print Name and Title

Business Name

Street Address, City and State

COMPLETION ASSURANCE AGREEMENT

THIS AGREEMENT made this _____ day of _____ by and between the State of Connecticut Department of Housing (DOH) and _____ (Contractor).

WITNESSETH

WHEREAS, the Contractor, the Owner and DOH have entered into a Construction Contract dated _____, providing for the construction of a project described in such Contract; and

WHEREAS, the Contractor desires to meet his/her obligations to supply 100 percent Performance and Payment Bonds with a substitution of another form of security; and

WHEREAS, the Owner has determined that a cash deposit arrangement would provide sufficient security in lieu of a Performance and Payment Bond.

NOW THEREFORE, in consideration of the mutual promises and undertakings herein contained, and for the purpose of inducing DOH to substitute a cash deposit arrangement for a Performance and Payment Bond, the parties hereto agree that:

1. The Contractor has provided DOH with a letter dated _____, from a banking institution evidencing the deposit of funds in an account (Fund) in the amount of

\$ _____. The Fund has been established in the name of the State of Connecticut Department of Housing to secure and indemnify it for any expense, loss or damage suffered or sustained as a result of any default by the Contractor in the performance of its obligations under the Construction Contract. It is expressly understood and agreed that said Fund shall at all times be under the control of the Owner.

2. All disbursements from the Funds shall be authorized and made by the DOH.

3. The Fund shall be maintained as a separate trust account and may be drawn in increments up to its aggregate amount or the aggregate may be drawn. Any incremental draw will not impair or diminish the right of the DOH to make subsequent draws in any amount(s) up to the aggregate amount of the Fund. The proceeds of a draw may be disbursed as follows:

A. To the contractor during the course of construction to promote the completion of the project, as may be deemed necessary by the DOH.

B. To DOH the entire Fund or balance remaining therein in the event of a default by the Contractor under the Construction Contract to be used by DOH to indemnify it for any loss, damage or expense whatsoever which it may suffer by reason of Contractor's failure to perform the construction contract.

C. To the Contractor the balance of such Fund remaining after three months from the date that the work has been substantially completed in accordance with the Construction Contract (except for punch list items and items awaiting seasonal opportunity to complete) and accepted by the Contracting Officer in accordance with Section 20 of the General Conditions, but only so long as the Project is free and clear of any liens, claims or encumbrances whatsoever. There shall be withheld from the payment of said balance an amount equal to 2-1/2 percent of the total amount of the Construction Contract, which sum is to be retained in account for a period of 15 months from the date of substantial completion or for another period less than 15 months if authorized by DOH. Said sum shall be held as a Fund to guarantee against defects in construction due to faulty materials or workmanship or damage to the premises resulting from such defects, which defects or damage become apparent within one year after date of substantial completion. Said sum may be used for the correction of defects or damage in the event the Contractor fails to make such corrections. The Contractor's liability for such corrections is not limited by the amount of such sum.

4. It is agreed that Contractor may provide a separate unconditional and irrevocable Letter of Credit to satisfy the requirement, set forth in paragraph 3C above, that 2-1/2 percent of the total Construction Contract amount, for latent defects, to be retained

for fifteen months beyond the date of substantial completion. If such separate unconditional and irrevocable Letter of Credit is provided, it must be delivered to DOH and made subject to this Completion Assurance Agreement before any balance remaining in the fund is released to the Contractor or the Fund canceled.

5. Any other provision of this Agreement notwithstanding, it is understood and agreed that no funds may be disbursed to the Contractor so long as there are any outstanding liens, claims or encumbrances against the Project, written notice of which have been received by DOH. If any such claims, liens and encumbrances have not been removed or resolved, and written notice of such removal or resolution receive by DOH, by the date of substantial completion, DOH may in its sole discretion exercise any of its rights under the General Conditions of the Construction Contract.

6. It is expressly understood by all parties hereto that in the event of a default by the Contractor in any of its obligations under the Construction Contract, the entire Fund, any part thereof, or balance remaining therein may, at the option of DOH, be paid to the DOH together with an assignment of all rights granted to DOH.

7. This Agreement shall not alter or limit the obligations and liabilities of Contractor under the Construction Contract, but shall be deemed to be additional security for the performance by the Contractor of its obligations thereunder.

8. It is understood and agreed that in the event the Fund is held by a depository, that the depository is not charged with any duty or responsibility to see to the performance of or compliance with any agreements between any of the parties hereto other than that of paying over the Fund as directed in writing by DOH, nor to see to the application of the Fund after making disbursements as so directed. It is expressly understood and agreed that any claim, controversy, dispute or disagreement which may exist between the Contractor and DOH shall have no effect whatsoever upon the obligation of the depository to pay DOH promptly upon receipt of a notice issued pursuant to the terms of the Fund and this Agreement.

9. Notwithstanding any other provision of the Construction Contract, it is agreed the fund will be administered pursuant to the terms of the Fund, this Agreement and any consistent provisions in the Construction Contract. Any inconsistent provisions in the Construction Contract shall be superseded and controlled by the Fund and this Agreement. It is expressly agreed that reference to this Agreement or collateral Construction Contract document does not make the issuance of the Fund conditional.

Name of Contractor

State of Connecticut Department of Housing

Name and Title

Name and Title

Approved by Bank:

CASH DEPOSIT LETTER

Ms. Hermia Delaire
Program Manager
State of Connecticut Department of Housing
Team Sandy – OORR Program
505 Hudson Street, 2nd floor
Hartford, CT 06106

Dear Ms. Delaire:

Re: OORR Project # _____ Address _____

This will acknowledge that this Bank has established an account in the amount of \$ _____ with funds received from _____.

This account has been issued in the name of _____ and the original certificate manifesting the same is being handed to you herewith. It is our understanding that this account is being established in lieu of performance and payment bonds customarily furnished in construction projects. The account shall serve as the "Fund" referred to in the Completion Assurance Agreement, dated _____, by and between the State Department of Housing (DOH) and the Contractor.

The Bank shall pay over all or part of the funds in the account together with interest herein to DOH, or to another as the DOH may designate, upon written notification by the DOH to the Bank of a default by the Contractor under the Construction Contract, or of the Contractor's failure to perform the Construction Contract.

The Bank shall pay over all or part of the funds in the account upon proper notification by the Owner without regard to any objections, claims, defenses, assertions, or actions by the Contractor or any other person or entity acting on behalf of the Contractor. The Bank specifically recognizes that any controversy, dispute, claim or disagreement which may exist between the Contractor and DOH have no effect whatsoever upon the obligation of the Bank to pay DOH promptly upon receipt of the notice referred to above.

Sincerely,

President

SUBCONTRACTOR IDENTIFICATION

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
5. No segregated facilities will be maintained.

NAME AND TITLE OF SIGNER (Please type.)

SIGNATURE DATE

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 \geq 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

1. The purpose of this HUD and DOH sponsored 0% interest loan Owner Occupied Rehabilitation and Rebuilding program is to make good faith efforts to assist qualified property owners in making repairs to their property damaged by Superstorm Sandy. Eligible repairs include code, health and safety compliance modifications, including but not limited to building envelope and energy efficiency upgrades (See Green Building Standards).
2. In the event that the homeowner is dissatisfied with the work performed although the work has been completed to industry standards, approved by the local municipality's code enforcement officials and approved by the DOH or its agent, the homeowner's approval will be overridden, full payment will be issued to the contractor and the project will be officially closed.
3. The owner is responsible for removal or relocation from the respective work areas the following, including but not necessarily limited to: personal belongings, window treatments, small furniture, fixtures, area carpets, interior and exterior plants. The contractor will be responsible for covering and protecting large furniture unable to be removed from the respective work areas.
4. The Contractor, unless otherwise specified, shall provide all labor, materials, tools, equipment, and related items required for the erection and completion of all work indicated in this project manual and as may be inferred, implied or otherwise necessary for the proper execution of the work.
5. The Contractor shall pay all necessary taxes, fees, and permits necessary to complete all of his work as detailed on the attached scope of work.
6. The premises herein shall be occupied during the course of the construction work.
7. All rehabilitation, alterations, repairs, or extensions shall be in compliance with all applicable codes of the Municipality, HUD requirements or compliance with the latest edition of the International Building Code, which ever applies and is the more strict. All electrical, heating, and plumbing work shall comply with the rules and regulations of the National, State and Local Codes. Before commencing work, contractors and/or subcontractors shall obtain all necessary permits.
8. The Contractor certifies that he has familiarized himself with the requirements of the specifications and plans and understands the extent and character of the work to be done, and inspected the premises and given his full attention to any and all areas with which he might become specifically involved. He must familiarize himself with all conditions relating to and affecting his work and bid.
9. The selected Contractor must, prior to contract signing, supply the DOH and the Owner with the original certificates of insurance in accordance with the following insurance requirements:
 - A. Contractor shall procure and maintain for the duration of the Agreement the following types of insurance, in amounts no less than the stated limits, against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder:
 - 1) **Workers' Compensation Insurance:** The Contractor shall maintain full and complete Workers' Compensation Insurance for all of its employees and those of its subcontractors engaged in work on the premises, in accordance with the local and state laws governing the same, in the minimum amounts of \$100,000 each accident, \$500,000 disease – Policy limit, \$100,000 disease – each employee.
 - 2) **General Liability Insurance:** The Contractor shall furnish evidence of a comprehensive general liability insurance coverage with a combined single limit for bodily injury, death, and property damage in the amount of \$1,000,000 per occurrence, naming the Owner and the State as additional insured. This shall cover the use of all equipment, hoists and vehicles on the Premises not covered by any automobile liability policy. If the Contractor has a "claims-made" policy, then the following additional requirements apply: (a) the policy must provide a retroactive date which must be on or before the execution date of this Agreement and (b) the extended reporting period may not be less than five (5) years following the Construction Completion Date.
 - 3) **Automobile Liability:** The Contractor shall furnish evidence of Automobile Liability insurance with minimum limits of \$1,000,000 per occurrence, combined single limit for bodily injury and property damage liability. This shall include owned vehicles, non-owned vehicles and employee non-ownership.
 - 4) **Cargo Insurance:** The Contractor shall furnish evidence of all-risk cargo insurance, with a minimum limit of \$1,000,000 per occurrence when the project involves raising a structure above the Base Flood Elevation.
 - 5) **Builders Risk:** The Contractor shall maintain Builder's Risk (fire and extended coverage) insurance providing coverage for the entire work at the project site, including all work in place, all materials stored at the building site, foundations and building equipment. Coverage shall be on a completed value form basis in an amount equal to the projected value of the project. The Contractor agrees to endorse the State of Connecticut and the Owner as Loss Payees.

B. Additional Insurance Provisions

- 1) Each of the Owner and the State of Connecticut Department of Housing, and their successors and assigns, as their interests may appear, shall be named as an Additional Insured on the Commercial General Liability policy.
 - 2) Described insurance shall be primary coverage and Applicant and Applicant's insurer shall have no right of subrogation recovery or subrogation against the State of Connecticut.
 - 3) Applicant shall assume any and all deductibles in the described insurance policies.
 - 4) Without limiting Applicant's obligation to procure and maintain insurance for the duration identified in (A) above, each insurance policy shall not be suspended, voided, cancelled or reduced except after thirty (30) days prior written notice by certified mail has been given to the State of Connecticut, with the exception that a ten (10) day prior written notice by certified mail for non-payment of premium is acceptable.
 - 5) Each policy shall be issued by an Insurance Company licensed to do business by Connecticut Department of Insurance and having a minimum Best Rating of A- or equivalent or as otherwise approved by the State.
10. DOH and its agents must be notified prior to start of work of any subcontractor to be paid for work on the job who is different from the subcontractor identified in original bid proposal.
 11. Working times for the project shall be Monday through Friday 8 am to 5 pm (EST). Contractors must request permission from owner and be in compliance with local municipal ordinances prior to working longer hours or weekends.
 12. All materials shall be new and of acceptable quality. The Contractor shall submit proof of purchase of warrantee items at closeout. The property Owner shall select all colors, models, etc. as per scope of work. All materials and work must be applied in accordance with the applicable manufacturer's latest instructions and specifications, and in accordance with Federal prohibitions against the use of lead paint.
 13. All manufacturers' warranties are to be extended to the property Owner free and clear of all liens. Unless otherwise specified, all labor, material, and workmanship provided by the Contractor shall be guaranteed by the Contractor, including that of subcontractors, for a one (1) year period from the date of the Final Payment. This guarantee shall be in addition to and not in limitation of, in lieu of, or modify and other guarantee that is due the property Owner from any manufacturer.
 14. The Contractor shall repair or replace all work, materials and equipment which are found to be defective during construction and the guarantee period. Repair shall include all damage to surrounding work caused by the failure and/or necessary for the repair or replacement of the defect. All repairs and replacements shall be performed at no additional expense to the Owner and shall be completed promptly after the Contractor receives notice of the defect.
 15. The Contractor shall take all necessary measures and precautions to protect the surroundings from damage occurring due to performance of the work. All areas and surfaces of the existing building which are affected by the execution of the new work (removals, demolition, repairs etc.) shall be patched and restored to either match the existing adjacent conditions or to match the new work, whichever is applicable. If such damage occurs it will be repaired by the Contractor at no cost to the Owner. Contractor shall provide all temporary shoring, bracing and other construction (interior and exterior) required to perform the work of this contract.
 16. The Contractor shall dispose of all debris and remove all material resulting from his work in accordance with local and State law. The Contractor shall police and maintain a clean and safe job site daily. He shall reinstall accessories taken down and clean up all scrap around the project and remove fingerprints. All on-site maintenance relating to the performance of the work shall be the responsibility of the Contractor until the Certificate of Completion is issued. The project shall be maintained in a habitable and safe condition daily if the project is to remain occupied.
 17. Materials and products not otherwise specified in these documents shall be to match building standards and existing conditions, provided such items are in compliance with all applicable codes. Such codes set the minimum standards to be achieved.
 18. All work shall be neat and accurate and done in a manner in accordance with customary trade practices. **The Contractor, at a minimum, shall leave the premises broom clean and orderly after each working day and shall keep the premises free from accumulation of materials and rubbish by disposing of such debris in an onsite disposal container or removed by vehicle in accordance with all applicable state and local regulations.** At the completion of the project the Contractor shall remove all excess materials from the site. Any surplus material agreed to be left for the owner shall be stored neatly by the contractor in a location directed by the owner free from weather, spoilage or pilferage.
 19. The Contractor shall coordinate any work which interfaces with other Contractors or with the operations of the Owner. The Contractor shall take all necessary precautions to prevent fire, bodily injury, damage to property and any other calamities that may arise which pose a threat to life, limb property.
 20. The Contractor shall not make any changes to the scope of work unless a change order is processed and fully executed by the DOH.

21. The Owner may cancel this contract within three days of signing and not be liable to the Contractor or DOH. Should the Owner opt to cancel they must sign and send a Notice of Cancellation to DOH, otherwise DOH shall issue a Notice to Proceed authorizing the contractor to commence with the proposed improvements.
22. The Contractor shall commence work under this contract within 15 days of the date of the notice to proceed and complete work within **60** days of the notice to proceed.
23. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Owner or by any employee of the Owner, or by any separate Contractor employed by the Owner, or by changes ordered in the work or by labor disputes, fire, unusual delay in delivery of materials, transportation, adverse weather conditions not reasonably anticipatable, unavoidable casualties, or any cause beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by any other cause which justifies the delay, the contract time may be extended by Change Order for such reasonable time as may be agreed upon by all parties. It shall be the responsibility of the Contractor to request and document in writing such extensions within three (3) calendar days.
24. In the event that the Contractor does not commence or pursue the work as hereinafter stated, then DOH shall have the right to terminate this agreement and to hire a successor Contractor to perform the work. Any such termination shall be by certified mail to the address noted in this agreement, and shall be effective as of the date of mailing. Payments by the DOH/Owner in the event of termination shall be as follows:
25. The successor Contractor shall first be paid and then the terminated Contractor. Payments to the terminated Contractor shall be limited both as to those funds remaining after payment to the successor Contractor but shall not exceed the value of the work actually performed by the terminated Contractor. Further, should the total cost for work performed under this contract exceed the amount stated in this agreement due to the Contractor's termination, then the Owner shall have a cause of action against the terminated Contractor for any such additional cost.
26. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner his obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, DOH shall, thereupon, have the right to terminate this Contract by giving written notice to the Contractor of such termination and specifying the effective date of such termination. In such event, all unfinished work required by the Contractor under this Contract shall, at the option of the DOH, be completed or not.
27. Payments
 - 1) DOH/Homeowner shall pay the Contractor the price as provided in this contract.
 - 2) 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.
 - 3) 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.
 - 4) 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 ___ 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.
 - 5) 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.
 - 6) 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.
 - 7) 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.
 - 8) 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.

- 9) 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.
 - 10) 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.
 - 11) 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 no wise impair the obligations of any surety or sureties under any bonds furnished under this contract.
28. Disputes
- 1) "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.
 - 2) 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.
 - 3) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision.
 - 4) A claim by the Homeowner against the Contractor shall be subject to a written decision by the Contracting Officer.
 - 5) 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.
 - 6) 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.
 - 7) 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.
29. The Contractor will not discriminate against any employee or applicant for employment because of race, color, creed, religion, sex, sexual preference, national origin, or mental or physical disability during the performance of this agreement. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship, without regard to their race, color, creed, religion, sex, sexual preference, national origin or mental or physical disability. This provision will be inserted in all subcontracts, if any, for work covered by this agreement.
30. Equal Employment Opportunity (EEO) Clause
- During the performance of this contract, the Contractor agrees as follows:
- 1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and the employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
 - 2) The Contractor will, 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 or national origin.
 - 3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
 - 4) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.
 - 5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.
 - 6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, 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 in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by the rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

- 7) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.
31. In the event of the Contractor's noncompliance with this equal opportunity clause or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further contracts in accordance with procedures authorized in Presidential Executive Order 11246, or by rule, regulations, or order of the Secretary of Labor or as provided by law.
32. The following applies to all contracts of \$10,000,000.00 or more: SECTION 402 VETERANS OF THE VIETNAM ERA. AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VEITNAM ERA. The Contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran of the Vietnam era in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified disabled veterans and veterans of the Vietnam era without discrimination based upon their disability or veteran status in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship.
33. No officer, employee or member of the Governing Body of the Municipality shall have any financial interest, direct or indirect, in this contract or the proceeds of this loan.
34. DOH retains the right to reject any or all bids or any part of any bid in part or in whole if deemed to be in the best interest of the project.
35. Substitutions of materials from that specified are only allowed on an approved/equal basis. The Contractor must submit written documentation of the substitute item or material for approval by the Owner and Program prior to making such substitution. Any items or material substituted by the Contractor without prior written approval of the Owner and Program will at the Contractor's expense be replaced if it is determined not to be equal to the item or material specified. Any surrounding, adjoining, or dependent items affected by replacement of the unequal substituted material shall also be replaced, reworked, and reinstalled at no cost to the Owner.
36. Bids shall contain prices for general categories of work and/or items as specified on the provided bid sheets. In the case of a mathematical error by the Contractor, the correct sum of the individual line items in the cost summary shall be the Contractor's bid.
37. All bids shall remain in effect for thirty (30) calendar days.
38. The Owner will supply all necessary power required by the Contractor at no additional cost to complete his work. Power shall be limited to the use of existing outlets and shall not exceed the existing capacity of the system. Power required over the capacity of the existing electrical system shall be the responsibility of the Contractor. Heating during construction shall be supplied by the Owner.
39. If any unseen or unknown asbestos related conditions arise during the work the Contractor shall stop all work immediately and notify the DOH of such.
40. OTHER PROVISIONS – LEAD BASED PAINT

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. 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 and EPA's Repair Renovation, and Painting Rule at 40 CFR.80 Subpart E.

Any and all rehabilitation work under this Agreement will comply with the requirements of the Federal Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4831) which prohibits the use of lead-based paint in residential structures constructed or rehabilitated with Federal Assistance in any form.

The construction or rehabilitation of residential structures with assistance provided under this contract is subject to the final regulations "Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally owned Residential Property and Housing Receiving Federal Assistance." The regulation is at 24 CFR part 35. It implements sections 1012 and 1013 of the Residential Lead-Based Paint Hazard Reduction Act of 1992, Title X, of the Housing and Community Development Act of 1992. Sections 1012 and 1013 amend the Lead-Based Paint Poisoning Prevention Act of 1971.

Beginning April 22, 2010, the Contractor is required to have a certificate from a 6 hour EPA/HUD RRP lead remediation course.

41. The Contractor shall comply with the provisions of the immigration Reform and Control Act of 1986 effective and enforceable as of June 6, 1987 which Act makes unlawful the hiring for employment or subcontracting individuals failing to provide documentation of legal eligibility to work in the United States. The Contractor shall hold DOH, its agents and the Homeowner harmless for the failure to comply with the provisions of said Act.

Section 3:

Scope of Work and Specifications

Refer to pages following.

SECTION 3

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INTRODUCTORY INFORMATION

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SECTION 000200 LIST OF DRAWINGS

The List of Drawings dated 05/14/14 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

- A-000 Cover Sheet and Site Plan
- A-101 Roof Demolition Plan, Roof Construction Plan and Details
- A-102 First Floor Plan and Roof Details

END OF SECTION 000200

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

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

B. Related Requirements:

1. Section 015000 "Temporary Facilities" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: DOH Application No.1898, LAA Project No. 1524-05

1. Project Location: 34 Hobson 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. Demolition of existing roof, abatement of hazardous material, Replace existing roof and related flashings, roofing accessories, minor roof reframing, general repairs, selective window replacement, interior painting.

B. Type of Contract.

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

C.

1.4 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site 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 Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.5 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.

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 6:00 p.m., Monday through Friday, unless otherwise indicated.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.

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 011000

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.

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. The Contractor's relations with subcontractor's vendors and material suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

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 weekly.
- 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. Architects Contract # _____
- 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 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.

State of Connecticut Department of Housing
CDBG-Community Block Grant Program
Superstorm Sandy Disaster Recovery Program
DOUGLAS AND DIANA STACK RESIDENCE

Application No.1898
LAA Project No. 1524-05

PART 2 - PRODUCTS Not Applicable

PART 3 - EXECUTION Not Applicable

END OF SECTION 010450

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. Sanitary facilities.
 - 3. Enclosures such as tarpaulins, barricades and canopies.
 - 4. Platforms, walking surfaces, and other items required to maintain access to occupied units.
 - 5. Debris containers.
 - 6. Temporary fencing of staging areas.
 - 7. 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.
Water will be made available by the Owner.

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. Single phase, 120volt power will be made available by the Owner.

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:

1. Make necessary arrangements and pay costs for installation and operation of telephone 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.

F. Fire Extinguishers: Provide and maintain fire extinguishers in sufficient quantities as required by project size.

3.2 FIELD OFFICES

- A. The Contractor shall provide temporary field offices as necessary for its construction operations.

3.3 SANITARY FACILITIES:

1. Provide temporary sanitary facilities in the quantity required for use by all contractor and sub-contractor personnel.
2. Maintain in a sanitary condition at all times.
3. The use of the Owner's toilet facilities by the Contractor is prohibited.

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 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.

3.5 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 02 8300 – LEAD ABATEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The project Contract documents, including any General Supplementary Conditions, apply to this Section.
- B. Limited Hazardous Materials Inspection Report dated April 2014, revised May 2014.
- C. Roof Demolition Plan, Roof Construction Plan, and Details Drawing A102.

1.2 CONSULTANT

- A. The Owner may retain a Consultant for the purposes of project management and monitoring during lead abatement activities. The Consultant shall represent the Owner in all phases of the abatement project at the discretion of the Owner. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, review of monitoring results, completion of the various segments of work, final completion of the abatement, submission of data, and daily field punch list items.

1.3 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. 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 in consultation with the Consultant, to correct any conflicts.
- F. All items, not specifically mentioned in the Specifications but implied by trade practices to complete the work, shall be included.

1.4 EXAMINATION OF SITE

- A. It is understood that the Contractor has examined the Site and made his own estimates of the facilities and difficulties attending the execution of the Work, and has based his 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.

1.5 CONTRACTUAL QUALIFICATIONS

- A. All bidders shall submit a record of prior experience in similar projects, listing no less than three (3) completed jobs 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 been found out-of-compliance with federal or state asbestos and/or lead regulations pertaining to worker protection, removal, transport, or disposal.
- C. The Contractor shall be a United States Environmental Protection Agency (EPA) Certified Lead-Safe Renovator in accordance with the EPA Lead Renovation, Repair, and Painting Rule (RRP Rule). **All workers and supervisors** shall have completed 8 hours of training and received certification as lead safe renovators. This is a requirement of the U.S. Department of Housing and Urban Development (HUD) regulation 24 CFR Part 35.

1.6 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. Schedule of work of this Contract shall include the notification requirements to regulatory agencies for the work if exterior materials will become friable during proposed removal operations. It shall be incumbent upon the contractor performing the asbestos removal to determine if proposed removal methods shall render the asbestos containing exterior roofing materials friable.
- C. The Contractor shall supervise and direct all work of his and other trades using his 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. A pre-construction meeting shall be attended by the contractor and any sub-contractors. The assigned Supervisor must attend this meeting.

1.7 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.

1.8 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 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 and Consultant and shall maintain written evidence of such inspection for review by the Owner and 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 to who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

1.9 PROJECT SCOPE OF WORK

- A. Work outlined in this Section includes all work necessary for the removal and disposal of lead hazards including; interior defective lead based paint, exterior defective lead based paint, and elevated concentrations of lead in dust. Work shall be performed in compliance with United States Environmental Protection Agency (EPA) Renovation, Repair, and Painting (RRP) regulations and Housing and Urban Development (HUD) Lead Safe Work Practices. In addition to identified lead hazards, intact lead painted surfaces and components that will be impacted during the roof replacement project work shall be handled in accordance with requirements of RRP using Lead Safe Work Practices. Work is to be performed at 34 Hobson Street in East Haven, Connecticut. The property is considered Target Housing, however is not currently occupied by a child under the age of six and CT Regulations 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.
 - 4. Prior to the start of work the Lead-Safe Renovation Contractor shall ensure Pre-renovation notification requirements for providing EPA Pamphlet are adhered to.
 - 5. The Lead Safe Renovation Contractor and Supervisor shall ensure that lead safe work practice requirements are utilized in accordance with RRP and HUD regulations
 - 6. The required record keeping 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 RRP and HUD regulations.
 - 3. Upon the completion of work conduct the required visual clearance inspection and cleaning verification as required. It should be noted that HUD regulations will require the collection of lead dust wipe samples to verify adherence to clearance requirements specified herein.
- D. The following table summarizes the interior defective lead based paint identified requiring removal and proper disposal as hazardous lead waste:

LOCATION	ABATEMENT ITEM	QUANTITY
Sunroom	Interior Window Sashes	3 Window Sashes shall be

		removed for replacement as detailed by architectural specifications.
--	--	--

E. The following table summarizes the exterior defective lead based paint identified requiring scrapping of the defective lead based paint and proper disposal as hazardous lead waste:

LOCATION	ABATEMENT ITEM	QUANTITY
Basement	Exterior Window Trim	3 Window Openings shall be scraped to remove loose and flaking paint and stabilize paint for re-painting. Re-painting as specified by architectural specifications.
Front Entrance Door	Exterior Door Threshold	1 Door Threshold shall be scraped to remove loose and flaking paint and stabilize paint for re-painting. Re-painting as specified by architectural specifications.

F. The following table summarizes the elevated concentrations of lead in dust requiring decontamination with Tri-sodium Phosphate (TSP) and High Efficiency Particulate Air (HEPA) vacuuming and proper disposal as hazardous lead waste:

LOCATION	ABATEMENT ITEM	QUANTITY
Living Room and Closet, Bedroom #1 and Closet, Bedroom #2 and Closet, Sunroom, and Hallway at Basement Stairs	Lead in Dust shall be cleaned to meet clearance standards.	700 SF

G. The following table summarizes the interior intact lead based paint requiring compliance with EPA RRP and HUD Lead Safe Work Practices during proposed renovation work specified by architectural specifications:

LOCATION	LEAD BASED PAINT	QUANTITY
Foyer	Walls and Ceilings	100 SF

H. The Contractor is responsible for verifying the quantities of materials to be removed, and the condition of these materials. This independent site verification shall include the quantity of window sashes to be removed, window trim and door threshold to be scraped, and lead in dust to be cleaned as well as all applicable site conditions. Waste generated during all work activities shall be presumed hazardous waste for disposal and properly disposed.

1.10 DEFINITIONS

- A. The following definitions relative to asbestos abatement may apply:
1. Abatement - A measure or set of measures designed to permanently eliminate lead based paint hazards or lead-based paint. Abatement strategies include the removal of lead-based paint, enclosure, encapsulation, replacement of building components coated with lead-based paint, 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 (µg/m3) calculated as an eight hour time weighted average.
 3. Abrasive Removal - A method of abatement that entails the removal of lead-based paint using mechanical removal equipment fitted with a high efficiency particulate air (HEPA) dust collection system.

4. Atomic Absorption Spectrophotometer (AA) - 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.
5. Biological Monitoring - The analysis of a person's blood to determine the level of lead contamination in the body.
6. Certified Renovator – An individual who is approved to carry out remodeling work practices described in the terms of the Lead, Renovation, Repair, & Painting (RRP) rule issued by the United States Environmental Protection Agency on April 22, 2008.
7. Chemical Removal - A method of abatement which entails the removal of lead-based paint using caustic or solvent based chemical paint strippers.
8. 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 and the combined weekly visits last at least six hours, and the combined annual visits last at least 60 hours. 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.
9. 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.
9. Competent 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.
10. Complete Abatement - Abatement of all lead-based paint 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, reevaluation and on-going monitoring.
11. 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 get paint from the damaged area. Deteriorated paint shall be classified as either in fair condition or poor condition.
12. 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 forty (40) micrograms per deciliter ($\mu\text{g}/\text{dl}$) as defined in OSHA Standard 1926.62.
13. 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 lead-based paint.
14. Enclosure - The use of rigid, durable construction materials that are mechanically fastened to the substrate to act as a barrier between the lead-based paint and the environment.
15. 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.
16. Evaluation - Risk assessment, paint inspection, reevaluation, investigation, clearance examination, or risk assessment screen.
17. 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.
18. 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 four conditions:
 - a. Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 through 262.24),
 - b. Has been listed as hazardous (40 CFR Section 261.31 through 261.33),
 - 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.

19. Inspection - A surface-by surface investigation to determine the presence of lead-based paint (in some cases including dust and soil sampling) and a report of the results.
20. Inspector - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 to (1) perform inspections to determine and report the presence of lead-based paint 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 lead-based paint hazard control requirements or standards.
21. 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.
22. Interim Controls - A set of measures designed to temporarily reduce human exposure or possible exposure to lead-based paint 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.
23. Lead Abatement Plan - A written plan that identifies the location of intact and defective lead-based paint and describes how defective lead-based surfaces will be abated and how the environment, health, and safety will be protected.
24. Lead-Based Paint - Paint or other surface coatings that contain lead equal to or greater than 1.0 milligrams of lead per square centimeter or greater than 0.5% by weight.
25. Lead-Based Paint Hazard - Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or deteriorated lead-based paint would have an adverse effect on human health. Lead-based paint hazards include for example, deteriorated lead-based paint, leaded dust levels above applicable standards, and bare leaded soil above applicable standards.
26. Lead-Based Paint Hazard Control - Activities to control and eliminate lead-based paint hazards, including interim controls, abatement, and complete abatement.
27. Lead-Based Paint Abatement Planner/ Designer - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 for planning and designing lead-based paint abatement projects.
28. Lead Consultant - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 to perform as an inspector, risk assessor or planner/designer
29. 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. 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.
30. Lead-Free Dwelling - A lead-free dwelling contains no lead-based painted surfaces and has interior dust and exterior soil lead levels below the applicable CT DPH, HUD and EPA standards.
31. Lead Hazard Screen - A means of determining whether residences in good condition should have a full risk assessment. Also called a risk assessment screen.
32. Lead-Safe Dwelling - A lead-safe dwelling contains intact, or encapsulated lead-based paint and has interior dust and exterior soil lead levels below the applicable CT DPH, HUD and EPA standards.
33. 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.
34. Paint Film Stabilization - The process of wet scraping, priming, and repainting surfaces coated with deteriorated lead-based paint; paint film stabilization includes cleanup and clearance.
35. Paint Removal - An abatement strategy that entails the removal of lead-based paint from surfaces. For lead hazard control work, this can mean using chemicals, heat guns below 700 degrees Fahrenheit, and certain contained abrasive methods. Open flame burning, open abrasive blasting, sand blasting, water blasting and extensive dry scraping are prohibited paint removal methods.
36. Permissible Exposure Limit (PEL) - Fifty (50) micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) of air averaged over an 8 hour period as determined by 29 CFR 1926.62.

37. Personal Monitoring - Sampling of lead concentrations within the breathing zone of a worker to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employee's work tasks.
38. Reevaluation - 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 lead-based paint hazard control measure is still effective and if the dwelling remains lead-safe.
39. 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-lead components free of lead-based paint.
40. Risk Assessment - An on-site investigation of a residential dwelling to discover any lead-based paint 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.
41. 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.
42. Risk Assessor - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health Sections 20-478-1 through 20-478-3 to (1) perform risk assessments, (2) identify acceptable abatement and interim control strategies for reducing identified lead-based paint hazards, (3) perform clearance testing and reevaluations, and (4) document the successful completion of lead-based paint hazard control activities.
43. 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.
44. 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.
45. Visible Residue - Any paint debris, dust, or chips on surfaces within the work area where lead abatement has taken place and which is visible to the unaided eye.
46. 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 afterwards disposing of the cleaning items as hazardous lead waste.
47. 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.
48. X-ray Fluorescence (XRF) Analyzer - An analytical instrument which measures lead concentration of dried paint on surfaces or in a laboratory sample in milligrams per square centimeter (mg/cm²) using a radioactive source within the instrument. There are two types of XRF-analyzers commonly available which require distinct and different testing protocols - "direct read" and "spectrum analyzer".

1.11 SUBMITTALS

- A. The Contractor shall submit the following prior to the pre-construction meeting:
 1. Submit a schedule to the Owner and the Consultant that defines a timetable for executing and completing the project, including set-up, removal, cleanup, decontamination, and disposal.
 2. Submit the identity of the hauling contractor and location of the landfill to be used for disposal of hazardous lead waste.
 3. Submit the plans and construction details for the construction of the decontamination enclosure systems and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
 4. Submit the training and medical records of each employee who may be on the project site exposed to lead.
 5. Submit the qualifications of the laboratory who the Contractor proposes to use to analyze personal air samples for OSHA employee exposure monitoring if applicable.

6. Submit detailed product information on all materials and equipment proposed for lead abatement work on this project.
 7. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project as well as a list of past projects completed.
- B. The following shall be submitted to the Owner 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 at the completion of work:
1. Copies of all air sampling results
 2. Contractor 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 which 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. 24 CFR 35 - Lead Based Paint Poisoning Prevention.
 - b. 29 CFR 1910.134 - Respiratory Protection.
 - c. 29 CFR 1910.146 - Permit-Required Confined Spaces.
 - d. 29 CFR 1926.21 - Safety Training.
 - e. 29 CFR 1926.28 - Personal Protective Equipment.
 - f. 29 CFR 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists.
 - g. 29 CFR 1926.57 - Ventilation.
 - h. 29 CFR 1926.59 - Hazard Communication.
 - i. 29 CFR 1926.62 - Lead.
 - j. 29 CFR 1926.103 - Respiratory Protection.
 3. Environmental Protection Agency (EPA)
 - a. 40 CFR 260 - Hazardous Waste Management Systems: General.
 - b. 40 CFR 261 - Identification and Listing of Hazardous Waste.
 - c. 40 CFR 262 - Generators of Hazardous Waste.
 - d. 40 CFR 263 - Transporters of Hazardous Waste
 - e. 40 CFR 264 - Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
 - f. 40 CFR 265 - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
 - g. 40 CFR 268 - Land Disposal Restrictions
 - h. 40 CFR 745 - Subpart F - Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards Upon Sale or Lease of Residential Property.
 - i. 40 CFR 745 - Subpart L - Lead-Based Paint Activities.
 - j. 40 CFR 745 - Subpart Q - State and Indian Tribal Programs.
 - k. 40 CFR 745.80-92 – Renovation, Repair, and Painting Rule (RRP Rule)
 4. Department of Transportation (DOT)
 - a. 49 CFR 172 - Hazardous Materials Tables and Hazardous Materials Communications Regulations
 - b. 49 CFR 178 - Shipping Container Specification
 5. Department of Housing and Urban Development (HUD)
 - a. 24 CFR 35 – Subpart 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 29 CFR 1926.59.

- B. Compliance Plan (Site Specific)
 - 1. The contractor shall establish a written compliance plan, which is specific to the project site, to include the following:
 - a. A description of 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 to be 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 which 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 of
 - c. Names and qualifications of each sub-contractor that will be transporting, storing, treating, and disposing of 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 sampling and analysis
 - i. Spill prevention, containment, and cleanup contingency measures
 - 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 29 CFR 1910.1025 and 29 CFR 1926.62.
 - 2. The examination shall not be required if adequate records show that employees have been examined as required by 29 CFR 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 Lead in Construction 29 CFR 1926.62 regulations.
 - 2. 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 HUD Lead Safe Housing Rule 24 CFR 35 Subpart 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)
 - b. HUD/NARI course "The Remodeler's and Renovator's Lead Based Paint Training Program" (8 hours).
 - c. HUD "Lead Safe Work Practices" (8 hours)
3. The Contractor shall ensure that a "Certified Renovator" be assigned to the project as required by EPA RRP Rule 40 CFR 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 29 CFR 1926.62.
2. The Contractor shall establish a Respiratory Protection Program in accordance with ANSI Z88.2, 29 CFR 1910.134, and 29 CFR 1926.62.

1.14 SUBMITTALS

- A. The Contractor shall submit to the Owner the following submittals prior to start of work:
1. Copies of medical records for each employee to be used on the project, including results of biological monitoring and a notarized statement by the examining physician that such an examination took place.
 2. Copies of workers' training certificates.
 3. Submit record of successful respirator fit testing performed by a qualified individual within the previous six months, for each employee to be used on this project with the employee's name and social security number with each record.
 4. The name and address of Contractor's blood lead testing lab, OSHA CDC listing, and Certification in the State of Connecticut.
 5. The name and address of Contractor's personal air monitoring and waste disposal lead testing laboratory/ies.
 6. Name, address, and ID number of the hazardous waste hauler, waste transfer route, and proposed disposal site.
- B. The Contractor shall submit to the Owner the following submittals during the job:
1. Results from personal air samples.
 2. Medicals, certificates, and fit test 24 hours in advance of any new employee starting on the project.
- C. The Contractor shall submit to the Owner the following submittals upon completion of the work:
1. Copies of manifests and receipts acknowledging disposal of all hazardous waste material from the project showing delivery date, quantity, and appropriate signature of landfill's authorized representative.

1.7 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 weighted average (TWA)).
 4. During the period of the exposure assessment, the Contractor shall institute the following procedures for protection of workers.
 - a. Protective clothing shall be utilized
 - b. Respiratory protection
 - c. Change areas shall be provided
 - 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/MSHA for use in atmospheres containing lead dust.
2. Respirators shall comply with the requirements of 29 CFR 1926.62.
3. Workers shall be instructed in all aspects of respiratory protection.
4. The Contractor shall have an adequate supply of HEPA filter elements and spare parts on site for all types of respirators in use.
5. The following minimum respirator protection for use during paint removal or demolition of components and surfaces with lead paint shall be the 1/2 mask air purifying respirator with high efficiency filters for exposures (not in excess of 500 ug/m³ 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 with a minimum of two complete disposable coverall suits.
3. Removal workers shall not be limited to two (2) 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 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.

1.8 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. Samples shall be taken 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 taken every 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 eight hour Time weighted averages (TWA). The Contractor is responsible for personal sampling as outlined in OSHA Standard 29 CFR 1926.62 and 29 CFR 1910.1025.
- 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 analysis results will be reported in micrograms/cubic meter ($\mu\text{g}/\text{m}^3$).
- D. Testing Laboratory. The Contractor's testing lab shall be participating in AIHA's 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 Owner prior to use. Any requests for substitution shall be provided in writing to the Owner. The request shall clearly state the rationale for the substitution.
- B. Submit to the Owner 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, safety data sheets (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, polyethylene sheeting of proper size and thickness, tape, cleaning chemicals, and air filters.
- D. Materials
 - 1. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating 6 mil.
 - 2. Polyethylene disposable bags shall be six 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 polyethylene sheets and for attachment of polyethylene 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. (The containers shall be labeled in accordance with EPA 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. Detergent shall be a high phosphate content lead specific cleaning agent.
 - 7. 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 the substrate which they are applied to and the chemical stripper they are used in conjunction with.

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 pick-up 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.

3.1 PRE-ABATEMENT 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 Contractor Supervisor is also required to 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 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. Upon approval by the Owner and Consultant, the Contractor will receive 'Notice To Proceed' with the work of the Contract.

3.2 WORKER HYGIENE PRACTICES

- A. Work Area Entry. Workers shall don personal protective equipment 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. Hand washing 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, or remove their respirators in the work area.
- F. Shock Hazards. The Contractor is responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground fault circuit interrupters (GFI).

3.3 GENERAL WORK AREA PREPARATION – LEAD CONTROL AREA

- A. A Competent Person shall be on the job 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, shut down 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 Connecticut licensed electrician.
- C. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, vents around the work area shall be "criticaled" with duct tape and polyethylene sheeting

3.4 WORK AREA PREPARATION FOR WINDOW SASHES

- A. Install isolation barrier on the interior side of the window openings. Protection shall be affixed to the inside finish surfaces to isolate window sashes scheduled for removal to the exterior. One layer of six-mil polyethylene 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 six-mil reinforced polyethylene 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 29 CFR 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. Doors and windows within 10 feet of the work area shall be closed and sealed with critical barriers taped and glued.
- E. Place all required tools and equipment in the work area so that workers will not have to leave the area. This will avoid stepping of the protective sheeting.
- F. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to stepping off the protective sheeting.

3.5 WORK AREA PREPARATION FOR WINDOW TRIM AND DOOR THRESHOLD

- A. Install isolation barrier on the interior side of the window openings and door opening. Protection shall be affixed to the inside finish surfaces to isolate window and door openings scheduled for defective lead based paint removal to the exterior. One layer of six-mil polyethylene 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 six-mil reinforced polyethylene 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 29 CFR 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. Doors and windows within 10 feet of the work area shall be closed and sealed with critical barriers taped and glued.
- E. 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.

- F. 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

- A. Moveable objects shall be washed with TSP and HEPA vacuumed cleaned 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 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 Contractor 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 six mil polyethylene 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 polyethylene 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. 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.

3.7 WORK AREA PREPARATION FOR INTACT LEAD BASED PAINT

- 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 Contractor 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 six mil polyethylene 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 polyethylene 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 six mil polyethylene sheeting. Drop clothes consisting of six mil polyethylene sheeting shall be utilized to collect any dust and/or paint chips generated painting activities.
- E. Occupied areas and/or building space not within the work areas shall be separated from lead abatement work areas by means of airtight barriers.
- F. Place all required tools and equipment in the work area so that workers will not have to leave the area.

- G. 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 job 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 regulation 29 CFR 1926.62 to prohibit non-trained workers from entering areas where ACM are to be removed.
- C. The Contractor shall establish a worker hygiene facility remote from the work area.

3.9 WORK PROCEDURES FOR WINDOW SASH REMOVAL

- A. Prior to the removal of the window sashes, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.4 of this Specification.
- B. Wet down components which are to be removed to reduce the amount of dust generated during the removal process.
- C. Remove components utilizing hand tools, and follow appropriate safety procedures during removal. Remove the building component by approved methods that will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.
- D. Initiate cleanup immediately after component removal has been completed. Remove any dust located behind the component removed.
- E. Maintain appropriate wash station within the work area.

3.10 WORK PROCEDURES FOR WINDOW TRIM AND DOOR THRESHOLD

- A. Prior to the removal of the defective lead based paint on window trim and door threshold, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.5 of this Specification.
- B. If chemical stripper is utilized to remove defective lead based paint, 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.
- C. If wet scraping/wet sanding is utilized to remove defective lead based paint, 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.
- D. 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 vacuum dust collection systems to remove lead-based paint is prohibited.

2. Welding or torch cutting of materials painted with lead-based paint is prohibited. Where cutting, welding, rivet busting, or torch cutting of materials is required, prior removal of the lead-based paint shall be performed in the affected area.
 3. Dry scraping.
- E. Collect debris in the work area throughout the operation using wet clothes or a HEPA vacuum.
- F. Upon completion of properly preparing the surface for encapsulation, the surfaces shall be wet wiped and HEPA vacuumed clean of debris and dust.\
- G. Apply appropriate encapsulation for the surface to be painted. MSDs and other product information for the encapsulant to be utilized for the work shall be submitted to the Owner and approved prior to the work commencing.
- H. Protect adjacent surfaces from debris and/or dust contamination.
- I. Maintain appropriate wash station within the work area.

3.11 WORK PROCEDURES FOR LEAD IN DUST

- A. Prior to the cleaning of lead in dust on the floors, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.6 of this Specification.
- B. Gross debris, paint chips, etc. should first be removed by HEPA vacuuming materials 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.

3.12 WORK PROCEDURES FOR INTACT LEAD BASED PAINT

- A. Prior to the performing work on intact lead based paint, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.7 of this Specification.
- B. If removal or sanding of intact lead based paint is required, the work shall be performed wet. Dry scraping is prohibited.
- C. Gross debris, paint chips, etc. resulting from proposed work shall be removed by HEPA vacuuming materials and wet spraying debris to be removed by hand to minimize dust generation.
- D. HEPA vacuum surface thoroughly and repeatedly.
- E. Wet clean surfaces. Following HEPA vacuuming. Wash the adjacent surfaces to remain 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.
- F. Maintain appropriate wash station within the work area.

3.13 DECONTAMINATION PROCEDURES

- A. All workers must wash upon leaving the work area. Wash facilities will be provided by the removal Contractor in compliance with 29 CFR 1926.51(f) and 20 CFR 1926.62. This wash facility will consist of, at least, running potable water, towels, soap, and a HEPA vacuum. Upon leaving the work area, each worker will HEPA vacuum gross debris from work suit, remove and dispose of 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 of in accordance with all applicable regulations.
- 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 State's Inspector or risk assessor shows that employee exposure to airborne lead exceeds 50 µg/m³, 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 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-specific detergent and water to minimize dust levels.

3.14 WORK AREA CLEAN UP

- A. Mop heads, waste water, broom heads, rags and sponges used in the clean-up activity shall be disposed of as hazardous lead-bearing 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 lead paint removal, the Contractor shall begin final cleaning. The Contractor shall clean and remove any contaminated material, equipment, or debris including polyethylene sheeting from the work area. The polyethylene 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 polyethylene sheeting at least six 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 plastic bag, at least six mils 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 floor polyethylene sheeting and critical barriers on windows and doors, shall begin at the corners and be folded into the middle to contain the dust or residue. All collected polyethylene sheeting shall be placed in six mil polyethylene bags for proper disposal.
 - 4. HEPA Vacuuming. Once the six mil polyethylene sheeting is removed from the work area, cleaning shall begin with a thorough HEPA vacuuming of all surfaces, proceeding down the walls and including window trim and floors. The floor shall be vacuumed last, beginning at the farthest corners from the entrance to the work area. HEPA vacuuming shall again be performed as noted above, after the following TSP wash.
 - 5. Lead Specific Detergent. The Contractor shall next wash or mop the same surfaces with a lead specific detergent such as tri sodium phosphate (TSP) (five percent) and allow surfaces to dry. The Contractor shall prepare and use detergents according to the manufacturer's instructions. The manufacturer's recommended coverage shall be followed. Then a second HEPA Vacuuming of the surfaces shall be

performed by the Contractor, as described above. By the conclusion of the cleaning phase, all visible dust and debris shall have been completely removed.

6. 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.

3.15 CONSULTANTS INSPECTION AND RE-OCCUPANCY CLEARANCE SAMPLING RESPONSIBILITIES

- A. The Consultant shall conduct inspection throughout the progress of the abatement project. Inspections may be conducted in order 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 the course of 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, during the course of the pre-commencement inspection, deficiencies are found, the Contractor shall perform the necessary adjustments in order 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 course of the work inspections, the Consultant shall observe the Contractor's removal procedures, verify barrier integrity, assess project progress, and inform the Contractor of specific remedial activities if deficiencies are noted.
 3. Final Visual Inspection. The Consultant, upon request of the Contractor, shall conduct a final visual inspection. After final cleaning, the inspector/code enforcement official 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 floors following cleaning of the lead in dust and of the window sills following removal of the window sashes where abatement work is performed.
- D. Re-Occupancy Clearance Sampling Criteria – The following dust wipe criteria shall be met prior to occupancy:
 1. Floors – 40 ug/ft²
 2. Window Sills – 250 ug/ft²
 3. Window Wells – 400 ug/ft²
 - 4.

3.16 DISPOSAL OF WASTE

- A. Disposal of hazardous lead bearing material must be in compliance with the requirements of, and authorized by, the State of Connecticut, Department of Energy and Environmental Protection, Office of Solid Waste Management and with the requirements of the Resource Conservation and Recovery Act (RCRA).
- B. The Consultant has performed lead testing, including components specified for removal and disposal and those to remain in place. Results indicate potential for waste to be hazardous lead waste.
- C. The Contractor shall segregate the following materials for disposal as potential hazardous lead waste based on Toxicity Characteristic Leachate Procedure that the Contractor will conduct for each dumpster of waste.
 1. Window Sashes
 2. Paint chips from surface preparation and other debris.
 3. In base bid, the Contractor should assume 5 cubic yards of hazardous waste.
- D. The following materials are likely to leach lead at hazardous levels in excess of 5 mg/liter. The Contractor shall containerize and dispose of the following materials as hazardous lead waste at an EPA approved treatment, storage, and disposal facility.
 1. Paint chips.
 2. Paint dust.
 3. Sludge from chemical stripping.
 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 of the above disposal of hazardous waste is to be provided at no additional cost to the Owner.
- E. Contractor shall wipe the following materials clean of all dust, dirt and debris and dispose of the material as construction debris:
1. Polyethylene sheeting used in removal activities other than chemical removal.
- F. 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:
1. 5 micron porosity in-line cartridge particulate filter followed by activated carbon filter in-line cartridge
- G. 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 parts per million (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 test fails the 0.1 parts per million (ppm) of water test, the Contractor shall filter waste water by reverse osmosis prior to testing and discharge to the sanitary sewer.
- H. All hazardous lead waste shall be containerized in accordance with 49 CFR 178. Label and placard each container in accordance with 39 CFR 1926.62 and 40 CFR 172 to identify the type of waste and the date the container was filled.
- I. The Contractor may not store containerized hazardous lead waste on the job site for in excess of 180 calendar days from the accumulation start date.
- J. Contractor shall utilize a certified transporter for hazardous waste in compliance with DOT 49 CFR 172.
- K. 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 asbestos debris leaving the job site and arriving at the landfill acknowledged.

END OF SECTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of building exterior.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 SUBMITTALS

- A. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.

1.5 PROJECT CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

- C. Hazardous Materials: see abatement specifications.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- B. Inventory and record the condition of items to be removed and items to be removed and salvaged.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off indicated utilities with Owner or utility companies.

2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.3 PREPARATION

- A. 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.
 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Services."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Shoring: 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.

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, to minimize disturbance of adjacent surfaces. 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. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 5. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal."
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

- A. 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 15 – ASBESTOS IN ROOFNG ABATEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The project Contract documents, including any General Supplementary Conditions, apply to this Section.
- B. Limited Hazardous Materials Inspection Report dated April 2014, revised May 2014.
- C. Roof Demolition Plan, Roof Construction Plan , and Details Drawing A101.

1.2 CONSULTANT

- A. The Owner may retain a Consultant for the purposes of project management and monitoring during asbestos removal. The Consultant shall represent the Owner in all phases of the abatement project at the discretion of the Owner. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, review of monitoring results, completion of the various segments of work, final completion of the abatement, submission of data, and daily field punch list items.
- B. The project was designed by Fuss & O'Neill EnviroScience's State of Connecticut licensed Asbestos Consultant – Project Designer Kevin McCarthy (PD # 000274).

1.3 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. 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 in consultation with the Consultant, to correct any conflicts.
- F. All items, not specifically mentioned in the Specifications but implied by trade practices to complete the work, shall be included.

1.4 EXAMINATION OF SITE

- A. It is understood that the Contractor has examined the Site and made his own estimates of the facilities and difficulties attending the execution of the Work, and has based his 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.

1.5 CONTRACTUAL QUALIFICATIONS

- A. All bidders shall submit a record of prior experience in similar projects, listing no less than three (3) completed jobs 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. The Contractor selected must appear on the approved list of Asbestos Abatement contractors on file at the State of Connecticut Department of Public Health (DPH) and hold a valid license for asbestos abatement within the State of Connecticut if the materials to be removed become a regulated asbestos-containing material (RACM) during removal.
- C. Submit a written statement regarding whether the Contractor has ever been found out-of-compliance with federal or state asbestos and/or lead regulations pertaining to worker protection, removal, transport, or disposal.

1.6 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. Schedule of work of this Contract shall include the notification requirements to regulatory agencies for the work if exterior materials will become friable during proposed removal operations. It shall be incumbent upon the contractor performing the asbestos removal to determine if proposed removal methods shall render the asbestos containing exterior roofing materials friable.
- C. The Contractor shall supervise and direct all work of his and other trades using his 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. A pre-construction meeting shall be attended by the contractor and any sub-contractors. The assigned Supervisor must attend this meeting.

1.7 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.

1.8 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 OSHA regulations.
- B. Should the asbestos containing materials (ACM) become friable during removal, the Contractor shall employ a competent Asbestos Abatement Supervisor with at least three (3) years experience on projects of similar scope and magnitude who shall be responsible for all work involving asbestos removal as described in the specifications and defined in applicable regulations, and have full time daily supervision of the same.
- C. 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 and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.
- D. 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.
- E. 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 to who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

1.9 PROJECT SCOPE OF WORK

- A. Work outlined in this Section includes all work necessary for the removal and disposal of asbestos containing roofing materials that will be impacted during the roof replacement project work at 34 Hobson Street in East Haven, Connecticut. This work includes the removal and disposal of exterior non-friable roofing materials such roof flashing cement.
- B. The following table summarizes the ACM identified requiring removal and proper disposal as asbestos containing waste materials:

LOCATION	ABATEMENT ITEM	QUANTITY
Rear flat roof	Flashing cement	70 Square Feet
Main pitched roof, rear pitched roof	Flashing cement	

- C. The Contractor is responsible for verifying the quantities of materials to be removed, and the condition of these materials. This independent site verification shall include the quantity of roofing materials to be abated as well as all applicable site conditions.
- D. The Contractor is responsible for providing containments, cleaning, etc. at no cost to the building owner if work practices result in ACM breaching the roof deck and entering the building during removal.

1.10 DEFINITIONS

- A. The following definitions relative to asbestos abatement may 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. **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.
 - 5. **ASBESTOS FELT** – A product made by saturating felted asbestos with asphalt or other suitable bindery, such as synthetic elastomers.
 - 6.
 - 7. **ASBESTOS WORK AREA** – A regulated area as defined by OSHA 29 CFR 1926.1101 where asbestos abatement operations are performed which is isolated by physical boundaries 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.
 - 8. **ASBESTOS FIBERS** – Those particles with a length greater than 5 microns and a length to diameter ratio of 3:1 or greater.
 - 9. **ASPHALT SHINGLES, COMPOSITION SHINGLES OR STRIP SLATES: (PITCHED ROOF SHINGLE)** – A roofing material manufactured by saturating a dry felt with asphalt then coating the saturated felt with a harder asphalt mixed with a fine mineral, glass fiber, asbestos or organic stabilizer. All or part of the weather side may be covered with mineral granules, or with powdered talc or mica.
 - 10. **BASE FLASHING (ROOF)** – The flashing provided by upturned edges of a water tight membrane on a roof. May contain metal and associated waterproofing material or combination of roofing felts and waterproofing at the joint between a roofing surface and a vertical surface such as a wall or parapet. Also base flashing may be present at perimeter of completely flat roof.
 - 11. **BUILT-UP ROOFING (Composition Roofing, Felt and Gravel Roofing, Gravel Roofing)** – A continuous roof covering made up of laminations or plies of saturated or coated roofing felts, alternated with layers of asphalt or coal-tar pitch and surfaced with gravel, paint or finish coat.
 - 12. **CATEGORY I NON-FRIABLE MATERIAL** – Asbestos containing packings, gaskets, resilient floor coverings, and asphalt roofing products.
 - 13. **CATEGORY II NON-FRIABLE MATERIAL** – Any non-friable asbestos containing material not designated as Category I.
 - 14. **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 (2) dissimilar materials. (i.e., Masonry to wood, masonry to steel)
15. **CLEAN ROOM** – An uncontaminated area or room which is a part of the worker decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.
 16. **CLEARANCE SAMPLING** – Final air sampling performed aggressively after the completion of the abatement project in a regulated area. Air samples collected by the project monitor having a fiber concentration of less than 0.01 fibers/cc of air will denote acceptable clearance sampling by Phase Contrast Microscopy or Five (5) air samples collected by the project monitor having an average asbestos concentration of less than 0.005 asbestos fibers/cc of air will denote acceptable clearance sampling for Transmission Electron Microscopy.
 17. **COMPETENT PERSON** – As defined by 29 CFR 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 EPA's Model Accreditation Plan.
 18. **CURTAINED DOORWAY** – A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two (2) curtained doorways spaced a minimum of 6 feet apart can form an airlock.
 19. **DAMP PROOFING** – Application of a water impervious material to surface such as wall to prevent penetration of moisture, typically at foundation or below grade surface.
 20. **DECONTAMINATION ENCLOSURE SYSTEM** – A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.
 21. **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).
 22. **EQUIPMENT ROOM** – A contaminated area or a room which is part of the worker decontamination enclosure with provisions for storage of contaminated clothing and equipment.
 23. **FIXED OBJECT** – A unit of equipment or furniture in the work areas which cannot be removed from the work area.
 24. **FRIABLE ASBESTOS MATERIALS** – Any material that contains more than one percent (1%) asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.
 25. **GLAZING COMPOUND** – Any compound used to hold window glass in place, also referred to as putty, or glazier's putty. Is not field-applied, usually installed during manufacture of windows.
 26. **HEPA FILTER** – A high efficiency particulate air (HEPA) filter in compliance with ANSI Z9.2-1979.
 27. **HEPA VACUUM EQUIPMENT** – Vacuum equipment with a HEPA filter system for filtering the effluent air from the unit.
 28. **MOVABLE OBJECT** – A unit of equipment or furniture in the work area which can be removed from the work area.
 29. **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.
 30. **NESHAPS** – National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.

31. **PERMISSIBLE EXPOSURE LEVEL (PEL)** – The maximum airborne concentration of asbestos fibers to which an employee is allowed to be exposed. The new level established by OSHA 29 CFR 1926.1101 is 0.1 fibers per cubic centimeter of air as an eight (8) hour time weighted average and 1.0 fibers /cc averaged over a sampling period of thirty (30) minutes as an excursion limit. The Contractor is responsible for maintaining work areas in a manner that this standard is not exceeded.
32. **PROJECT MONITOR** – A State of Connecticut licensed professional capable of conducting air monitoring and developing air sampling schemes. This individual should be an industrial hygienist, an environmental scientist, or an engineer with one year (minimum) experience in asbestos air monitoring.
33. **REGULATED ASBESTOS CONTAINING MATERIAL (RACM)** – Is a friable asbestos containing material, a Category I non-friable asbestos containing material that has become friable or will be or has been subjected to sanding, grinding, cutting or abrading, Category II non-friable asbestos containing material that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by force expected to act on the material during demolition or renovation operations.
34. **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.
35. **SHOWER ROOM** – A room between the clean room and the equipment room in the work decontamination enclosure 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.
36. **WATERPROOFING** – Material, usually a membrane or applied compound (tar/mastic), used to make a surface impervious to water, includes concealed conditions (applications around doors, windows, and in wall cavities). Sometimes combined with felts.

1.11 SUBMITTALS

- A. The Contractor shall submit the following prior to the pre-construction meeting:
 1. Submit a schedule to the Owner and the Consultant that defines a timetable for executing and completing the project, including set-up, removal, cleanup and decontamination.
 2. Submit the identity of the hauling contractor and location of the landfill to be used for disposal of asbestos containing waste.
 3. Submit the plans and construction details for the construction of the decontamination enclosure systems and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
 4. Submit the training and medical records of each employee who may be on the project site exposed to ACM.
 5. Submit the qualifications of the contractor who the Contractor proposes to use to perform OSHA employee exposure monitoring if applicable.
 6. Submit detailed product information on all materials and equipment proposed for asbestos removal work on this project.
 7. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project as well as a list of past projects completed.
- B. The following shall be submitted to the Owner during the work:
 1. Results of personal air sampling

2. Training and medical records for new employees to start work (twenty-four (24) hours in advance)
- C. The following shall be submitted to the Owner at the completion of work:
1. Copies of all air sampling results
 2. Contractor logs
 3. Completed, signed copies of waste shipment records

1.12 REGULATIONS AND STANDARDS

- A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner which 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. U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Regulations (40 CFR 61, Subpart M);
 2. Occupation Safety and Health Administration (OSHA) Asbestos Regulations (29 CFR 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. Connecticut Department of Public Health (DPH) Standards for Asbestos Abatement Sections 19a-332-1 to 19a-332.16;
 5. Connecticut Basic Building Code (BOCA) (including Connecticut Supplements);
 6. Life Safety Code (NFPA);
 7. 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.

1.13 EXEMPTIONS

- A. Any deviations from these specifications require written approval from the Owner and Consultant.

1.14 FINAL AIR CLEARANCE

- A. Not applicable to this exterior non-friable roof removal project.

1.15 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

- A. The Contractor shall make the following notifications, and provide the submittals to the following agencies prior to the commencement of removal work if the work is going to render the ACM friable. These notifications are required ten (10) calendar days prior to the start of the abatement project:
1. EPA Region 1
c/o State of Connecticut Department of Public Health
Division of Environmental Health
Indoor Air Program
410 Capitol Avenue, MS #51GR
P. O. Box 340308
Hartford, CT 06134
 2. Connecticut Department of Environmental Protection
Health Services and Solid Waste Management Unit

79 Elm Street
Hartford, CT 06106
(Only if disposing of asbestos waste in Connecticut)

- 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 to be removed.
 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

1.16 WORK SITE SAFETY PLAN

- A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the work site. The safety plan should include provisions for the following:
1. Evacuation of injured workers.
 2. Emergency and fire exit routes from the roof.
 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 is responsible for training all workers with regards to these procedures.

1.17 INDEPENDENT AIR SAMPLING AND INSPECTION SERVICES

- A. This section describes independent air sampling work that may be performed by the Owner. This work is not in the Contract Sum.
- B. The owner may retain a project monitor to conduct air monitoring to detect faults in the work area practices such as:
1. Contamination of the interior of the building by airborne asbestos fibers
 2. Contamination of the outside environment by airborne asbestos fibers.
- C. Should any of the above occur the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. The Contractor shall not recommence work until authorized by the Consultant.
- D. The Owner may retain a Project Monitor to conduct visual inspections of the work including the following:
1. Periodic inspections to verify adherence to work practices detailed herein.
 2. Final visual inspection of work areas to ensure that all required ACM have been properly removed.

1.18 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor shall be required to maintain control of and be responsible for access to all asbestos 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", and shall be equipped with properly fitted respirators and protective clothing as required by OSHA.
- B. Asbestos waste that is taken out of the work area must be properly bagged and labeled in accordance with these specifications. The surface of the bags shall be decontaminated. Asbestos waste must be immediately transported off site or immediately placed in locked, posted, temporary storage containers on site, and removed within 24 hours of the project conclusion.
- C. Any material, equipment, or supplies used during the project shall be cleaned and decontaminated by wet cleaning and/or HEPA vacuuming of all surfaces.
- D. The Contractor shall be required to monitor airborne asbestos concentrations in the workers' breathing zone and to establish conditions and work procedures for maintaining compliance with OSHA Regulations 29 CFR 1910.1001 and 1926.1101.
- E. The Contractor shall document all air sampling results and provide a report to the Consultant within forty-eight (48) hours after sample collection.
- F. All air sampling shall be conducted in accordance with methods described in OSHA Standards 29 CFR 1910.1001 and 1926.1101.

1.19 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 AHERA regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987 if the materials being removed become regulated. Appropriate OSHA training is required of all workers.
- C. The Contractor is required to be certified and accredited as required by the State of Connecticut Department of Public Health if materials being removed become friable (RACM).
- D. In accordance with 29 CFR 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:
 6. Engineering controls
 7. Work Practices
 8. Respirators
 9. Housekeeping procedures
 10. Hygiene facilities
 11. Protective clothing

12. Decontamination procedures
 13. Emergency procedures
 14. Waste disposal procedures
 15. Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134
 16. Appropriate work practices for the work
 17. Requirements of medical surveillance program
 18. Review of 29 CFR 1926
 19. Pressure Differential Systems
 20. Work practices including hands on or on-job training
 21. Personal Decontamination procedures
 22. Air monitoring, personal and area
- E. The Contractor shall provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an eight (8) hour Time Weighted Average. 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 as a minimum meet OSHA requirements as set forth in 29 CFR 1926.
- F. Submit the following to the Owner for review. The Contractor shall not start work until these submittals are returned with Owner's action stamp indicating that they are approved. Many of these submittals become mandatory only if the materials being removed become regulated (friable).
- G. Submit copies of certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each Asbestos Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.
- H. Submit evidence that the Contractor is certified to perform asbestos abatement work by the State of Connecticut Department of Public Health.
- I. 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:
1. Name and Social Security Number
 2. Physicians Written Opinion from examining physician including at a minimum the following:
 - a. Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
 - b. Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
 - c. 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.
 - d. Copy of information that was provided to physician in compliance with 29 CFR 1926.
 - e. 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.
- J. Submit certification signed by an officer of the contracting firm and notarized that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.

PART 2 PRODUCTS

2.1 MATERIALS

- A. The Contractor shall 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. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.
- C. Polyethylene disposable bags shall be 6 mil with pre-printed label. Tie wraps for bags shall be plastic, 5 inches long (minimum), pointed and looped to secure filled plastic bags.
- D. Surfactant (wetting agent), shall consist of fifty percent (50%) polyoxyethylene ether and fifty percent (50%) polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of 1 ounce surfactant to 5 gallons of water or as directed by manufacturer.
- E. Removal encapsulant shall be non-flammable factory prepared penetrating chemical encapsulant found acceptable to Consultant. Usage shall be in accordance with manufacturer's printed technical data.
- F. The Contractor shall have available spray equipment capable of mixing wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas with asbestos.
- G. Impermeable containers are to be used to receive and retain any asbestos-containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with OSHA Standard 29 CFR 1925.1101. Containers must be both air and watertight.
- H. Labels and signs, as required by OSHA Standard 29 CFR 1926.1101, will be used.

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 Project Monitor 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, polyethylene 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.

- 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. 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.

PART 3 EXECUTION

3.1 PRE-ABATEMENT 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 Contractor Supervisor is also required to 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 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. Upon approval by the Owner and Consultant, the Contractor will receive 'Notice To Proceed' with the work of the Contract.

3.2 WORK AREA PREPARATION

- A. Where necessary, shut down 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 licensed electrician.
- B. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, vents around the work area shall be "criticalled" with duct tape and polyethylene sheeting.
- C. Seal off all openings, including, but not limited to, roof level heating and ventilation air intake sources, windows adjacent to removal (within ten feet) skylights, ducts, grills, diffusers, and any other penetration of the work areas, with polyethylene sheeting a minimum of 6 mils thick, sealed with duct tape.

3.3 DECONTAMINATION SYSTEM

- A. The Contractor shall establish on site, a remote decontamination enclosure consisting of equipment room, shower room, and clean room in series.
- 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 enclosure 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 polyethylene sheeting, spray glued or taped at the joints.

3.4 ASBESTOS REMOVAL PROCEDURE – GENERAL

- A. Following a federal court of appeals decision, the Occupational Safety and Health Administration (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.) continue to be 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 Connecticut Department of Public Health are not required to be removed by a licensed asbestos abatement contractor in the State of Connecticut. This is true 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. The Contractor shall have a designated "competent person" on the job at all times to ensure proper work practices throughout the project.
- E. The Contractor shall regulate the work area as required for compliance with OSHA regulation 29 CFR 1926.1101 to prohibit non-trained workers from entering areas where ACM are to be removed.
- F. The Contractor shall establish worker decontamination unit remote from the work area.
- G. The Contractor shall spray asbestos materials with amended water using airless spray equipment or apply approved removal wetting agent to ensure no visible emissions during removal of Category I non-friable roofing materials.
- H. The wet asbestos must be removed in manageable sections. Material drop shall not exceed 8 feet. For heights up to 15 feet, provide inclined chutes or scaffolding to intercept drop. For heights exceeding 15 feet, the Contractor shall provide an enclosed dust-proof chute.
- I. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet wiped or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work, the surfaces being cleaned shall be kept wet.
- J. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris. Waste shall be containerized in labeled and signed 6 mil polyethylene disposable bags. Tie wraps for bags shall be plastic, 5 inches long (minimum), pointed and looped to secure filled plastic bags.
- K. If an enclosed dumpster is used in conjunction with a "bladder bag liner", the contractor shall continuously inspect the dumpster and chute to ensure the integrity of the system.
- L. At any time during asbestos removal, should the Consultant suspect contamination of areas outside the work area(s), he shall cause all removal work to stop until the Contractor takes 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.

- M. The Consultant may conduct a final visual inspection of the work area. If residual debris is identified during the course of the final inspection, the Contractor shall comply with the request of the Consultant in order to render the area clean of all residual ACM.

3.5 CONSULTANT'S RESPONSIBILITIES

- A. Air sampling may be conducted by the Consultant to ascertain the integrity of controls that protect the building and the environment from 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.

3.6 CONSULTANT'S INSPECTION RESPONSIBILITIES

- A. The Consultant may conduct inspection throughout the progress of the abatement project. Inspections may be conducted in order to document the progress of the abatement work as well as the procedures and practices employed by the abatement Contractor.
- B. The Consultant may perform the following inspections during the course of abatement activities:
 - 1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the abatement Contractor. The Consultant shall be informed 12 hours prior to the time the inspection is needed. If, during the course of the pre-commencement inspection, deficiencies are found, the Contractor shall perform the necessary adjustments in order 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 course of the work inspections, the Consultant shall observe the Contractor's removal procedures, verify barrier integrity, monitor negative air filtration devices, assess project progress, and inform the abatement Contractor of specific remedial activities if deficiencies are noted.
 - 3. Pre-sealant Inspection. The Consultant, upon the request of the abatement Contractor, 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, during the course of the pre-sealant inspection, the Consultant identifies residual dust or debris, the Contractor shall comply with the request of the Consultant in order to render the area "dust free."
 - 4. Final Visual Inspection. The Consultant, upon request of the abatement Contractor, shall conduct a final visual inspection. Following the removal of the inner layer of polyethylene sheeting and 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 course of the final inspection, the Contractor shall comply with the request of the Consultant in order to render the area "dust free."

3.7 DISPOSAL OF ASBESTOS

- A. 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 asbestos debris leaving the job site and arriving at the landfill acknowledged.
- B. All asbestos debris shall be transported in airtight, leak tight, covered, sealed vans, boxes, or dumpsters that are physically isolated from the driver by an airtight barrier. All vehicles must be properly licensed to meet DOT requirements.
- C. Any vehicles used to store or transport ACM will either be removed from the property at night, or securely locked and posted to prevent disturbance.

END OF SECTION 028215

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Framing with dimensional lumber.
 2. Wood blocking and nailers.
 3. Wood furring.
 4. Plywood exterior sheathing

PART 2 - PRODUCTS

- 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 or omit grade stamp and provide certificates of grade compliance issued by grading agency.
 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: Use Category UC3b for exterior construction not 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 the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, blocking, furring, and similar concealed members in contact with masonry or concrete.
3. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

A. General Framing : No. 2 grade.

1. Application: General Framing.
2. Species:
 - a. Hem-fir (north); NLGA.
 - b. Southern pine; SPIB.
 - c. Douglas fir-larch; WCLIB or WWPA.

2.4 ROOF SHEATHING

A. Plywood Roof Sheathing: Exterior-Exposure 1, Structural I sheathing.

2.5 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. Mixed southern pine; No. 2 grade; SPIB.
2. Eastern softwoods; No. 2 Common grade; NeLMA.
3. Northern species; No. 2 Common grade; NLGA.
4. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

2.6 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 A; with ASTM A 563 hex nuts and, where indicated, flat washers.

2.7 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Simpson Strong-Tie Co., Inc.
 - 2. Or approved equal.
- B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of products of manufacturers listed. 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, 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.

2.8 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.

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, 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. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- D. Do not splice structural members between supports unless otherwise indicated.
- E. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- F. 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 2304.9.1, "Fastening Schedule," in The Building Code of The State of Connecticut, latest Edition.
- G. Wall and Roof Sheathing:
 - a. Nail to wood framing.
 - b. Space panels 1/8 inch apart at edges and ends.

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 073113 - ASPHALT SHINGLES AND ROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Asphalt shingles.
 - 2. Felt underlayment.
 - 3. Self-adhering sheet underlayment.
 - 4. Ridge vents.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Samples: For asphalt shingles, ice shield, roof membrane and ridge vent.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain ridge vents, felt underlayment, self-adhering sheet underlayment and self adhering roofing through one source from a single roofing manufacturer.
- B. Fire-Test-Response Characteristics: Provide asphalt shingle and related roofing materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108 or UL 790, for application and roof slopes indicated.

1.4 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials within specified warranty period.
 - 1. Material Warranty Period: 30 years from date of Substantial Completion, prorated, with first 5 years non-prorated. G.A.F. Materials Corp. "Smart Choice Limited Warranty."
 - 2. Algae-Discoloration Warranty Period: Asphalt shingles will not discolor five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Basis of Design shall be Timberline Series shingles as manufactured by G.A.F. 30 year warranty, 5 year Smart Choice Protection, 120 mph wind coverage. Or an approved Equal

2.2 UNDERLAYMENT MATERIALS

- A. Felt: Underlayment:, ASTM D 6757; asphalt-impregnated fiberglass-reinforced organic felt designed for use on roof decks as a water-resistant layer beneath roofing shingles.
- B. Self-Adhering Sheet Underlayment; ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and "split" back plastic release film; Use in 'low-slope' areas (below 4:12, but no less than 2:12); provide material with warranty equal in duration to that of shingles being applied.

2.3 RIDGE VENTS

- A. Ridge Vent: Rigid plastic ridge ventilator designed to allow the passage of air: Manufacturer's standard rigid section for use under ridge shingles: G.A.F. "Cobra Rigid Vent II, or approved equal.
 - 1. Minimum Net Free air flow Area: 18 square inches per foot.

2.4 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Roofing Nails: ASTM F 1667; aluminum or hot-dip galvanized steel wire shingle nails, barbed shank, sharp-pointed, with a minimum 3/8-inch diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through plywood sheathing.
 - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- C. Felt Underlayment Nails: Aluminum, or hot-dip galvanized steel wire with low profile capped heads or disc caps, 1-inch minimum diameter as recommended by underlayment manufacturer.
- D. Starter Strip Shingles: G.A.F. "Universal Starter Strip Shingles" 8 ½ inches x 40 inches long.

2.5 METAL FLASHING AND TRIM

- A. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section 07620 "Sheet Metal Flashing and Trim".
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

- A. Single-Layer Felt Underlayment at slopes 4 ½" on 12 or more. Install single layer of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Lap sides a minimum of 2 inches over underlying course. Lap ends a minimum of 4 inches. Stagger end laps between succeeding courses at least 36 inches. Fasten with felt underlayment nails.
 - 1. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment. Lap sides of felt over self-adhering sheet underlayment not less than 3 inches in direction to shed water. Lap ends of felt not less than 6 inches over self-adhering sheet underlayment.
- B. Double-Layer Felt Underlayment at slopes less than 4 ½" on 12 at asphaltic shingle areas as indicated on plan: Install double layers of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Install a 19-inch wide starter course at eaves and completely cover with full-width second course. Install succeeding courses lapping previous courses 19 inches in shingle fashion. Lap ends a minimum of 6 inches. Stagger end laps between succeeding courses at least 36 inches. Fasten with felt underlayment nails.
 - 1. Install felt underlayment on roof sheathing not covered by self-adhering sheet underlayment. Lap edges over self-adhering sheet underlayment not less than 3 inches in direction to shed water.
- C. Self-Adhering Sheet Underlayment (Leak Barrier): Install self-adhering sheet underlayment; wrinkle free, on roof deck horizontally, nail in place in accordance with manufacturer's written instructions. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install at locations indicated, lapped in direction to shed water. Lap sides not less than 4 inches. Lap ends not less than 6 inches staggered 36 inches between courses. Roll laps with roller. Cover underlayment within seven days.
 - 1. Eaves: On top of eave metal flashing, install leak barrier up slope from eave edge to 36 inches from the edge or at least 24 inches beyond the face of the warm exterior wall, which ever is greater; lap ends 6 inches and bond.
 - 2. Valleys: Install leak barrier at least 36 inches wide centered on valley; lap ends 6 inches and seal.

3. At closed valleys: Install 36 inch wide felt underlayment centered in valley. Fasten to deck with nails.
 - a. Lap roof deck felt underlayment over valley felt underlayment at least 6 inches.
 - b. Install 36 inch wide strip of granular surfaced valley lining centered in valley, with granular surface up. Lap ends at least 12 inches in direction to shed water, and seal with asphalt roofing cement. Fasten to deck with nails.
 - c. For additional information see drawings.
4. Install leak barrier at penetrations:
 - a. At rake edges, install metal edge flashing over the leak barrier and roof deck protection; set tight to rake boards; lap joints at least 2 inches and seal with plastic cement; secure with nails.
 - b. At hips and ridges, install leak barrier along entire lengths. If ridge vents are to be installed, position leak barrier so the ridge slots are not covered.
 - c. For additional information, see drawings.

3.2 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."
 1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

3.3 ASPHALT SHINGLE INSTALLATION

- A. Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with tabs removed at least 7 inches wide with self-sealing strip face up at roof edge.
 1. Extend asphalt shingles 1 inch over fascia at eaves and rakes.
- C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with 6-inch offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten asphalt shingle strips with a minimum of four roofing nails located according to manufacturer's written instructions.

- E. Closed-Cut Valleys: Extend asphalt shingle strips from one side of valley 12 inches beyond center of valley. Use one-piece shingle strips without joints in valley. Fasten with extra nail in upper end of shingle. Install asphalt shingle courses from other side of valley and cut back to a straight line 2 inches short of valley centerline. Trim upper concealed corners of cut-back shingle strips.
- F. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- G. Ridge and Hip Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.
 - 1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION 073113

SECTION 075552 ASPHALTIC MODIFIED BITUMINOUS ROOFING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Asphaltic modified bituminous roofing
- B. Related Sections
 - 2. Section 061000: Rough Carpentry
 - 3. Section 076200: Sheet Metal Flashing and Trim

1.2 REFERENCES

- A. Factory Mutual (FM Global) - *Approval Guide*
- B. Underwriters Laboratories (UL) - *Roofing Systems and Materials Guide (TGFU R1306)*
- C. American Society for Testing and Materials (ASTM) - *Annual Book of ASTM Standards*
- D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - *Architectural Sheet Metal Manual*
- E. Asphalt Roofing Manufacturers Association (ARMA)
- F. National Roofing Contractors Association (NRCA)
- G. American Society of Civil Engineers (ASCE)

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) *Roofing and Waterproofing Manual* for definitions of roofing terms related to this section.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide an installed roofing membrane and base flashing system that does not permit the passage of water, and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.
- B. Manufacturer shall provide all primary roofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.

a. SUBMITTALS

- i. Product Data: Provide product data sheets for each type of product indicated in this section.
- ii. Shop Drawings: Provide manufacturers standard details and approved shop drawings for the roof system specified.

- iii. Samples: Provide samples of insulation(s), fasteners and roll goods for verification of quality.
- iv. Certificates: Installer shall provide written documentation from the manufacturer of their authorization to install the roof system, and eligibility to obtain the warranty specified in this section.

b. QUALITY ASSURANCE

- i. Source Limitations: All components listed in this section shall be provided by a single manufacturer or approved by the primary roofing manufacturer.
- ii. Final Inspection

Manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors must be addressed and final punch list completed.

c. REGULATORY REQUIREMENTS

- i. All work shall be performed in a safe, professional manner, conforming to all federal, state and local codes.

d. DELIVERY, STORAGE AND HANDLING

- i. Deliver all roofing materials to the site in original containers, with factory seals intact.
- ii. Store all pail goods in their original undamaged containers in a clean, dry location within their specified temperature range.
- iii. Store roll goods on end on pallets in a clean, dry, protected area. Take care to prevent damage to roll ends or edges. Do not double stack modified bitumen products.
- iv. Do not expose materials to moisture in any form before, during, or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.
- v. Remove manufacturer supplied plastic covers from materials provided with such. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from weather and moisture. Cover and protect materials at the end of each work day. Do not remove any protective tarpaulins until immediately before the material is to be installed.
- vi. Materials shall be stored above 55°F (12.6°C) a minimum of 24 hours prior to application.

e. PROJECT CONDITIONS

i. Weather

1. Proceed with roofing only when existing and forecasted weather conditions permit.
2. Ambient temperatures must be above 45°F (7.2°C) when applying hot asphalt or water based adhesives.

f. WARRANTY

i. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials within specified warranty period.

1. Duration: Twenty (20) years from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. Basis of Design shall be GAF Liberty Cap sheet with Liberty Self Adhering Base/Ply Sheet - GAF 1361 Alps Road, Wayne, NJ 07470

2.2 BASE / PLY SHEETS

- A. Durable, film surfaced asphalt modified bitumen membrane containing a core glass mat coated with flexible, SBS polymer-modified asphalt, and a self adhering underside. Underside is protected with a silicone coated release film. Each roll contains two squares of material, 39.4" x 66', 82 lbs., Basis of Design shall be Liberty™ Self Adhering Base/Ply Sheet

2.3 MEMBRANE MATERIALS

- A. Premium, granule surfaced asphalt modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt, and a self-adhering underside. Underside is protected with a silicone coated release film. Each roll contains one square of material, 39.4" x 34', 94.5 lbs., Basis of Design shall be Liberty™ Cap

2.4 FLASHING MATERIALS

- A. Durable, film surfaced asphalt modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt. Designed for mechanical attachment over a variety of substrates. Each roll contains two squares of material, 39.4" x 66', 80 lbs., Basis of Design shall be Liberty™ Mechanically Attached (MA) Base Sheet.

- B. Durable, film surfaced asphalt modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt, and a self adhering underside. Underside is protected with a silicone coated release film. Each roll contains two squares of material, 39.4" x 66', 83.7 lbs., Basis of Design shall be GAF Liberty™ Self Adhering Base/Ply Sheet
- C. Premium, granule surfaced asphalt modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt, and a self-adhering underside. Underside is protected with a silicone coated release film. Each roll contains one square of material, 39.4" x 34' , 94.5 lbs., Basis of Design shall be GAF Liberty™ Cap

2.5 BITUMEN / ADHESIVES

- A. SBS Cement: Conforming to ASTM D 4586
- B. Asphalt Primer: Conforming to ASTM D 41
- C. Solvent based synthetic elastomeric sealant designed for use where elastomeric caulks are required such as term bar applications, or around clamping rings at penetrations.
- D. Flashing Fabric: Non-woven, 100% fully spun-bonded polyester fabric.

2.6 ACCESSORIES

- A. Mechanical Fasteners
- B. Roofing Fastener: Alloy steel fastener with CR-10 coating with a .220" diameter thread: Factory Mutual Standard 4470 Approved, #3 Phillips truss head or hex head. Length as required.
- C. 3" galvanized fastener Plate: 3" diameter, center hole .25 inch, for use with Standard, Heavy Duty, CD-10, Fluted Nail or Toggle Bolt.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that the surfaces and site conditions are ready to receive work.
- B. Verify that the deck is supported and secured.
- C. Verify that the deck is cleaned and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.
- D. Verify that the deck surfaces are dry and free of ice or snow.
- E. Verify that all roof openings, curbs, pipes, sleeves, ducts, vents or other penetrations through the roof are solidly set, and that all flashings are tapered.

3.2 SUBSTRATE PREPARATION

- A. Plywood Deck

1. Plywood sheathing must be exterior grade, minimum 4 ply, and not less than 3/4" thick.
2. Preservatives or fire retardants used to treat the decking must be compatible with roofing materials.
3. The deck must be installed over joists that are spaced 24" o.c. or less.
4. The deck must be installed so that all four sides of each panel bear on and are secured to joist and cross blocking. *"H" clips are not acceptable.*
5. Panels must be installed with a 1/8" to 1/4" gap between panels and must match vertically at joints to within 1/8".
6. Decking should be kept dry and roofed promptly after installation.
7. Light metal wall ties or other structural metal exposed on top of the wood deck shall be covered with one ply of a heavy roofing sheet extending 2"-6" beyond the metal in all directions. Nail in place before applying the base ply.
8. Tape and staple fastening systems may be used on wood decks when they comply with local building codes.
9. Attach an acceptable base sheet through flat metal caps or use nails with attached 1" square or round metal caps that have a minimum withdrawal resistance of 40 pounds each .

3.3 INSTALLATION - GENERAL

- A. Install roofing system according to all current application requirements in addition to those listed in this section.
- B. When the slope of the roof is 1/2" per foot or greater, install all plies parallel with the slope of the roof, and install intermediate wood nailers as required for the specific roof slope. Plies must extend over ridges and nailed on 6" centers.

3.4 INTERPLY SHEET (2 plies)

- A. Coiled rolls should be unrolled and allowed to relax prior to installation. Cut sheets into manageable lengths that will allow for a wrinkle and void free installation.
- B. Prior to installation, clean the surface of the installed Base Sheet removing all debris, dirt, moisture and other contaminants. Repair any punctures, fishmouths, wrinkles, open seams and other defects prior to installation of succeeding courses.
- C. Starting at the low point of the roof, install one ply of Self-Adhering Base Ply lapping 3" on sides and 6" on ends. Fold the bottom half of the sheet back and remove the release film from this part of the roll. Working from the center of the sheet, carefully roll and hand press the sheet back into place over the base ply being careful to avoid wrinkles and trapped air while maintaining proper alignment. Fold the upper portion of the sheet back on itself to expose and remove the remaining release film and finish the roll. Install the upper portion of the roll working from the center of the sheet outward toward the ends. Firmly hand press the sheet to avoid wrinkles and trapped air and finish with a weighted roller over the entire sheet to insure full contact with the base sheet. All side and end laps must be staggered and offset from underlying courses a minimum of 6".
- D. Interply End Lap Detail: End laps must be a minimum of 6", staggered and offset from adjacent courses a minimum of 3'. On the overlapping sheet, cut the selvage edge at a 45° angle to provide a tapered transition at the "T" joints formed by succeeding courses. See "T"-Joint Selvage Cuts drawing in the roofing manufactures Application and Specifications Manual. Remove the release film from the underside of the overlapping sheet and form the lap without wrinkles or voids. Firmly press and roll this overlap seam with a weighted roller to complete.

- E. Prior to installing succeeding coursed, apply a 3/8" bead of SBS Flashing Cement along the top edge

of each course and along the 45° angle at all selvage edge “T” joint to minimize the potential for voids, blisters or open seams. Install subsequent courses as detailed above, carefully working each sheet into the laps without wrinkles or trapped air. Firmly hand press the sheet and complete the side lap by rolling with a weighted hand roller.

3.5 CAP SHEET

- A. SBS membranes must not be applied during adverse weather or without precautionary measures in temperatures below 60°F. Contact GAF® Contractor Services for details.
- B. Installation of SBS Self-Adhering Cap sheet in temperatures below 60° F requires heatwelding of membrane sidelaps with a hot air welder.
- C. Coiled rolls should be unrolled, placed upside down and allowed to “relax” prior to installation. Then re-roll to apply.
- D. Starting at the low point of the roof install one ply of Self-Adhering Cap sheet lapping 4” on sides and 6” on ends. Fold the bottom half of the sheet back and remove the release film from this part of the roll leaving approximately 8” at the end of the roll where it will lap the previous sheet. Working from the center of the sheet, carefully roll and hand press the sheet back into place over the interply being careful to avoid wrinkles and trapped air while maintaining proper alignment. Fold the upper portion of the sheet back on itself to expose and remove the remaining release film and finish the roll. Install the upper portion of the roll working from the center of the sheet outward toward the ends. Firmly hand press the sheet to avoid wrinkles and trapped air and finish with a weighted roller over the entire sheet to insure full contact with the underlying membrane. All side and end laps must be staggered and offset from underlying courses a minimum of 6”.
- E. Cap sheet end lap detail: End laps must be a minimum of 6”, staggered and offset from adjacent courses a minimum of 3’. After aligning end lap, fold back the overlapping sheet and apply a 1/16” to 1/8” thick troweling of SBS Flashing Cement to the underlying granule surface. On the overlapping sheet, cut the selvage edge at a 45° angle to provide a tapered transition at the “T” joints formed by succeeding courses. Remove the release film from the underside of the overlapping sheet and form the lap without wrinkles or voids, pressing the sheet firmly so that a uniform bead is squeezed out at the lap edges and along the transition cut. Firmly press and roll the completed end lap with a weighted roller. Prior to installing succeeding courses, apply a bead of SBS Flashing Cement along the top edge of each course and along the 45° angle at all selvage edge, “T” joints to minimize the potential for voids, blisters or open seams. Install subsequent courses as detailed above, carefully working each sheet into the laps without wrinkles or trapped air. Firmly hand press the sheet and complete the side lap by rolling with a weighted hand roller.

3.6 BITUMINOUS BASE FLASHINGS

- A. Install base flashing specification 3WBSASA over all cant strips, horizontal to vertical transitions, roof edges and roof penetrations. Flashings are to be secured in accordance with current manufacturers application guidelines.
- B. Prime all surfaces with asphalt primer, and allow adequate drying time prior to adhering flashing plies.

- C. Backer plies installed over masonry or other non-nailable substrates must be cut into manageable lengths to ensure adequate adhesion to the cant strip and vertical surfaces without excessive voids. All vertical laps shall be 4". Backer plies shall extend onto the field of the roof as shown in the applicable manufactures published construction detail.
- D. The finished ply of base flashing shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 3" vertical laps. If the sheet is run horizontally, the vertical laps must be a minimum of 6" and the selvage edge must be removed from the sheet or fully covered by the counterflashing. The finished flashing ply must extend out onto the field of the roof as shown in the applicable manufactures published construction detail, and must be extended a minimum of 4" beyond the edge of the prior flashing plies. The flashing must be soundly adhered to the parapet, cant area and roof surface to result in a minimum void, non-bridging construction.
- E. Base flashing heights must be a minimum of 8" and a maximum of 24" above the roofline.
- F. Use only trowel-grade modified adhesive. Apply using a trowel or wide-edged putty knife with a uniform 1/8" thickness throughout. Firmly press sheets into the adhesive, and immediately nail the top of the flashing as specified in the appropriate flashing detail.
- G. Corner membrane flashings, such as "bow ties" for outside corners and "footballs" for inside corners or other membrane reinforcements are required to ensure that base flashing corners are sealed at cant areas. An alternate method of corner reinforcing is to install a smooth MB membrane reinforcement piece on the prepared corner substrate prior to final surfacing membrane. Refer to MB Flashing Details section of the manufactures published Application and Specifications Manual.

3.7 SHEET METAL

- A. Metal should not be used as a component of base flashing. Because of the high coefficient of expansion of sheet metals and the large temperature changes that can be experienced on a roof, sheet metal or exposed metal components must be isolated from the waterproofing components of the roofing and flashing system as efficiently as possible to prevent the metal from splitting the membranes.
- B. When it is unavoidable to use metal in the roofing system (i.e., lead flange at drains, gravel stops), treated wood nailers and insulation stops, 1" wider than the metal flange, should be provided for metal flange attachment. Metal flanges must always be set on top of the roof membrane with modified trowel grade cold adhesive applied material for SBS roof systems. The metal flange is then sealed using the applicable construction detail to meet applicable guarantee requirements. Metal accessories (gravel stops, counter flashing, etc.) should be 16 oz. copper, 24 gauge galvanized or stainless steel, 2 1/2 to 4 lb lead, or 0.032" aluminum.
- C. Fabricate and install all sheet metal materials as shown in applicable construction details. Refer to SMACNA (Sheet Metal and Air Conditioning Contractors National Association, Inc.) for guidance on sheet metal treatments not addressed in this specification.
- E. Clean metal and apply asphalt primer to all sheet metal surfaces that will come into contact with asphalt or other bituminous materials; allow the primer adequate time to dry.
- F. Use fastener types compatible with the sheet metal type.

1. Copper or lead-coated copper: use copper or bronze fasteners.
 2. Lead and galvanized steel: use galvanized or cadmium-plated sheet fasteners.
 3. Aluminum: use aluminum fasteners.
 4. Stainless steel: use stainless steel fasteners.
- G. Metal counter-flashing shall have a minimum 4" face with a drip lip. The bottom edge of the counterflashing shall cover the roofing membrane and/or base flashing by a minimum of 4". Metal counter flashing used for masonry walls, wooden walls, or through wall metal flashings should be a two piece design to allow for installation and later removal. Metal counter-flashings for stucco, EIFS, wood siding or similar materials should be designed appropriately, such as "Z" type flashing. End joints shall be lapped 3" or more. Adequate fasteners must be provided to secure against wind forces. Skirt fasteners shall be watertight.
- H. Metal termination bars shall be a minimum of 1/10" thick x 1" wide with preformed sealant edge lap. Bar should have 1/4" x 3/8" slotted holes on 4" centers to facilitate mechanical anchorage. Note: Termination bars are not suitable in all base flashing and wall flashing conditions. Termination bars may only be used in conjunction with an appropriate counter-flashing extending minimum of 4" below the termination bar.
- I. Metal flanges for gravel stops, eave strips, and pitch pockets to be used in conjunction with roofing shall be primed (both sides), set in modified trowel grade cold adhesive applied material for SBS roof systems. Flanges shall be a minimum of 3 1/2" wide for gravel stops or eave strips and 4" wide for projections and extensions through the roof. The gravel stop lip should be at least 3/4" high. Eave strip lips shall be at least 3/8" high. Provisions must be made for securing the skirt to the face of the wall. This may be a wood nailer strip for masonry and metal construction. In all cases, gravel stop and eave strip nailer should be fastened to the deck or deck system with adequate resistance against wind forces.
- J. Stacks shall have metal sleeve flashing a minimum of 8" high. Pitch pockets for brackets, supports, pad-eyes, etc., shall have a 4" minimum height metal sleeve.
- K. On re-roofing projects, provisions shall be made for reinstallation of existing sheet metal duct work, equipment, coping metal and counter-flashing removed in conjunction with the new work. Also, provide for cleaning and repairing of existing defective sheet metal, and replacement of missing and irreparable sheet metal to match existing types. Light gauge sheet metal flashings which are incorporated into the Ruberoid® roof system are not suitable for re-use and must be replaced with new material.
- L. Conduits and piping such as electrical and gas lines must be set on wood blocking or some other form of support. Wood blocking/supports must be set on pads constructed of an additional layer of roof membrane material.

3.8 ROOF PROTECTION

- A. Protect all partially and fully completed roofing work from other trades until completion.
- B. Whenever possible, stage materials in such a manner that foot traffic is minimized over completed roof areas.
- C. When it is not possible to stage materials away from locations where partial or complete installation

has taken place, temporary walkways and platforms shall be installed in order to protect all completed roof areas from traffic and point loading during the application process.

- D. Temporary tie-ins shall be installed at the end of each workday and removed prior to commencement of work the following day.

3.9 CLEAN-UP

- A. All work areas are to be kept clean, clear and free of debris at all times.
- B. Do not allow trash, waste, or debris to collect on the roof. These items shall be removed from the roof on a daily basis.
- C. All tools and unused materials must be collected at the end of each workday and stored properly
- D. off of the finished roof surface and protected from exposure to the elements.
- E. Dispose of or recycle all trash and excess material in a manner conforming to current EPA regulations and local laws.
- F. Properly clean the finished roof surface after completion, and make sure the drains and gutters are not clogged.
- G. Clean and restore all damaged surfaces to their original condition.

END OF SECTION 075552

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Formed roof drainage sheet metal fabrications – gutters and leaders.
2. Formed wall flashing and trim.
3. Formed low-slope roof sheet metal fabrications.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Warranty. Sample of special warranty.

1.3 CLOSE OUT SUBMITTALS

- A. Maintenance data.

1.4 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.

1.5 WARRANTY

- A. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.
- B. Aluminum Sheet: 0.032 inch thick, ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

1. As-Milled Finish: One-side bright mill finish.
 2. Exposed Coil-Coated Finishes:
 - a. Two-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.
 3. Colors: As selected by Architect from full range of manufacturer's color selections.
- C. Stainless Steel Sheet: ASTM A240 or ASTM A666, Type 304, dead soft, fully annealed; 2D (dull, cold rolled) finish.

2.2 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, non-perforated.
- B. Slip Sheet: Building paper, 3-lb/100 sq. ft. minimum, rosin sized.

2.3 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer or primary sheet metal or manufactured item.
 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
 2. Fasteners For Aluminum Sheet: Aluminum or Series 300 stainless steel.
 3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- C. Solder:
 1. For Stainless Steel: ASTM B 32, Grade Sn60, with an acid flux of type recommended by stainless-steel sheet manufacturer.
- D. Butyl Sealant: ASTM 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

- E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.
- F. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- G. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- H. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

2.4 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
 - 1. Obtain field measurements for accurate fit before shop fabrication.
 - 2. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
 - 3. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
- B. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant.
- C. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Seams, soldered: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- F. Seams, sealant: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
- G. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

2.5 ROOF DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: 0.032 inch thick “K” style gutter, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 120 inch- long sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters, of size recommended by SMACNA but not less than twice the gutter thickness. Fabricate gutter bead reinforcing bars and gutter accessories from same metal as gutters.
 - 1. Color: As selected by Architect from full range of manufacturer’s colors.
- B. Downspouts: Fabricate rectangular downspouts complete with mitered elbows. Furnish with metal hangers, from same material as downspouts, and anchors.
 - 1. Hanger Style: Bracket.
 - 2. Fabricate from the following materials:
 - a. Aluminum: 0.032 inch thick.
 - 3. Color: As selected by Architect from full range of manufacturer’s colors.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Copings: Fabricate in minimum 96-inch- long, but not exceeding 10-foot- long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight. Fabricate from the following materials:
 - 1. Aluminum: 0.050 inch thick.
- B. Color: As selected by Architect to from full range of manufacturer’s colors.

2.7 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Apron and Step Flashing: Fabricate from the following materials:
 - 1. Aluminum: 0.050 inch thick.
- B. Drip Edges: Fabricate from the following materials:
 - 1. Aluminum: 0.032 inch thick.
- C. Eave and Rake Flashing: Fabricate from the following materials:
 - 1. Aluminum: 0.032 inch thick.
- D. Colors: As selected by Architect from full range of manufacturer’s colors.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

- A. Felt Underlayment: Install felt underlayment with adhesive for temporary anchorage. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.
- B. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement so that completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 - 3. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
 - 4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
 - 5. Install sealant tape where indicated.
 - 6. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.
 - 1. Coat back side of uncoated aluminum sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or masonry construction.
 - 2. Underlayment: Where installing metal flashing directly on masonry or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.

- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
- D. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Seal joints as shown and as required for watertight construction.
- F. Rivets: Rivet joints in uncoated aluminum where indicated and where necessary for strength.
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inch, except reduce pre-tinning where pre-tinned surface would show in completed Work.
 - 1. Do not solder aluminum sheet.
 - 2. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
 - 3. Stainless Steel Soldering: Tin edges of uncoated sheets using solder recommended for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
 - 4. Copper Soldering: Tin edges of uncoated copper sheets using solder for copper.

3.3 ROOF DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.
- B. Hanging Gutters: Attach gutters at eave or fascia to firmly anchored gutter brackets spaced not more than 36 inches (900 mm) apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
- C. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c. in between.

3.4 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet

Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in SMACNA's "Architectural Sheet Metal Manual" and as indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at 6-inch centers.
- C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.
- D. Copings: Anchor to resist uplift and outward forces according to recommendations in SMACNA's "Architectural Sheet Metal Manual" and as indicated.
 - 1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 16-inch centers.
 - 2. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.
- F. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with sealant.

3.5 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.6 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 076200

SECTION 085313 – VINYL REPLACEMENT WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes vinyl-framed windows.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Samples: For each exposed product and for each color specified, 2 by 4 inches in size.
- D. Product Schedule: For vinyl windows. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Sample warranties.

1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace vinyl windows that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period:
 - a. Window: 10 years from date of Substantial Completion.
 - b. Glazing Units: 10years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. JELD-WEN
2. Silver Line
3. Windsor
4. An approved equal.

2.2 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: AAMA/WDMA/CSA 101/I.S.2/A440.
 1. Minimum Performance Class: R
 2. Minimum Performance Grade: 30
- B. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.30 Btu/sq. ft. x h x deg F
- C. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of .28.

2.3 VINYL WINDOWS

- A. Operating Types: To match existing
- B. Frames and Sashes: Impact-resistant, UV-stabilized PVC complying with AAMA/WDMA/CSA 101/I.S.2/A440.
 1. Finish: Integral color, to match existing
- C. Glass: Clear annealed glass, ASTM C 1036, Type 1, Class 1, q3.
 1. Kind: Fully tempered where indicated on Drawings and required by code
- D. Insulating-Glass Units: ASTM E 2190.
 1. Glass: ASTM C 1036, Type 1, Class 1, q3.
 - a. Tint: Clear
 - b. Kind: Fully tempered .
 2. Lites: to match existing
 3. Filling: Fill space between glass lites with argon.
 4. Low-E Coating: Pyrolytic on second surface.

- E. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- F. Hardware, General: Manufacturer's standard corrosion-resistant material sized to accommodate sash weight and dimensions.
 - 1. Exposed Hardware Color and Finish: to match existing.
- G. Projected Window Hardware:
 - 1. Gear-Type Rotary Operators: Complying with AAMA 901 when tested according to ASTM E 405, Method A. Provide operators that function without requiring the removal of interior screens or using screen wickets.
 - a. Type and Style: As selected by Architect from manufacturer's full range of types and styles
 - 2. Hinges: Manufacturer's standard type for sash weight and size indicated.
 - 3. Single-Handle Locking System: Operates positive-acting arms that pull sash into locked position. Provide one arm on sashes up to 29 inches (735 mm) tall and two arms on taller sashes.
 - 4. Limit Devices: Limit clear opening to 4 inches.
- H. Hung Window Hardware:
 - 1. Counterbalancing Mechanism: AAMA 902.
 - 2. Locks and Latches: Operated from the inside only.
 - 3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis.
- I. Horizontal-Sliding Window Hardware:
 - 1. Sill Cap/Track: Designed to comply with performance requirements indicated and to drain to the exterior.
 - 2. Locks and Latches: Operated from the inside only.
 - 3. Roller Assemblies: Low-friction design.
- J. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- K. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
 - 1. Exposed Fasteners: Do not use exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 ACCESSORIES

- A. Dividers (False Muntins): Provide divider grilles in designs indicated for each sash lite.

2.5 INSECT SCREENS

- A. General: Fabricate insect screens to fully integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.
 - 1. Type and Location: Full, inside for project-out / Full, outside for double-hung sashes.
- B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
 - 1. Finish for Interior Screens: Baked-on organic.
 - 2. Finish for Exterior Screens: Baked-on organic.
- C. Glass-Fiber Mesh Fabric: 18-by- mesh complying with ASTM D 3656.
 - 1. Mesh Color: Manufacturer's standard

2.6 FABRICATION

- A. Fabricate vinyl windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
- B. Glaze vinyl windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Provide mullions and cover plates, compatible with window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units. Provide manufacturer's standard finish to match window units.
- E. Mount hardware through double walls of vinyl extrusions or provide corrosion-resistant reinforcement.
- F. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.

- B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.
- C. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.
- D. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
- E. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 085313

SECTION 099100 - PAINTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Surface preparation and field application of paints.
 - 2. Interior and exterior painting.

1.2 REFERENCES

- A. Master Painters Institute (MPI). Architectural Painting Specification Manual.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Manufacturer's data on materials proposed for use including:
 - a. Product designation and grade.
 - b. Product analysis and performance characteristics.
 - c. Standards compliance.
 - d. Material content.
 - e. Mixing and application procedures.

1.4 QUALITY ASSURANCE

- A. Materials, Preparation, and Workmanship: Conform to MPI Painting Manual.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Container Labels: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage rates, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- B. Paint Materials: Store at ambient temperature from 45 to 90 degrees F in ventilated area, or as required by manufacturer's instructions.

1.6 PROJECT CONDITIONS

- A. Do not apply materials when surface and ambient temperatures or relative humidity are outside ranges required by paint manufacturer.
- B. Maintain ambient and substrate temperatures above manufacturer's minimum requirements for 24 hours before, during, and after paint application.

- C. Do not apply materials when relative humidity is above 85 percent or when dew point is less than 5 degrees F different than ambient or surface temperature.

1.7 MAINTENANCE

- A. Extra Materials: 1 gallon of each color and sheen.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 1. Benjamin Moore and Co.
 2. Devoe Paint Co.
 3. Glidden.
 4. Kelly-Moore Paints.
 5. PPG Architectural Finishes, Inc.
 6. Pratt and Lambert Paints.
 7. Sherwin Williams.

2.2 MATERIALS

- A. Paints:
 1. As scheduled at end of Section, or approved substitute.
 2. Free from all forms of lead and mercury.

- B. Maximum Volatile Organic Compound (VOC) Content for interior paints, coatings, and accessories, tested to ASTM D6886:
 1. Primers: 100 grams per liter.
 2. Flat paints and coatings: 50 grams per liter.
 3. Non-flat paints and coatings: 50 grams per liter.

- C. Gloss Ratings:

Gloss Designation	Units at 60 Degrees	Units at 85 Degrees
Flat	0 to 5	Maximum 10
Eggshell	10 to 25	10 to 35
Satin	20 to 35	Minimum 35
Semigloss	35 to 70	

Gloss	70 to 85
High Gloss	Minimum 85

2.3 ACCESSORIES

- A. Accessory Materials: Paint thinners and other materials required to achieve specified finishes; commercial quality.
- B. Patching Materials: Latex filler.
- C. Fastener Head Cover Materials: Latex filler.

2.4 MIXES

- A. Deliver paints pre-mixed and pre-tinted.
- B. Uniformly mix to thoroughly disperse pigments.
- C. Do not thin in excess of manufacturer's recommendations.
- D. Re-mix paint during application; ensure complete dispersion of settled pigment and uniformity of color and gloss.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Test shop applied primer or existing coatings for compatibility with subsequent coatings.
- B. Measure moisture content of surfaces using electronic moisture meter. Do not apply coatings unless moisture content of surfaces are below following maximums:
 - 1. Gypsum board 12 percent.
 - 2. Masonry and concrete: 12 percent.
 - 3. Wood: 15 percent, measured to ASTM D4442.
 - 4. Concrete floors: 8 percent.

3.2 PREPARATION

- A. General:
 - 1. Protect adjacent and underlying surfaces.
 - 2. Remove [or mask] electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
 - 3. Correct defects and clean surfaces capable of affecting work of this section.
 - 4. Seal marks that may bleed through surface finishes with shellac.

- B. Impervious Surfaces: Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow to dry.
- C. Gypsum Board:
 - 1. Fill minor defects with filler compound. Spot prime defects after repair.
 - 2. Apply light orange peel stipple texture in accordance manufacturer's instructions.
- D. Concrete and Masonry:
 - 1. Remove dirt, loose mortar, scale, salt and alkali powder, and other foreign matter.
 - 2. Remove oil and grease with solution of trisodium phosphate; rinse and allow to dry.
 - 3. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- E. Aluminum: SSPC Method SP1 - Solvent Cleaning.
- F. Interior Wood:
 - 1. Wipe off dust and grit.
 - 2. Seal knots, pitch streaks, and sappy sections with sealer.
 - 3. Fill nail holes and cracks after primer has dried; sand between coats.
- G. Exterior Wood:
 - 1. Remove dust, grit, and foreign matter.
 - 2. Seal knots, pitch streaks, and sappy sections.
- H. Existing Surfaces:
 - 1. Remove loose, flaking, powdery, and peeling paints.
 - 2. Lightly sand glossy painted surfaces.
 - 3. Fill holes, cracks, depressions and other imperfections with patching compound; sand flush with surface.
 - 4. Remove oil, grease, and wax by scraping; solvent wash and thoroughly rinse.
 - 5. Remove rust by wire brushing to expose base metal.

3.3 APPLICATION

- A. Apply paints in accordance with manufacturer's instructions and MPI Painting Manual.
- B. Apply primer or first coat closely following surface preparation to prevent recontamination.
- C. Do not apply finishes to surfaces that are not dry.
- D. Apply coatings to minimum dry film thickness recommended by manufacturer.
- E. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.
- F. Apply coatings to uniform appearance without laps, sags, curtains, holidays, and brush marks.

- G. Allow applied coats to dry before next coat is applied.
- H. When required on deep and bright colors apply an additional finish coat to ensure color consistency.
- I. Continue paint finishes behind wall-mounted accessories.
- J. Sand between coats on interior [wood] [and] [metal] surfaces.
- K. Match final coat to approved color samples.
- L. Prime concealed surfaces of exterior wood and interior wood in contact with masonry or cementitious materials] with one coat primer paint.
- M. Mechanical and Electrical Components:
 - 1. Paint factory primed equipment.
 - 2. Remove unfinished and primed louvers, grilles, covers, and access panels; paint separately.
 - 3. Paint exposed and insulated pipes, conduit, boxes, ducts, hangers, brackets, collars, and supports unless factory finished.
 - 4. Do not paint name tags or identifying markings.
 - 5. Paint exposed conduit and electrical equipment in finished areas.
 - 6. Paint duct work behind louvers, grills, and diffusers flat black to minimum of 18 inches or beyond sight line.
- N. Do not Paint:
 - 1. Surfaces indicated on Drawings or specified to be unpainted or unfinished.
 - 2. Surfaces with factory applied finish coat or integral finish.
 - 3. Architectural metals, including brass, bronze, stainless steel, and chrome plating.
 - 4. Surfaces not included in the scope of work as indicated on the drawings.

3.4 ADJUSTING

- A. Touch up or refinish disfigured surfaces.

3.5 CLEANING

- A. Remove paint from adjacent surfaces.

3.6 PAINT SCHEDULE

- A. Steel Substrates:
 - 1. Quick-Drying Enamel System: MPI INT 5.1A / MPI EXT 5.1.A.
 - a. Prime Coat: Quick-drying alkyd metal primer.
 - b. Intermediate Coat: Quick-drying enamel matching topcoat.
 - c. Topcoat: Quick-drying enamel (semi-gloss).
 - 2. Alkyd System: MPI INT 5.1E / MPI EXT 5.1.D.
 - a. Prime Coat: Alkyd anticorrosive metal primer.

- b. Intermediate Coat: Interior or exterior alkyd matching topcoat.
 - c. Topcoat: Interior or exterior alkyd (semi-gloss).
- B. Galvanized-Metal Substrates:
- 1. Latex System: MPI INT 5.3A / MPI EXT 5.3.A.
 - a. Prime Coat: galvanized-metal primer.
 - b. Intermediate Coat: Interior or exterior latex matching topcoat.
 - c. Topcoat: Interior or exterior latex (semi-gloss).
 - 2. Alkyd System: MPI INT 5.3C / MPI EXT 5.3.B.
 - a. Prime Coat: galvanized-metal primer.
 - b. Intermediate Coat: Interior or exterior alkyd matching topcoat.
 - c. Topcoat: Interior or exterior alkyd (semi-gloss).
- C. Gypsum Board Substrates:
- 1. Latex System: MPI INT 9.2A.
 - a. Prime Coat: Interior latex matching topcoat.
 - b. Intermediate Coat: Interior latex matching topcoat.
 - c. Topcoat: Interior latex (eggshell).
- D. All Other Surfaces:
- a. Same as "C" above.

END OF SECTION 099100